Syntax and parametric analysis of superblock patterns

John Peponis*[1], Chen Feng*[1], David Green[2], Dawn Haynie[3], Sung Hong Kim[4], Qiang Sheng[5], Alice Vialard[1,6] and Haofeng Wang[7]
* Corresponding authors, who have equally contributed to this paper.
[1] Georgia Institute of Technology
[2] Perkins + Will
[3] Georgia State University
[4] University of Seoul
[5] Tianjin University
[6] Northumbria University
[7] Shenzhen University

..."The second strategic design choice has to do with the tuning of the relationship between inserts and supergrid. This also has a couple of dimensions to it. First, inserted areas can be designed so that transitions from one to the next are only possible through the supergrid, or also possible directly, without travel along the supergrid. The supergrid can thus be the sole connector, or a preferable connector that bypasses local density to speed up longer trips. In some extreme cases, where the inserts are very sinuous, the supergrid can even be part of the shortest trips linking destinations inside the superblocks, when trip length is measured by direction changes. We have already indicated this through the construction of the theoretical examples (see Figure 20). The second dimension of the relationship between supergrid and inserted areas is whether the inserted areas have distinct centers of local convergence. This is where the 'deformed wheel' pattern of closeness centrality functions as a very useful shorthand. In the case of traditional towns, such as the four considered above, the pattern of closeness centrality is likely to include streets traversing the middle of the town; the question is whether it also includes parts of the periphery. In the case of superblocks, the supergrid is most likely to have high values of closeness centrality based on directional distances; the question is whether centrality also includes parts of the inserted network and how extended these parts are.

Which brings us to considering Gangnam as a very interesting strategic design alternative regarding the space syntax of supergrids. Gangnam, now a new commercial and business center in Seoul, is a relatively recent development, urbanized from agricultural land in the 1970s. Land subdivision occurred under the Land Readjustment program which affected 40% of the urbanized areas of Seoul; Gangnam was the largest continuous area developed under the program. In Gangnam, high rise buildings and commercial frontages are placed on the supergrid. The supergrid functions as a system of convergence and confluence. At the same time, the inserted network of streets resembles a traditional deformed wheel pattern, supporting the creation of distinct local centers, with retail frontages, continuously growing from the supergrid inwards. Thus, an urban area structured along the principles present in Gangnam, would have two clearly layered and almost co-extensive scales of organization, local and global, each invested with uses that support urban liveliness. In abstract syntactic principle, Gangnam comes close to inserting the structure and scale of traditional smaller towns inside the superblocks of a modern Metropolis. This places it in interesting dialogue with all the other cases considered.

Ending with an evocation of 'abstract syntactic principle,' however, would be inappropriate. It would conceal a rather interesting design problem that we wish to make more explicit. In order for high density developments to be supported at the edge of the superblock, block sizes must be appropriately large. Larger block sizes at the edge may also be necessary to mediate the transition from the scale of the supergrid to the scale of the first parallel street in the interior. The centrality patterns at the center of the superblock might benefit by more intense block subdivision. This adjustment of block size to syntactic position is evident in Gangnam. However, as shown by the Perry-Whitten example, larger blocks in the interior of the superblock may be necessary to accommodate a range of uses, from local public open spaces, to schools. Thus, one aspect of the design problem is the calibration of an abstract syntactic idea to requisite block dimensions. Another aspect of the design problem is the calibration of visual relationships. Without such calibration the interior of the superblock will be dwarfed by the higher density development of the perimeter. Turning contrasts of visual scale to an advantage rather than a disadvantage is an interesting syntactic problem in its own right. Finally, the interweaving and calibration of high volume vehicular access networks, lower volume through-traffic networks and pedestrian networks is a major issue, one that Doxiadis grappled with when he superimposed a covering pedestrian grid (with offsets intended to define local quarters) upon dendric networks for vehicular access and a sparse network of vehicular through movement. In short, we propose that work such as presented in this paper is most useful when it leads to the definition of a design problem, thus inviting a next phase of exploration of syntactic principles through design propositions rather than through the analysis of existing cases and experiments only."… pp.109-141.