INNER CITY NEW TOWN

WHAT CAN INFRASTRUCTURE DO THAT ARCHITECTURE CANNOT?

Urban renewal, and the new housing stock it requires, cannot succeed by good architecture alone. The failing of modern housing projects were not architectural failings, but the failings of outmoded urban infrastructure. The following project attempts to address this shortcoming by a ground-up reorganization of a notorious slum, the Fifth Ward of Houston Texas.

NOTE ON IMPLEMENTATION

The following project proposes a reorganization of the street infrastructure of a large urban district. Like all other significant investments in the city, this will be achieved incrementally over time. The initial phase this project targets a City of Houston program that leverages urban renewal off of the auctioning of tax delinquent lots. The project works within the general outlines of this program while revealing potential urban synergies that could amplify the effect of what is now a house-by-house effort. Discussions are ongoing.

below: TAX DELINQUENT LOTS, 2007
BROKEN CITY, BROKEN FORM

An inner city district of Houston called the Fifth Ward is frequently characterized as a blighted slum. The Fifth Ward began as a "Freedman’s Town" founded in 1866 by the region’s freed slaves. It is located adjacent to Houston’s Central Business District yet it is a world apart from the corporate ethos that pervades its neighbor. For many decades the Fifth Ward served as the center of the Houston African-American community. With over one hundred churches and a concentration of black-owned businesses, the district reached its population peak in the years leading up to the Second World War. With sizable rail yard and an active port on its southern border, the Fifth Ward was supported by good jobs all within walking distance. The Fifth Ward was a destination in Houston commonly referred to as “the Nickel.” Four members of Congress came from the Fifth Ward including Barbara Jordan and Mickey Leland. It was also the birthplace of George Forman and Dr. Ruth Simmons.

In the early 1950s things began to slide for the Fifth Ward as it did for the rest of urban America. The port moved further out and jobs disappeared. In the early sixties, the Fifth Ward was eviscerated by freeway construction. Major pollution in its southern section came to light leading up to the declaration of a major Superfund site. By the 1980s, crime was rampant and the Nickel was renamed the “Bloody Nickel.”

The 2000 census lists the Fifth Ward as a community of 21,640 people: 60% African American, 37% Hispanic and 2% white. The majority of residents (51%) have yearly incomes below $18,300.00. 67% of the population rents, with a vacancy rate of 14%. 55% of the lots contain single-family houses, 71% of the lots are valued at less than $25,000. One third of the lots in the Fifth Ward (32%) are vacant.

The image on the upper left is the present street plan of the Fifth Ward. The image upper right is a translation of this plan into a field of intersections. The fractured infrastructure of the Fifth Ward is the object of the following study. The study takes the position that any architectural reform — such as modern housing — must be preceded by infrastructural reform.

FIVE ELEMENTS
The inner city street infrastructure will be reorganized around the five principal elements shown in the diagram above and described in the paragraphs below.

1. SWITCHES. The analysis of urban infrastructure begins, not with the line of connectivity, but with the isolated point. The point is taken from existing street intersections that are redefined as “switches” or nodes in a large urban network. Switches exist in one of five distinct states. The first state is marked as a 1-way switch indicating one spoke connecting to and from it. This is the abstraction of a dead end street. The following switches indicate the successive number of edges or spokes connecting to and from it marked as 2, 3, and 4-way switches. With an increase in value comes an increase in the openness or continuity of the infrastructure. A final switch type is the null switch which is an unbuilt or demolished intersection.

2. MAT. The second element of urban organization is the programmatic mat. The mat marks basic divisions of the ground plane taking the place of the traditional zoning. In the new plan the mat represents program but can also take on other meanings and associations. For example, programs dominated by space such as parks, abandoned lots and industrial areas are grouped together in the plan to form a larger mat that represents the void spaces. Other mat associations mark distinctions between zoned/unzoned, programmed/unprogrammed, vegetated/barren, owned/shared, and full/empty.

3. STREET PATTERN. The third element represents the smallest scale of urban organization. In the new Fifth Ward plan, the scale of the “street” pattern is similar to that of a traditional city block, measuring around 250’ to a side. Providing some of the amenity of the traditional urban grid, the street pattern is highly fragmented and cannot provide the decisive structure of the plan. The street pattern works symbiotically with a higher level of organization superimposed upon it.

4. UNIT OF AGGREGATION. The fourth element of urban organization is derived from the megalopolitan “unit of aggregation.” Like most cities, Megalopolis is aggregated from a basic unit. Unlike traditional cities, however, the specific unit of aggregation is not a “block.” Following the ever increasing economies of urban scale, the unit of aggregation is an organizational spine structuring a complex assembly of inhabitable space, technical services, street infrastructure and public utilities. The unit of aggregation is capable of and infinite number of configurations which create neither a figure nor a field condition but attempts to mediate between the two. This characteristic stems from the desire to reproduce a city that is dominated by space rather than form.

5. LOOP. Superimposed on the unit of aggregation is a third level of urban organization which, unlike the fragmented grid or spine, does not contain terminal points. Overlapping adjacent units of aggregation, the loops of the new plan link spine to spine providing the penultimate scale of urban organization.
NETWORK OF CONTINUITIES. Each of the four photos represents each of the four distinct states of Fifth Ward intersections. Clockwise from top left are the 1-way intersection, which is a dead end street, a 2-way intersection, which is an elbow turn, a 3-way intersection, which is a T intersection, and a 4-way intersection which is open to traffic in both directions. To the right is a diagram of the 3-way or “invisible wall” intersections. Tracking the status of intersections allows for the tracking of the openness of the existing urban form. As such it is an index of urban space.
PROGRAM AND CONTINUITY. Inner city residential districts consistently show a high proportion of 4-way intersections providing maximum continuity among living areas. In the Fifth Ward, there are 547 residential blocks and 388 intersections. Of the 388 intersections, 230 [42%] are 4-way intersections. By way of contrast, there are 471 industrial blocks, 107 intersections of which only 15 [3%] are 4-way. Each program has its own relative switch ratio.

It is possible to take this switch ration and apply it to all program types of variable number of blocks generating many alternate configurations [see addendum]. In the surrounding diagrams, the switch area ratios for the residential areas were calculated [above] and then those ratios were used in the redistribution of the residential program [below] in the new plan.

Every program has its own “continuity” that can be quantified and translated directly into a network of intersections. In other words, continuity can be translated directly into form.
ZONING. We are commonly limited to just two types of land use zoning, mixed use zoning of the traditional urban district [arrondissement], and single use zoning of the contemporary urban megalopolis. The first is rendered obsolete by present urban/economic conditions while the second stands as one of the most reductive aspects of contemporary urban production. The diagrams show clockwise from upper left, the existing zoning, contemporary single-use zoning, traditional, mixed-use zoning and our new zoning plan.

MIXED/SINGLE USE. The purpose of our zoning exercise was to provide an alternative to single use and mixed use zoning. This was done by subdividing the Ward into 3 zones, then 7 zones and finally 21 zones. The diagram shows these subdivisions overlapped. We then applied discrete activities to each of the 21 subdivisions. From the standpoint of 21 zones and you have single use zoning; subdivide the Ward into 7 zones, however, and you have mixed use zoning. This overlap of mixed-use and single-use zoning combines the virtues of both.

NEW STREET PATTERN. Having redistributed the programs according to a mixed/single use zoning, we returned to the “switch ratio” to calculate the required number and type of each program’s intersections. These were then assembled — knit together actually — to form a semi-continuity of form around a dominant matrix of space. This matrix forms the base level of urban organization. It should be noted that this strategy of “preemptive closure” is offered as an alternative to the absolute closure that results from unchecked market forces.
MATRIX OF SPACE. What most distinguishes the contemporary from the traditional city is the dominance of space over form. In our attempt to reconcile the inner city with the realities of contemporary urban production, we have incorporated this characteristic into the new plan. Given the large amount of open space already existing in the Ward, it already has a dominance of space: a characteristic that we intend to sustain. We have attempted, however, to redistribute this space into an organizational matrix of space indicated in the diagram.

SOFT WALLS. Walls destroy the qualities of contemporary urban space. Three-way or “T” intersections create invisible walls. Instead of constructing material boundaries, we have subdivided the Ward using “soft walls” made of 3-way intersections. Replacing the ubiquitous barriers surrounding the fortified subdivision, these virtual walls are one of the most important aspects of mapping and manipulating urban continuities. The diagram on the right shows how the “T” intersections coincide with the new subdivision of the Fifth Ward.

ORGANIZATIONAL OVERLAY. Despite the presence of grid-like forms in new town [as in Megalopolis], the city does not aggregate block-by-block as it did in the traditional city. While Megalopolis is an aggregate urbanism, its unit of aggregation is not the urban block. That unit is, instead, the spine form that is common to contemporary cul-de-sac production. The diagram to the right shows an overlay of 7 variable spine units upon the street pattern. These spines structure complex assemblies of infrastructure and architecture that aggregate into a new urban unity.
UNIT OF AGGREGATION. Like almost every city before it, Megalopolis is an aggregation of discrete units. While we grasp the aggregate nature of ‘sprawl,’ we continue to think that its unit of aggregation is some variation of the block form [superblock, megablock]. The increment of contemporary development is, however, much larger than that supplied heretofore by block aggregation. The increment of contemporary development must also construct an entirely different type of urban aggregate, an aggregate that is dominated, not by [block] form, but by space.

The block paradigm needs to be replaced by units of aggregation conceived as complex assemblages in which built forms are but a part of a larger assembly of technical services and public utilities. This assembly can no longer be meaningfully structured by the ancient pairing of building and infrastructure but must instead be considered as a complex totality. The adjacent diagrams are an attempt to outline the structure of such a complex totality.

To the right is a small fragment of a much larger “search space” that contains one of the 7 units of aggregation found in the new plan. Each unit is situated in a unique space that operates by virtue of a simple transformation [algorithm]. The transformations create a set of related forms or selection table. Derived from both evolutionary biology and computer science, search spaces are an alternative to urban typologies which do not reduce variation to a typical essence, but instead multiplies them. [see addendum.]
HOUSING AS INFRASTRUCTURE. In Megalopolis, the spine form is not limited to street infrastructure but also serves to structure discrete buildings. The structuring spines of shopping malls, airports and high-rise buildings, for example, all attest to the extraordinarily close relation between architecture and infrastructure in the contemporary city. This binding relation suggests that the traditional distinction between architecture and infrastructure is today meaningless. It further suggests that innovations in urban housing only succeed when they are attended by innovations in urban infrastructure. In other words, architecture must be addressed, not in itself, but as an inseparable part of a complex assembly that has been identified above as the unit of aggregation. Having devised an overall plan for the reorganization of the Fifth Ward based on this new unit of aggregation, we are only now prepared to address architecture as it operates within a larger, complex assembly.

UNIT 2.14. The final panel shows preliminary work on a thorough demonstration of unit 2.14. Subsequent development of the project would complete the specification of a new unit including two large housing sectors, a commercial district, a park, and several institutional buildings all specified in the larger plan of this area.

SITE. Our housing proposal will be tested in the western, residential section of the unit of aggregation marked 2.14. This unit covers approximately 132 acres in the northeast corner of the Fifth Ward. A high concentration of tax delinquent lots coupled with the enormous space of an abandoned rail yard create a viable testing ground for a city dominated by space. As perhaps the most “blighted” part of the Fifth Ward, the site possesses an excess of space. Properly handled, this excess of space may translate into an excess of potential.
UNIT 2.14 VARIATION ONE. This simple variation of the unit assembly places a build up of three building types across the primary axis of the spine. While the individual pavilions are closely tied to the street layout, the slab and the towers have a more direct relation to the spine. This division of scale and of building type is reconciled in the east facing wall of the slab which acts as a backdrop to the detached buildings as it looks out over the large open space [Jordan Field] that is today a disused train yard. [See other variations in the pdf addendum.]