Digital Tools Aimed to Represent Urban Survey

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INTRODUCTION

Since the affirmation, in the Sixties, of Urban Survey as a subject in the field of drawing's disciplines, it aimed to represent a set of three-dimensional data on a plane.

This aim emerged in the European researches carried out by Pierre Lavedan and Augusto Cavallari Murat that triggered a discussion about the values characterizing the historic city, in particular the Baroque one, and the ways in which these values could be represented. Cavallari Murat and Lavedan shared that the values of the Baroque city could be represented through a concise drawing, as had happened in some famous maps of the past, in particular, that of Rome, drawn by Giovanni Battista Nolli.

In 1968, Cavallari Murat and his group of scholars published the books Forma urbana e architettura nella Torino barocca (Politecnico di Torino, Istituto di Architettura Tecnica, 1968), in three volumes.

The urban survey maps of Baroque Turin, drafted in scale 1: 1000, made up the third volume. They are based on the tables of the geometrical particle cadastre, drawn in 1823 by Andrea and Alberto Gatti, and on the municipal map of the time. The urban survey maps represented a selection of data collected through archival research on iconographic documents and texts, such as censuses, and aimed to became a knowledge basis for preservation and intervention on Cultural Heritage.

The morphological, typological, and stylistic data, were collected in a drawing of the ground floor, where the public spaces were distinguished to the private ones. The goal was to provide, through a map, a series of information about the three-dimensional feature of the historic urban tissue, using the so called stereometric symbols, that represented: the upper cornices, the number of storeys of the different building units, the virtual projection of vaulted and beamed coverings, the openings' axes of the main floor, the stairs as elements of vertical distribution, and the entrances to the housing units in the standard floor.

In 1974, Cavallari Murat proposed symbols for the survey of historic urban tissues, stated in the 1968's research, within the standard UNI 7310-74 - Urban Cartography. Graphic Standards, for representing historical urban tissue, mainly characterized by multi-storey buildings.

This methodology of urban survey representation can be broaden to urban tissues, not necessarily characterized by historical values.

The authors of this paper worked in the research group directed by Dino Coppo, a pupil of Cavallari Murat and are today involved in researches about the potentialities of digital tool for representing urban survey.
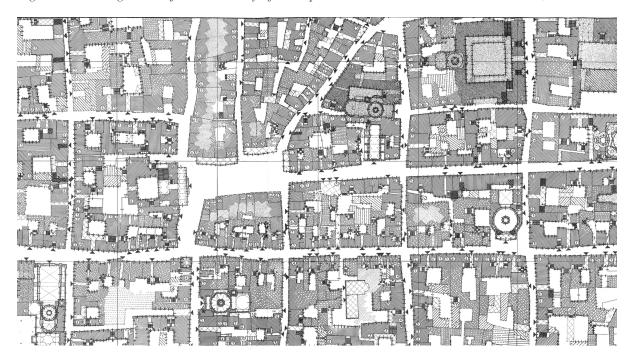
Figure 1. Philological conjectural survey of Baroque Turin. Source: Politecnico di Torino, 1968.

Indeed, digital revolution allows to represent urban tissues by 3D models that can collect a lot of information related to the buildings, becoming real data base.

Today, these models fulfil the need for update representations of urban settings, aimed both to critical studies on historical city and to manage the ongoing transformations. Moreover, these representations could become the urban scenarios for simulations and checks of master plans and architectural designs in their relationships with the built environment.

Several new tools of urban procedural modelling, BIM modelling and web resources allow generating urban 3D models.

The authors of this paper will compare the knowledge and informative capabilities of different new technologies for urban modelling, through an overview of international researches, case studies, and also some experiences personally carried out.

BACKGROUND

The representation of the environment, the city, a building, and the different aspects that define them, in an articulate relationship between tangible and intangible elements, has always been a complex matter, due to the difficulty in "narrating" and using images to summarise the various closely related aspects that make them what they are. Digital modelling combined with the latest information technology has made a fundamental contribution to creating new and constantly evolving communication scenarios which offering such a wide range of potential means and ways of representing the city as to require very careful design of the process used for the selection and communication of information.

If today's new multimedia tools allow an immediate and interactive communication, often addressing a wide range of users, when studying a given urban or environmental reality, it is necessary to identify

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