impermanence (Tuttle Publishing, North Clarendon, Vermont).
Koren, L. (1994) *Wabi-Sabi, designers, poets and philosophers* (Stone Bridge Press, Berkeley, CA).
Kosco, B. (1994) *Fuzzy thinking: the new science of fuzzy logic* (HarperCollins, London).
Pirsig, R. (1974) *Zen and the art of motorcycle maintenance: an enquiry into values* (William Murrow, New York).
Powell, R. J. (2005) *Wabi-Sabi simple* (Adams Media, Avon, MA).
Shanks, M. (2008) *Traumwerk* (http://documents.stanford.edu/) accessed 16 June 2008.

Informal settlements: a neglected aspect of morphological analysis

Pedro G. Buraglia Duarte, Universidad Nacional de Colombia, Facultad de Artes Bogotá D. C. Carrera 30 No. 46 – 09 Edificio SINDU 306 Oficina 109, Bogotá, Colombia. E-mail: pgburagliad@unal.edu.co

Informal developments are a much publicized aspect of cities, especially in Latin America. However, little has been done to understand the characteristics of their urban forms or consider their design implications. In Bogotá, Colombia early work was done by Molina, Salazar and Salguero (1983) and Jiménez (1994), and more recently studies have been undertaken by Carvajalino and Avendaño (2000) and Tarchópoulos and Ceballos (2005). During October and November 2008, an 'urban design charrette' was organized jointly by the National University of Colombia at Bogotá and the Central University of Venezuela at Caracas. Studies were made in the field at Barrio Mamera in Caracas and Barrios Aures and Hunza in Bogotá. This 'viewpoint' summarizes the morphological outcomes of this work.

Caracas and Bogotá

Mamera is located in Antímano, on the western fringes of Caracas, whereas Hunza and Aures in Bogotá are located on the north-western side of the city within the boundaries of Localidad Suba, in a relatively flat area bordered by the marshland of Humedal Juan Amarillo and the Hills of Suba. Poverty is interwoven with improvised urban landscapes in both cities, but morphological analysis reveals significant differences between the cities and suggests some of the variety of design challenges that are posed.

Settlements in Bogotá exhibit more self-sufficiency and variety in their land-use patterns. Mamera has very few ancillary activities surrounding its housing areas. To some extent the 'barrio' in Bogotá is an integrated, self-sufficient community, whereas Mamera depends to a substantial degree on the city's services.

Hunza and Aures exhibit clear urban tissues, well defined public and private spaces, and a strong connection in form and structure to institutional social housing models. The most popular settlements consist of 12 x 42 m sets of street blocks arranged in a Cartesian grid with an empty block (100 x 40 m in average size) in the middle of the settlement for public services and park provision. Individual 6 x 12 m plots are arranged symmetrically in a linear manner along each block. This similarity allows dwellers to have easy access to legal infrastructure services (Cortés and Salazar, 1993).

In Mamera, in contrast, the tissue is configured in a predominantly organic pattern, reflecting a degree of adaptation to the steep slopes on which it is located. Peña (2007, p. 107) finds similarities between informal settlements in Caracas and the layouts of medieval towns. However, plots in this settlement have particularly marked variations in size and shape. Both settlements have poor links to neighbouring settlements and to the main communication systems of the rest of the city.

In Bogotá public space consists not only of areas for roads, parks and social services. It also includes various 'ecological' structures as well (forests, streams etc), whereas in Caracas public space appears to include areas free of buildings for only social, recreational and infrastructure purposes and it has an ill-defined and strongly fragmented pattern (Peña, 2007, p. 107). Both cities lack sufficient public space. Furthermore, in many cases the areas designed for public use are occupied by informal settlements, even areas at risk of landslides and floods.

Despite the uniform plots, houses have very varied architectural patterns in Aures and Hunza. In Mamera the enormous variety of plot shapes encourages even greater architectural variety. In

both cities, there is a predominance of units with 2 or 3 floors and little or no interior free space.

As described by Jiménez (1994), in Aures and Hunza there can be observed various phases of development both for the settlement and each housing unit. Land is subdivided into street blocks and plots for selling by a private developer. Thereafter a process of occupancy and building occurs. In due course community organizations either plea with local politicians for public transport, infrastructure and service provision or seek these goals through a more institutionalized process called 'legalization' or 'integral upgrading'.

The initial basic dwelling, consisting of a single room and a sanitary unit, becomes enlarged and ephemeral materials are replaced by more durable ones. Generally, the initial dwelling in Bogotá is primarily built with such materials as zinc, cane and cardboard, and there is a gradual process of expansion and replacement by such materials as brick and concrete. Once the building has reached a degree of stability, it expands in height and footprint, a process accompanied by a variety of uses and types of tenancy as new space is created for rent and economic activity. The outcome is a mixed-use unit of three floors. In Mamera the process is similar. However, it was not possible to collect evidence of the way ephemeral materials have been replaced by durable ones in that case.

Design implications

Settlement upgrading is an institutionalized strategy adopted in different ways by both cities, following in part the definitions of the United Nations Centre for Human Settlements and the Inter-American Development Bank (Brakarz, 2002). The programmes on the whole stress policy and managerial issues relating to access to land, housing and social services, but little has been done to develop design ideas to support the upgrading of these areas. However, the morphological analysis helped to identify several recommendations for design purposes:

- Public space plays a key role as an integrative device and as a means of promoting individual positive attitudes to upgrading. However, the generation of space in some areas demands additional effort and design strategies to relocate families and activities.
- Natural features and scenic values must be considered not only as needing protection but also as the basis for recreational activity and, frequently, as an economic opportunity. It is necessary also to identify the potential and limitations of surrounding areas in order to forecast their future use and need for integration, and prevent the expansion of new informal settlements.
- Road network generation or adaptation and public transport provision are important opportunities to generate activity centres and improve access to work and services.
- Local economic activity, represented in a varied land-use pattern, must be stimulated. This entails minor adaptations of form and the provision of space surrounding dwellings.
- Housing typologies and tenancy types reflect adaptability to many technical and socio-economic factors. Instead of imposing standard new 'models' it is much more appropriate to develop and upgrade existing ones. In this case typological analysis has been shown to be very helpful.

References

Brakarz, J. (2002) *Ciudades para todos* (Banco Interamericano de Desarrollo, Washington DC).

Carvajalino, H. and Avendaño, F. (2000) *Espacialidad de la periferia: constitución espacial de la vivienda espontánea. Beca fomento a la creación y la investigación en artes, ciencias sociales y comunicaciones* (Barrio-Taller, Bogotá).

Cortés, R. and Salazar, J. (1993) *El futuro de la capital* (Misión Bogotá Siglo XXI, Bogotá).

Jiménez, L. C. (1994) C*aracterísticas morfológicas y tipologías en desarrollos de origen clandestino en las localidades del sur de Santafé de Bogotá.* Estudio de la legalización urbanística de Santafé de Bogotà (INURBE, Bogotá).

Molina, H., Salazar, J. and Salguero, M. (1983) *Alternativas para la construcción y el mejoramiento de la vivienda en barrios de desarrollo progresivo en relación con las pautas de poblamiento y morfología de los asentamientos (*Universidad de los Andes CPU, Bogotá).

Peña, M. I. (2007) 'El Carmen: sobre la naturaleza del vacío en los tejidos urbanos informales', *Urbana* 35, 106-11. http://www.revele.com.ve/revistas.php?rev=urbana

Tarchópoulos, D. and Ceballos, O. (2005) *Patrones urbanísticos y arquitectónicos en la vivienda dirigida a sectores de bajos ingresos en Bogotá* (PUJ, Bogotá).

The planning-typological approach

Giancarlo Cataldi, Facoltà di Architettura, Università degli Studi di Firenze, Dipartimento di Progettazione dell'Architettura, Viale Gramsci, 42 – 50132 Firenze, Italy. E-mail: giancarlo.cataldi@tin.it

At the ISUF conference in Cincinnati in 2001 Gian Luigi Maffei, Paolo Vaccaro and I presented the Lexicon of the Muratorian school (Cataldi *et al*., 2002). I tried on that occasion to summarize the conceptual connections between the key terms of the school in a 'synoptic chart'. I think it would be useful to present the chart again (Figure 1) along with some explanatory text, as my personal contribution to a comparison of the different approaches to urban morphology.

The purpose of the chart is to represent schematically and synthetically the 'Muratorian' system of thought. To be clear, it is necessary to distinguish between 'Muratorian' and 'of Saverio Muratori' to emphasize the grafting of the former onto the maestro's thought, involving many assistants and pupils over several decades. Some of us, starting from an initial adherence to Muratori's inspirational principles and sharing a vision of the world seen through the 'non-deformable' lens of architecture, have endeavoured to develop the thinking in order to make it clearer, more efficient and up-to-date, above all through our diverse individual experience of 'reading' the built environment at various scales.

I say this in anticipation of the possible objection that the chart is an unwarranted conceptual reduction of a highly complex system down to a sort of generic and fixed 'standard' theory. I maintain, however, that this attempt at synthesis provides a simple key to the system (which can be difficult to understand, particularly without access to the original Italian texts) that could help expand the numbers of potential users. There would then be a better chance of clarifying certain problematic issues and developing the system further.

It must suffice here to give just a quick explanation of the chart and direct those who might wish to examine it closer to the main texts of the Muratorian school (Cataldi *et al*., 2002).

The synoptic chart is basically split into two closely connected parts: the first summarizes the Muratorian theory of crisis and the second encapsulates the Muratorian 'cross-table' method.

The theory of crisis gets its name from one of the most specific terms in Muratori's philosophical lexicon, which is central to the first of his two principal texts (Muratori, 1963). He basically asserts that architecture reflects the state of civilization (more directly than any other civil or social factor) and therefore the crisis in architecture reflects a crisis in civilization. Modern architecture is the concrete expression of a deep-rooted civil discomfort, probably the most serious and traumatic in the history of mankind, whose consequences have worldwide repercussions. If we become aware of the crisis, we can only strive to overcome it with its own weapons: the critical self-consciousness of the Enlightenment that triggered the underlying processes. The crisis in itself is not an extraordinary phenomenon but a recurrent element of the cyclical process of human development. Generally speaking, it represents a moment between two cycles, between an old and a new process, with a consequent obscuring of conscious vision. This is stimulating but conducive of confusion.

In summary, the theoretical scheme lays down four sequential dialectic expressions, each consisting of binomials, whose interrelated terms are subject to a continuous process of mutual change and progressive modification. The archetype at the root of the system is the relationship between the subject 'man', in his capacity as a conscious being (naturally, 'subject' as seen from our own relative point of view), and the object 'nature'. It is a very particular relationship both because the latter term includes the former, conditioning and limiting man, and because reciprocal exchange occurs between two apparently very different worlds: the mental and the real. This gives rise to the next expression, which is fundamental to all architects, referring as it does to their principal tool, the *progetto* (a mental projection and act of creation), with its particular nature as an idea or concept that precedes and leads to the new object: modified nature. The *progetto* is particularly important because, in a nutshell, it consists of the 'building type', which of necessity comes to mind as a specific concept of a building in, and conditioned by, a particular historical moment and cultural area. The 'building type', as an *a priori* synthesis (Muratori's definition dates back to 1959), is therefore one side of a dual concept with the 'architectural organism', as an