# The Shifting Ground:
# Figuration Within the Gridiron City

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The American gridiron city has long resisted any radical transformation of its formal structure. For over two hundred years, its original conception, a simplified subdivision of space into repetitive cartesian limits, forming a pattern of filled blocks articulated by a matrix of open circulation, continues as the fundamental paradigm of organizing physical development. One of the reasons for the lack of evolution of the grid city is the lack of a substantial theory of form, or formal strategies that challenge the fundamental nature of the grid, and can promote alternative types of interpretation and redevelopment.[1]

The grid city, it can be argued, showing signs of decline in much of its reconstruction over the last half century, has now reached a stage which calls for a reevaluation of its formal structure, leading to physical transformations that can improve its capacity to perform both as a functional system of organization and as a armature ordering narrative content. It is proposed that formal strategies based in "figuration" through selective substractive and additive devices can develop further possibilities of differentiation and hierarchy within the redundant matrix of the city, and result in a reaffirmation of critical public space. The notion of figuration here is defined most broadly, inclusive of all devices that establish clearly defined limits and articulate spatial singularities, tending to cause fracture, exception, breakage, and distortion of an idealized grid as "ground," against which such figures are read.

Many of these concepts of figuration can be discovered through examining earlier urban projects, many of which, for purposes of this study, are exemplified within the definitive Manhattan grid. These projects, and other fundamental theory of grid organization can generate models for redevelopment, which will be summarized by a series of design principles supported by descriptive diagrams. This study is intended to serve as an initial inquiry into a more elaborate theory of city form applicable to all American grid-iron cities, leading to a variety of alternative physical possibilities, higher levels of resolution interrelating architecture and urban settings, and, a much needed reconnection and interdependency between changing cultural, social and economic conditions and the spatial order of the city.

There are a number of reasons as to why the grid-iron has been resistant to major degrees of transformation:

1. The developmental imperative of the American city continues to be based in the idea of the land as an economic, speculative commodity, centering its priorities in maximizing economic return. The grid, which articulates simple, efficient cubic volumes of space supports this tendency towards maximum "packaging," ie, filling out a given parcel to its volumetric limits within the zoning envelope, limiting any left over non-income producing space.

2. The original land surveys established ownership patterns that tend to endure. While sites may be enlarged (through accumulation of parcels) or reduced (through reduction of parcels), the pattern of properties are still based on earlier orthogonal limits, either within a partial block, or the overall block itself.

3. A fundamental paradigm of urban form has become firmly based in the spatial characteristics of the historic city, i.e., the definition of the street through the development of a common setback line, resulting in a clear articulation of streets (as voids) and blocks (as solids), thus reinforcing a spatial reading of the urban grid.[2] This "post-modern" position has triumphed largely through the writings of Colin Rowe, Robert and Leon Krier, and others, which critically assess the early 20th century experiments of modernists such as Le Corbusier, the manifestations of C.I.A.M. and later, Team 10, and espouse returning to the principles established through 18th and 19th century urban models.[3]

## CHALLENGES TO THE GRID MODEL

I would submit that the developmental, economic and cultural conditions existing for at least the last 50 years are vastly different than those existing at the time that established the predominant grid-iron layout of the American city, or during the period of maximum growth during the late 19th and early 20th century. Such changes in the fabric of our society, having much to do with the shifts of population and business activity to areas outside the central city, are of such

significance as to cause a reevaluation of the underlying structure of the city, and should consequently lead to major physical transformations. One might even conclude that the disintegration of the spatial/physical qualities of the American city since World War II are at least partly caused by the inability of planners to reconcile these changes with the original block and street constraints on patterns of development.

A thorough discussion of these changes is beyond the scope of this paper, and is well covered in other sources,[4] but can be summarized by a fundamental shift in the notion of city as a condensed locus of activity and development through the expansion and dispersal of outer city development. Since at least the recession of the early 1970's, the central city as experienced little impetus for growth and expansion--and in fact, has shrinked in population, as well as office and retail space.[5] The more recent manifestations of "edge city," changes in telecommunications, computer technology, and the proliferation of cheap, easily accessed space in the suburbs continues to erode the traditional developmental pressure of the urban core.[6] The original needs of the "walking city," the desirability of centralized locations generating vastly higher land costs that sponsored maximum growth and density simply no longer exists. Consequently, there is an excess of vacant retail, office and residential space in the majority of central grid cities, land values have been reduced (and will continue to decline), and unprofitable properties are falling into further disrepair, all of which suggests the need for a reevaluation of traditional development patterns that promote maximum density and continuous built fabric.

The other primary impetus for reconsidering the prevailing spatial pattern of the grid city is to question whether it ever served its purpose very well in the first place. If one considers the city to be little more than efficiently structured space that maximizes functional interrelationships, is properly serviced, and allows for basic human needs relative to light, air and safety, the grid network has always proven to be perfectly serviceable. But the grid's ability to express societal values and the evolution of culture is mitigated through its tendency towards repetition, sameness, and a non-hierarchical ordering of all the parts, both private and public. These parts, most particularly, the cultural institutions of the city that most express its ideals and content all tend to be equalized into a compartmentalized spatial matrix that leaves little room for differentiation and specificity. Libraries, museums, theaters, school, government buildings etc. are all forced into spatial envelopes that differ little from other speculative development, beyond facadal treatment. In other cases, with the rise of international corporations which build overpowering monuments that stand as icons of prestige and corporate identity, the traditional institutions of the city become diminished and subverted in importance. It is precisely this equivalence of the public and private realms that tends to reduce the legibility of the city, and the ability for its architecture to express appropriate roles and content.

Reading the content of the city through its architecture is not only achieved through the expressive characteristics of individual buildings, but is further clarified through the settings within which buildings are placed. The high-density compartmentalization of building functions leaves little room for surrounding open space, or the articulation of programs into differentiated components. This results in virtually all buildings being read as fragments of undifferentiated street walls, with little ability to take on hierarchical importance through a reciprocity with a particular spatial settings, or unique site conditions.[7] Even when plazas and other spaces are developed, the non-hierarchical nature of the grid and arbitrary zoning incentives encourages repetitive patterning which again mitigates hierarchical, specific readings that clarify the role of particular buildings within the city, and articulate an accurate relationship between form and content.[8] In other cases, public spaces have been displaced to the interior of individual buildings or blocks, thus "privatized" and incapable of entering into any larger urban narrative.

## ALTERNATIVE MODELS

Surely this hasn't always been the case, and in fact, the American grid city, particularly during the 19th and early 20th century, contains many examples where in fact reciprocity between architecture and settings with appropriate spatial differentiation were achieved. The development of the "City Beautiful" movement,  initiated by the Chicago World's Fair of 1893 and the influence of European cities, and further refined by Beaux-Arts trained architects, provide strategies to "interrupt" the gridiron, many of which were built.[9] In New York, for instance, the Public Library on 42nd Street by Carrere and Hastings combined 4 blocks into a single superblock, establishing an axial relationship to previously anonymous 41st Street, and also carved a new public space, Bryant Park, behind the urban "palace." In a different manner, Grand Central Station built in 1914 generated a new axis through the grid established by the widening of Park Avenue, terminated on axis by the great Waiting Room. A later transformation of the grid-iron is seen in Rockefeller Center of 1932, designed again by Beaux-Arts architects trained in the same planning principles originated in earlier European precedents. In this case, a central public mall and plaza has been carved into the series of repetitive blocks, establishing a primary central axis within the surrounding gridiron. While the project is made up of singular buildings orthogonally related to the grid, and typologically not that different than other adjacent structures, the open space and public circulation systems confer an identity, order, and a series of vistas of varying levels of significance that differentiates the role each building and its relationship to other elements, all achieved by the one exceptional spatial intervention.
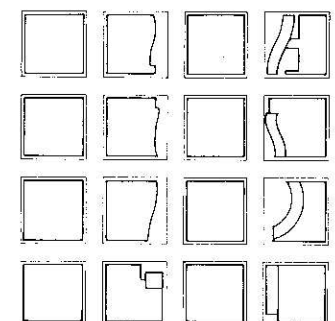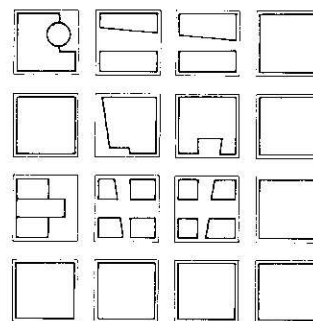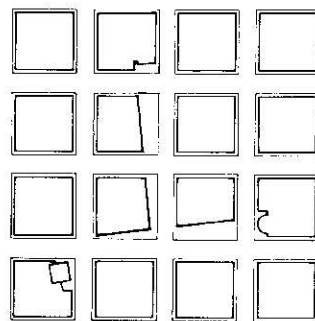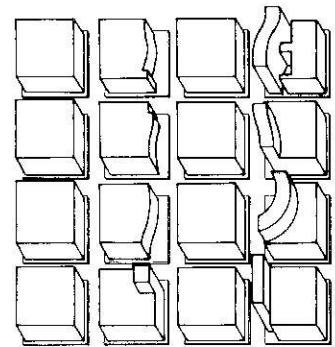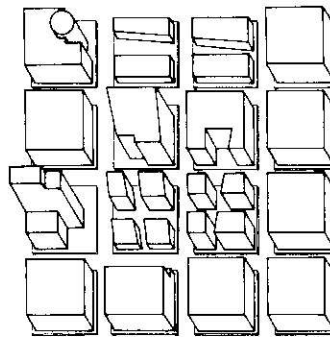
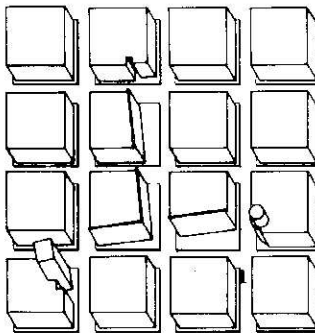More recent examples of articulating the grid developed since the formation of the Modern Movement tend to be
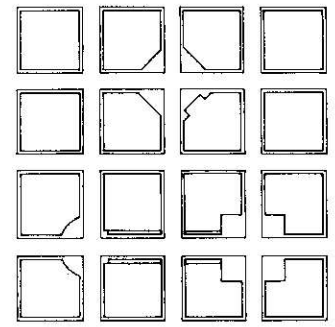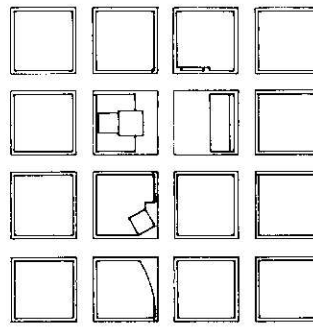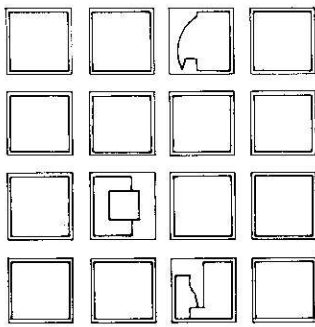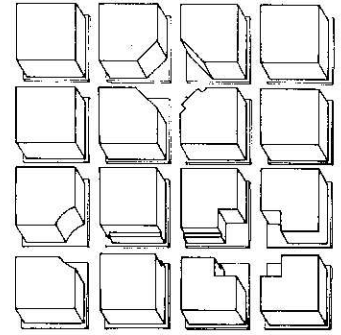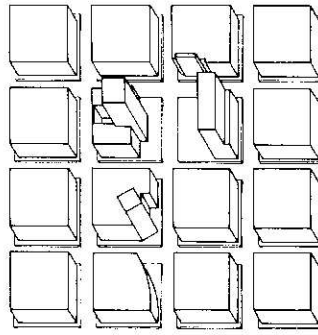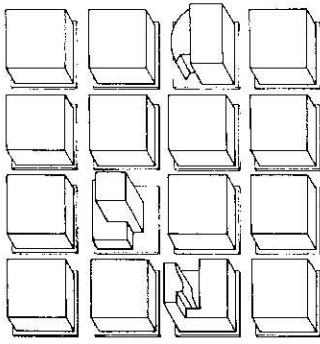
**1. AMBIGUOUS FIGURES**



**2. RECIPROCAL FIGURES**
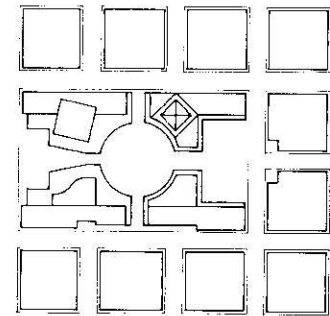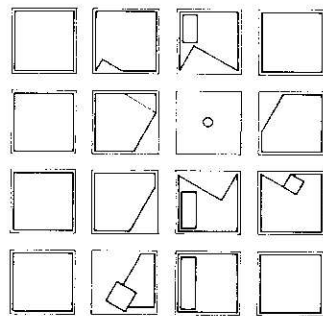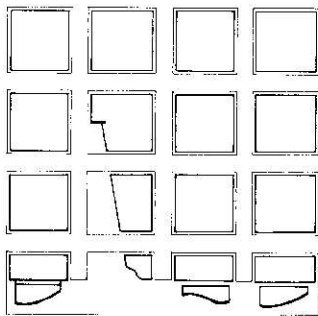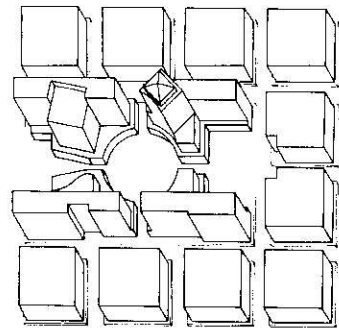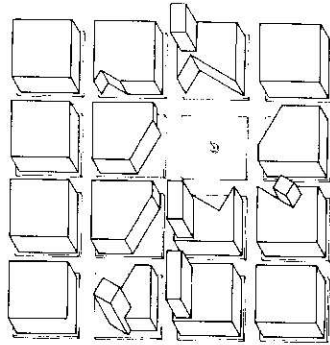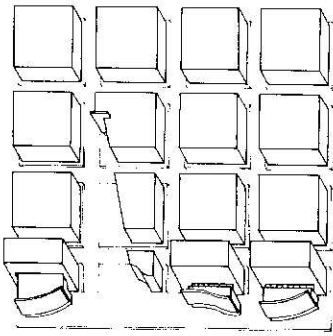


**3. SUBTRACTIVE CORNERS**
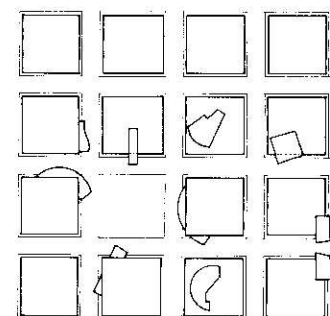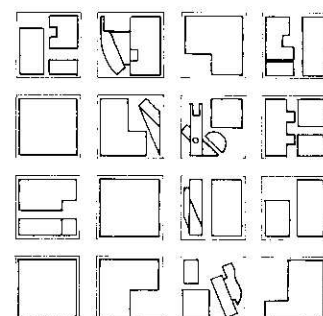


**4. SLICING (EXTERNAL)**
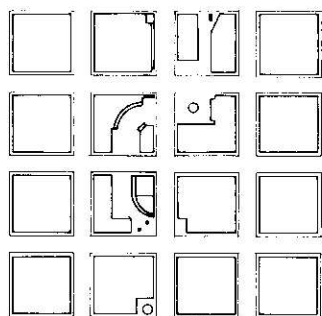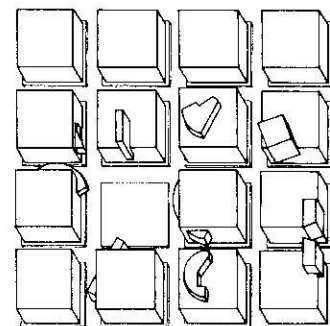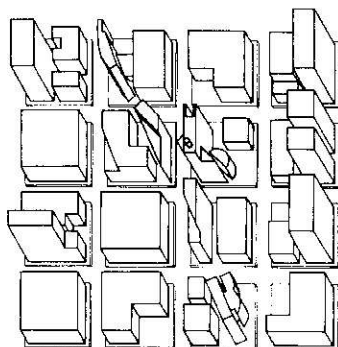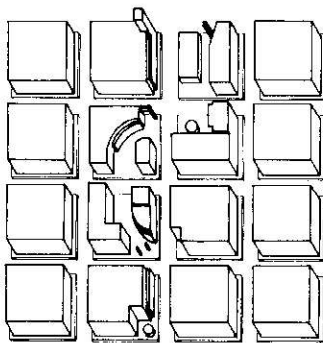


**5. SLICING (INTERNAL)**



**6. EROSION**

7. EDGING

8. ROTATIONAL OVERLAY

9. CONSOLIDATION/PLUGGING

10. LINKAGE (SPATIAL)

11. LINKAGE (MASSING)

12. ADDITIVE FRAGMENTS

highly criticized in terms of their tendency towards "objecthood," which destroys the integrity of the grid and the continuity of the urban streetwall. Examples, most commonly taking the form of the set-back tower, can be found in cities throughout the United States, and have played no small role in the disintegration of the historic city's density and cohesion. When these experiments became the basis of larger interventions, such as the large-scale public housing projects of the 1950's, the grid itself was completely displaced, and lost its ordering capacity as public structure to provide scale and a sense of mediation among highly differentiated private parts.[10] These "tower-in-the-park" schemes, the ubiquitous repetitive, articulated figures in a continuous spatial ground, do not achieve a meaningful definition of configured public space, and worse, deny the primacy of the urban street as the critical organizing agent of the city.

But select examples of intervention where individual buildings are articulated within an undifferentiated surrounding matrix can in fact play a significant role in breaking the relentless repetition of the grid, and in particularizing certain site relationships. The Seagram Building by Mies Van Der Rohe, for instance, when originally constructed in 1956, achieved its power by being the one exceptional setback from the urban streetwall (now no longer the case), defining a plaza forecourt that formed a spatial focus along Park Avenue, further intensified by the cross-axial relationship to the New York Racquet Club across the street. The Guggenheim Museum by Frank Lloyd Wright has always been considered to be the ultimate anti-contextual statement in terms of its total lack of relationship to the 150 foot wall of buildings along Central Park, with this apparent contrast playing some role in its architectural power. But one could also consider that the Museum was meant to be conceptually "displaced," and actually be a part of the park, a reading now clarified by the Gwathmey/Siegal high-rise addition which defines the new edge of the block, and allows the spiral spatial vortex to be seen as a removed fragment of nature, rather than being a part of the surrounding cityscape. Another, somewhat less potent example can be found in the Loews Hotel on 50th Street, whose undulation, while once again breaking the continuity of the streetwall, tends to agitate in a far more dynamic way one's vista down the street (not to mention the improved street views from individual hotel rooms), re-directs the visual perspective towards particular buildings in the vicinity, and even suggests the beginnings of an additional east-west seam through the midtown district. In all of the above cases, the non-conforming incident acquires its power through a dialectical relationship with the more neutral surrounding gridded field, and at the same time "charges up" the field, creating points of inequality and specificity.

All of this is to suggest that not only the urban gridiron can "take" such exceptions, but in fact through such divergences, can address the earlier stated problem of the misfit between the necessity of accommodating hierarchical con-

tent within a non-hierarchical framework, and the shifting demand for space in the center city. The problem is no longer to maximize the grid's efficiency and density through the filling of the zoning envelope, forcing all public and private functions to conform to the same rules on a subdivided "gameboard." Our cities have long been over-zoned, promoting rampant speculation, over-development, and now, vast quantities of vacant space. We must now design appropriate strategies for disinvestment and the selective "openning" of the American grid-iron.

PROPOSALS FOR GRID TRANSFORMATION

Such a tendency toward a "shifting ground," in which the neutrality of the grid is transformed through higher degrees of figuration is intended to create certain fundamental shifts in terms of the its spatial characteristics, and the relationships of buildings to their settings:

1. If the gridiron has generated a continuous ground of relatively equal incidents, it is proposed to create breaks, fissures and seams in the field that establish mediation and discontinuities, suggests unequal incidents, and promotes smaller areas of identifiable integration. This new fracturing of the grid, through selective substractive and setback strategies can create significant increases of appropriate open space that can make our cities desirable for habitation once again, intensify the role of the public realm, and reintegrate nature into the urban fabric.[11]    2. If the gridiron has tended to promote isolation through the individualized development of each building parcel, resulting in a uniformly privatized space with little beyond a building's conformance to the overall gridded network to suggest higher levels of order, it is proposed that the selected fragmentation and opening of the grid can establish intermediary orders and dependencies that can reinforce hierarchical connections and interrelationships between buildings, and encourage the development of diverse public settings.

3. If the gridiron establishes a non-hierarchical, undifferentiated matrix of subdivided space which tends to submerge possibilities of conferring higher importance and content on certain building parcels, it is proposed that a reconfiguration of the grid, forming inequalities, junctures and differentiation within its structure can establish an appropriate hierarchical order that articulates critical public institutions, and reasserts the relationship between a city's form and its content.

The following diagrams offer a graphic summary of certain formal tools (not intended to be definitive) that can address the above goals, suggesting possibilities of transformation and reinterpretation of a generic urban gridded structure through a series of additive and subtractive strategies (see Figures 1 and 1a, 12 Models of Grid Transformation):

## 1. AMBIGUOUS FIGURES

The notion of Ambiguous Figures suggests that figuration need not be conceived as an absolute condition, in terms of either completely articulating a shaped form within a block, such as a set back tower or monument that denies the streetline, or conversely, maintaining a consistent "ground" of infill development that reinforces the order of the street grid. In this case, the block can be developed as a "both/and" condition, in which parts of the block might fill out the limits of the grid, while a particular component of a program might also be articulated and be separated out from the surrounding ground, thus performing as <u>both</u> foreground <u>and</u> background.[12] This is to suggest that it is possible to selectively break, or fracture the order of the grid, while still maintain a portion of neutral infill which connects, or partially submerges the variant condition back into the dominant order of the grid. An example of this inclusivist strategy is surprisingly once again Mies' Seagram Building, in which the tower in the plaza articulates the corporate icon along Park Avenue, while on the back side, the [usually undocumented] service tower and lower office component fills out the project to the streetline, and ties the tower back into the rest of the block.

## 2. RECIPROCAL FIGURES

Reciprocal Figures suggests that object interventions in the grid do not have to be conceived as singular, individual statements that are completely divorced from larger site considerations, but rather, complex assemblies that form a more ambiguous figure made of multiple, interrelated spatial components.[13] In most cases, there occurs a larger, focal element, either as an open space or dominant mass which can act as a formal "mediator" to collect other sub-dominant elements into a larger figural whole. Or in other cases, there may be a particular relationship established between one building and another, or between a building and an adjacent space. Rockfeller Center is an example of using both a focal open space and mass to establish a hierarchical organization of individually configured parts, forming an order that both breaks off from the surrounding grid, and maintains its authorative presence at the same time.

## 3. SUBTRACTIVE CORNERS

Subtractive Corners recognizes the power of the ubiquitous condition of the intersection in grid systems to develop sites of special emphasis that confer a degree of specificity and sense of place versus the redundancy of the overall gridded order. It is clear that enlarging the intersection through subtracting portions of the block establishes different configurations of open space of unique characteristics, and at the same time, changes the geometry of the residual block. This results in a wide variety of unique site conditions of varying degrees of foreground/background, or public/

private implications, suggesting appropriate settings for particular types of development. The urban design implications can be observed in many precedents, from the chamfered corners of Cerda's 1859 Barcelona plan to Baroque planning interventions found in many European (and some American) cities.

## 4-5. SLICING (INTERNAL, EXTERNAL)

The notion of Slicing is to suggest that the traditional concept of the setback condition, which tends to be congruent with the street grid and defines the street/block form of the city, can in fact be adjusted so that there can occur variations and levels of misfit between the order of the street grid and the building setback line. If, for instance, the setback line is re-established somewhere <u>within</u> the property line, and perhaps is not made parallel to the property line, a new form of street space can occur which, a: is different from all other streets in terms of its configuration, b: defines a singular space carved out of the continuity of the street, c: expands the pedestrian realm beyond the original sidewalk, allowing new patterns of use other than circulation, and d: establishes new kinds of vistas, or perspectives that create points of focus within the grid. Similar characteristics describe the slicing of a block internally, in which the external setback condition between street and building setback is maintained, but new internal setback conditions are defined, forming new spaces within the block which can not be encroached upon. The power of this strategy (as recently investigated by Richard Meier's proposal for the Madison Square Garden site in New York) is the ability to maintain the infrastructural order and consistent definition of the streetgrid, while allowing the internal portions of the block to take on new roles, and variable forms.

## 6. EROSION

Erosion is another subtractive transformation, in which the original limit of the grid is organically reduced as opposed to a rigid, geometric incision. The result establishes a kind of spatial seam, which causes separation within the grid, as well as implicit continuity longitudinally along the seam. The configuration of an irregular, natural order within the regular subdivision of the grid suggests that qualities of nature, or landscape systems can be introduced within the man-made fabric of the city, while enhancing and clarifying the characteristics of both natural and manmade forms through articulation and polar opposition. This new edge condition can be achieved either through the definition of a new setback condition which is variably defined, or, by replacing the removed portions of the grid with a new formal type, such as a serpentine wall building which mediates between the open division and the closed block.

## 7. EDGING

Edging is a device intended to establish specific limits to a typically continuous gridded field, either in terms of demarcating a clear break between one grid from another grid of different dimension or orientation, or to end the field where it reaches a necessary point of definition, such as a natural barrier, such as a waterfront condition. Through configuring the terminating blocks, either through subtraction or displacement, appropriate forms of transition can be developed that allow the edge condition to perform differently than internal blocks. One option is to establish a block strategy that performs dualistically, forming both a clear wall condition of termination that relates to the adjacent grid, as well as another "soft" edge condition that might relate to an adjacent natural condition, allowing duel recognition of both manmade and natural contexts.

## 8. ROTATIONAL OVERLAY

Rotational Overlay suggests that figuration can be achieved through collaging a singular, specific form, or organizational system over a neutral grid. By rotating the configuration, there occurs a further separating out of the new form from the surrounding field, as well as the creation of unique conditions where the rotated form divides, or distorts the orthogonal structure of the field. The overlaid condition tends to maintain its formal structure and autonomous reading within the grid, allowing it to be extracted and examined without sacrificing its original characteristics.

## 9. CONSOLIDATION/PLUGGING

Consolidation of blocks into larger block forms by removing streets establishes hierarchy within repetitive grids, and allows for greater degrees of variance between the configuration of the infill fabric and the shape of the block. While one of the drawbacks of such "super blocks" has been the tendency to disrupt the overall scale and texture of surrounding development, it is also possible to configure infill which is informed by and respects the prevailing order of the original grid. Combining blocks also has the tendency to "plug," or disrupt the open continuity of the grid, so that particular vistas are climaxed by particular forms that perform as singular monuments of higher significance within the redundant subdivision of surrounding blocks.

## 10-11. LINKAGE (SPATIAL, MASSING)

The notion of Linkage is to establish a continuous series of configured events that can connect through a series of blocks. The linking structure can be conceived either as *spatial* openings, in which the potential mass of the block is carved away, leaving a configured route of varied shape and dimension juxtaposed to the given circulatory grid. Or, portions of the block can displaced, and then replaced with other types of *massing* configuration which weaves its way through the grid, developing a linked series of built forms and spaces that creates junctures and fracture within the grid. In both cases, figuration exists at two levels, both in terms of particular forms and spaces within a particular block, as well as a reading of the overall linkage as figure, which is able to be articulated independently out of the overall gridded matrix, and still possess a level of resolution and order unto itself.

## 12. ADDITIVE FRAGMENTS

Additive Fragments suggests that the massing of city blocks does not have to be conceived only as either an unvarying constant, or undergo transformation by complete displacement and rebuilding. Rather, buildings can take on partial adjustments and additions, sometimes enlarging given lease space, adding new public programs, or attaching components that can mark entry, specify changes of function, direct site relationships, or perform other roles. Such additions would normally take place vertically as roof space, but could conceivably be extended from the side, suspended over the public easement. In this way, given cubic volumes which have tended to be generated by the urban grid, can be subtlely transformed and reconfigured in order to confer new identity and meaning upon the non-hierarchical packaging of programmed space.

## SUMMARY

The exercises described above are only an initial inquiry into rethinking the standard ordering matrix which has served to structure most American cities from their original conception. At the very least, it is evident that there exists a far greater potential to clarify public order and form interrelationships than has typically been attained in the evolution of the grid city. The development of the inner city can no longer be based on the continuing imperative of growth and the maximizing of density--changing patterns of regional development encourage contraction and new forms that will reinstitute a critical public realm newly configured within the private urban matrix. Through the potentials of figuration, and the further exploration of a theory of restructuring the grid (along with conceiving new implementation strategies), the gridiron can take on new urban qualities, generate new forms, and be revitalized.

## NOTES

[1] Relatively little serious study has been given to the formal implications of the gridiron as a generator of city form. A few relevant studies would include Rodrigo Perez de Arce, "Urban Transformations," *Architectural Design* (April, 1978); Steven Holl, *Pamphlet Architecture #5: The Alphabetical City* (New York: Pamphlet Architecture, 1980); Leslie Martin,"The Grid As Generator," *Urban Space and Structure* (Cambridge: Cambridge University Press, 1972).

[2] The shift away from the Modernist urban interventions of the 1920s-1950s is most effectively started by the polemical statement of Jane Jacobs, *The Death and Life of Great American Cities* (New York: Random House, 1961) and emphatically delineated by the transformation studies by Lawrence Halprin, *New York, New York* (New York City Housing and Development Administration, 1968).

[3] Some of the fundamental sources for this position would include Fred Koetter and Colin Rowe, *Collage City* (Cambridfe: M.I.T. Press 1978; Rob Krier, *Urban Space* (New York: Rizzoli, 1979); Aldo Rossi *The Architecture of the City* (Cambridge: M.I.T. Press, 1982).

[4] Good histories of suburban development patterns occur in: Philip Dolce (ed.) *Suburbia* (New York: Anchor Books, 1976); Ann Miller and Patricia Melvin, *The Urbanization of Modern American* (New York: Harcourt Brace Jovanovich, 1973); Christopher Tunnard and Boric Puchkarev, *Man-Made American: Chaos or Control?* (New Haven: Yale University Press, 1963.

[5] Between 1970 and 1980, New York's Population fell 10.4% 7,895,000 to 7,071,000; the largest employer, the apparel industry, fell 31.9%. *1980 Census of Population* (PC80-S1-5).

[6] Joel Garreau, *Edge Cities* (New York: Doubleday, 1992).

[7] In New York, the submergence of public institutions into anonymous private fabric can be seen in many examples of infill renovations, such as the most recent branch library for Lower Manhattan, and the Lower Manhattan Post Office in the former Cunard Building.

[8] The New York zoning ordinance of 1961, as well as amendments to the ordinance in the 1970's encouraged a variety of incentive legislation, most typically floor area bonuses for the provision of pedestrian amenities, such as open plazas or through-block gallerias. As can be predicted, there was no specific plan that determined where such plazas were appropriate, which types of buildings should be eligible, and how open spaces should relate to the given building, as well as other buildings adjacent to the plaza, resulting in an arbitrary, and usually inappropriate placement of public spaces throughout the midtown area.

[9] For a further description of "City Beautiful" manifestations, see: Thomas Hines, *Burnham of Chicago* New York: Oxford University press, 1974); Leland M. Roth, *McKim, Mead & White, Architects* (New York: Harper & Row, 1983); Robert Stern et al., *New York 1900* (New York: Rizzoli, 1985).

[10] For a most thorough discussion of many of these projects, see Richard Plunz, *A History of Housing in New York City* (New York: Columbia University Press, 1990, pp. 207-779).

[11] This suggested opening of the city is not to be confused with the earlier mentioned Modernist ideals that resulted in the tower-in-the park schemes such as the Urban Renewal projects of the 1950's, completely displacing the grid of defined streets with buildings in a continuous spatial ground, which has proven to be so detrimental to the city's formal and social structure. In this case, it is imperative for the grid to remain in dialectical opposition in order to give identity and meaning to those conditions that attempt to break from its constraints, thus acheiving further clarity and resolution for both the exceptional intervention and the invariant gridded context.

[12] Credit for this notion of ambiguity goes to both Robert Venturi, *Complexity and Contradiction in Architecture* New York: The Museum of Modern Art, 1966, Chapter 4) and the discussions of "set Piece" by Fred Koetter and Colin Rowe found in "The Crisis of the Object: The Predicament of Texture," *Perspecta 16: The Yale Architectural Journal* (Cambridge: M.I.T. Press, 1980).

[13] Many of these types of conditions are well documented in the pioneering 19th century investigations of Camillo Sitte, *City Planning According to Artistic Principles* Trans. by G.R. and C.C. Collins (New York: Random House, 1965).