

DRAWING THE “BOUNDARIES”, THE START OF AN URBAN PLANNING PROJECT

Jordi GOMIS¹, Carlos TURÓN

DOI: 10.21163/GT_2017.122.07

ABSTRACT:

The graphic representation of the boundaries of urban planning areas is a sufficiently important element of the representation of urban planning as not to allow the slightest hint of doubt or imprecision to arise in regard to the dividing lines it indicates. It can include everything from the growth limit of the urban land as a whole to small inner areas of the city subject to improvement, renovation or change of planning conditions. It is this first concept that the town planner must include/draw on his working plan to begin his task. Throughout the history of urban planning, this first “boundary” has been represented in various ways using different graphic and/or visual mechanisms. This article presents a journey through the history of the resources used by technicians for their representation and their evolution.

Key-words: *Graphic representation, Technical drawing, Urban Planning, City drawing, Urbanism.*

1. INTRODUCTION

The demarcation of geographical, territorial, municipal, regional, etc. areas has never been a problem dissociated from society. Since ancient times the specification of geographic boundaries and limits of influence has occupied and preoccupied people. “Boundaries” and “frontiers” have always given rise to disputes that people have attempted to resolve and settle, sometimes graphically, many others, unfortunately, through the use of force. Various inventories of land, people, property, crops, etc. were made ever since ancient times to inform kings and noblemen of the quantity and quality of their belongings and properties. Since then, for a variety of reasons, a great many maps have delimited areas of the territory. In these maps, drawn with the clear aim of representing the territory rather than the urban cores, well defined limits are usually depicted. The importance of these boundaries is quite obvious as they are precisely drawn as one of the fundamental elements of the map (**Fig. 1**).

From the late 18th century and the early 19th century on, with the rise of the bourgeoisie, ownership and the parcelling of the territory began to be clearly defined in maps. Urban planning interventions required precisely defining the scope of their performance, because the implications and consequences of the new arrangement would not be superfluous. The new urban or territorial planning interventions categorize what is now “private property”. If in ancient times “all” land belonged to the king or noblemen, it now belonged to different people. The sense and significance of property had changed. This new categorization and classification that was to define the new urban planning can influence the future use that may be made of the affected property.

¹*Universitat Rovira i Virgili, Department of Mechanical Engineering, 43007 Tarragona, Spain, jordi.gomis@urv.cat; carlos.turon@urv.cat*

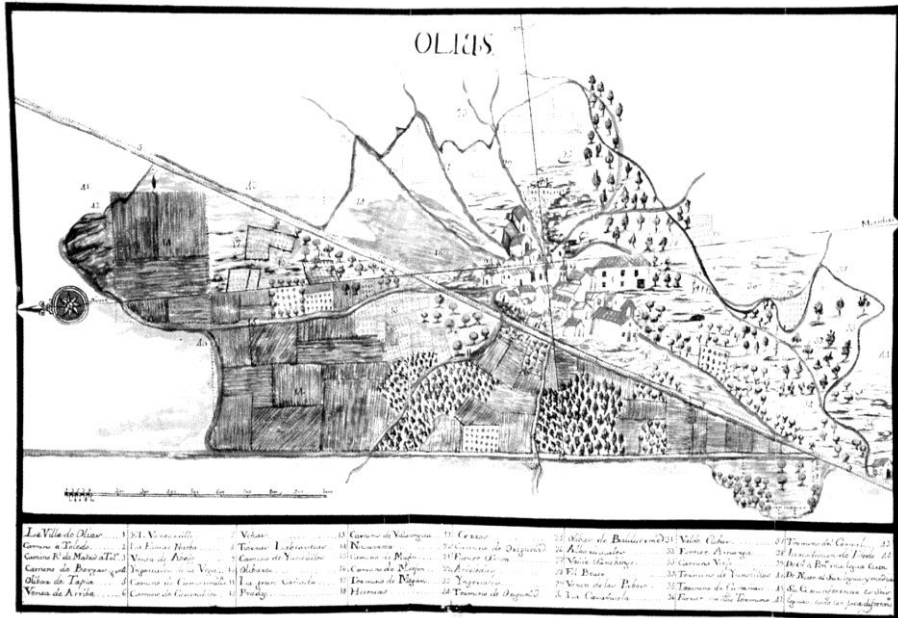


Fig. 1 Example of one of the cadastral maps of the “Marqués de la Ensenada” dated 1752, town of Ollas. By order of King Fernando VI, and at the suggestion of his Minister Ensenada, throughout the Crown of Castile a sort of inventory was conducted in order to specify the number of inhabitants, the land that they owned, their incomes and trades, their properties, etc. Civil servants of the kingdom travelled to several municipalities in order to perform the necessary surveys and drafted the “maps” and documents that recorded the data. The township boundaries were perfectly represented in all of the maps (Peris and Almarcha, 2009).

New use, different use, transfer, expropriation, etc. would become concepts that were to have an obvious economic aspect that the dominant bourgeoisie would not be inclined to ignore or take lightly.

Thus, the limits of the intervention had to be clearly defined. Of all the possible concepts that the urban planner deals with in his design process, perhaps this is the first thing, with small nuances, about which he must be very sure. Without clearly specifying the territorial scope of the proposed intervention it is not possible to define a plan. Urban interventions can be very limited and specific affecting a very concrete and determined space, or, conversely, can be approached as “a device that spreads like a spot of oil and as it requires territory it becomes occupied according to previously established criteria” (Sambrico, 1990).

This latter approach, which was adopted by some urban planning theorists in the first half of the 20th century, has always been both limited by purely geographical circumstances -a variety of topographies, rivers, ravines and other natural barriers, etc., and administrative and ownership constraints. The needs for rational, orderly and sustainable planning have always involved the prior definition of the thresholds of the intervention. The criteria that have helped determine them are often the result, in the best of cases, of a careful study of the needs and reasons under which the suitability of the proposed new arrangement have been decided. Of course, these criteria may also have a perverse origin, such as pure speculation, for example.

Urban planning is primarily determined by the division of the land into areas which, with varying degrees of concretion, are earmarked for a certain purpose. As a result of this planning, each point of the territory belongs to a particular category, to a particular land use. This land use expresses the circumstances of each area in relation to the general urban development process. This division of the territory into different land classifications is what we usually understand as urban land classification, and the assignment of the land in a certain area is what we understand by urban qualification. In urban planning, the city plan is defined by means of zonal delimitations that must be suitably accurate according to the different sense of each of the urban development systems. This precision "must be unequivocal in consolidated urban land, requires a certain degree of flexibility of interpretation in the areas that are subject to transformation, and must allow greater tolerances in land not for development given its extensive nature" (Esteban, 2007).

However, we also find authors that specify the need and the requirement that nowadays, and with the means that are available, "the imprecisions in the representation of territorial boundaries affected by urban planning are not acceptable under any circumstances, and can only lead to unwanted conflicts that slow down the implementation of plans" (Solomon, 2008). In any case, it is clear that the precise and unambiguous definition of the boundaries within which urban development is to take place or of its various scopes is a strictly necessary element of any planning and that, of course, must be rigorously represented in the planning drawings manifestly and clearly. "In this case, cartography and its representation becomes a fundamental tool for planners and architects" (Bertin, 1998). As Leonard Vartic affirms, this cartographic visual expression is an image composed of signs, symbols and codes that provide their interpretation. In this respect, cartography can be considered a language, a means of communication. Architects and town planners use a specific language as well, in order to communicate and also create and develop their projects, to follow their ideas (Vartic, 2015).

Thus, the representation of the boundaries of the scope of action will always be the start of the development project. The present study aims to analyse the graphic systems that planners have used to represent the boundaries of planning areas from an especially visual point of view, through an evolutionary and historical review of the different graphic solutions used by technicians. Unfortunately, and given the logical limited length of this article, it is not possible to present either the methodology or the detailed results obtained in the research, believing it far more interesting to relate the findings with which the research has provided its authors. It should be pointed out, however, that that the study sample of maps spans from the last decades of the 19th century until 2015.

2. EVOLUTION OF THE REPRESENTATION OF THE LIMITS OF URBAN PLANNING AREAS

In general, the representation of the boundaries of urban planning areas has always sought to employ sufficiently visible lines as to avoid non-specificities and ambiguities in their definition. It should be added, moreover, that this is a graphic aspect that is clearly incorporated in the plans of what we call "modern urban planning" (let us say since the beginning of the 20th century), and is almost entirely absent from urban planning maps dating from before the end of the second half of the 19th century.

Manual representation on copies of maps aided the use of colours whose use considerably simplified the reader's perception of the various categories and areas represented. It is known that, to the human eye, colour is a very strong visual variable that greatly enhances perception. The combination of thickness, types of line and colour, in the

maps of the first half of the 20th century, is usually the most common way of indicating the perimeters of the various limits of the arranged areas (**Fig. 2**).

Although the application of colour was common in the urban planning maps of the first half of the 20th century, the appearance of new reproduction techniques, that greatly economized the process of making copies and facilitated the dissemination of planning maps and documents, virtually eliminated colours from planning maps as of the late 1950s and early 1960s. This can be seen as a graphic constant that can be found through any analysis of the aspects of the representation of urban planning. The technician was posed with an obvious advantage that obliged him, however, to change the chromatic mechanisms of representation. The transformation of visual resources available when drawing a map, all the graphic instruments and devices that facilitated the reading and understanding of plans, had to adapt to new circumstances.

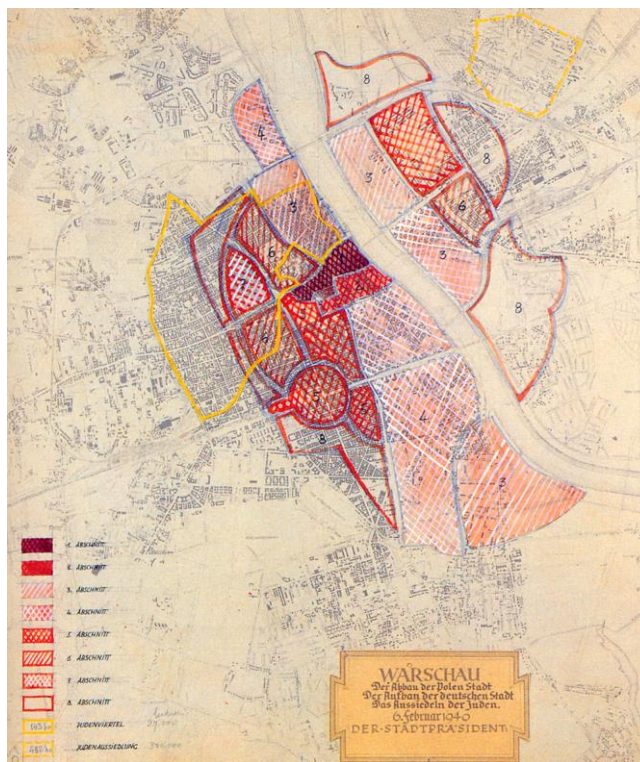


Fig. 2 Map of Warsaw – Poland – February 1940. The work of H. Gross –Architect and Nazi. Sometimes urban planning also has perverse goals. The plan establishes the new organization of the Polish capital according to the criteria of the “new German city”. The new arrangement sets the boundaries of the areas for demolishing to create new districts that were to be segregated according to race and social class. The continuous yellow line depicts the old Jewish quarter. The yellow dashed line (top right) shows the location of the new “Jewish Ghetto” of Warsaw (Bosma and Hellinga, 1997).

Of course, one will agree that these new circumstances enhance and simplify the graphic task of drawing plans, and, at the same time, greatly increase the possibility of disseminating and conveying urban planning works. However, the designer was forced to

adapt the entire range of graphic resources at his disposal to the new technique. The introduction of this new system of reproduction required a review of all the hitherto established criteria of representation. The town planner had to adapt the map to black and white, modifying and adapting the graphic resources to the new restriction imposed, but maintaining the notable thickness and/or the type of line as the main element of distinction in the representation of the boundaries of urban planning areas (Fig. 3).

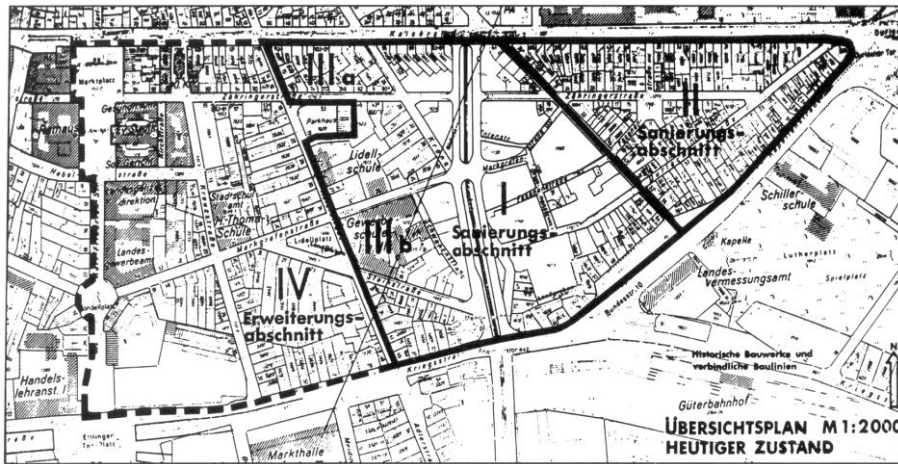


Fig. 3 Part of the tender project plan for the reconstruction of a central district of Karlsruhe -Germany- 1970. Zoning of different areas. Work of Franco Stella, Arnaldo Gamba and Alberto Benetello - Architects- (Stella and Moschini, 1991).

In the reviewed plans, the line is conserved as the essential graphic element for delimiting the planning areas. When analysing a wide variety of maps it can be seen that in general there are basically two graphic resources used to draw these lines that define and mark the boundaries of the planning areas. The first is thickness, and the second line type. The representation of these lines of a certain thickness and the use of different types of lines, basically combining dashes and dots, makes them stand out above the others on the map. In contrast to the normal continuity and thinner lines which are usually drawn to represent the whole range of aspects of a planning map, this is the graphic-visual resource usually used by the technician. These resources were only slightly modified due to the change and evolution of map delineation and reproduction techniques. The opportunity to dispose of greater precision of drawing and delineation equipment, and the feasibility of being able to print the required original plans directly generally “hone” the quality and accuracy of the drawing.

However, it should be noted that the concepts of representation used to draw the boundaries of the various planning areas remain constant in different periods of the plans studied. Only the nuances, as already pointed out, in reducing the thickness used and the possibility of using new line type patterns appear as variations of the representation. These variations are caused by the development and improvement of technical pens at first, and secondly, the emergence of CAD tools. The latter affected both the drawing and the printing of the map, and like the variation in the use of fonts, already mentioned in the previous section, it was also a noticeable constant in the various aspects studied. In this

Continuing with the representation of the boundaries of urban areas, it should be noted that one quite commonly used resource is to colour in the area arranged by the planning, while the rest of the territory, which remains unaffected, is left in black and white or shades of grey. For now, the predisposition, referring to the representation of the base plan, is to conserve the black and white or shades of grey so as not to hinder the visual benefits of incorporating colour. In **figure 5** you can appreciate how the fundamental task of identifying the area affected by planning benefits from the application of colour. In this case, the colour itself, regardless of which one(s), quickly categorize the main area of the plan, clearly making the desired distinction and, therefore, the desired delimitation.



Fig. 5. Zoning plan of the district of Ferencváros, Budapest -Hungary-, 2010. The planning area is clearly indicated in two different ways; on the one hand with blue dashes marking the boundaries, and on the other with the addition of colour to the entire area involved in the arrangement (Ferencvárosi Önkormányzat Képviselőtestületének, 2010).

In some cases in a more timely and discreet fashion (**Fig. 5**), and in other cases more emphatically and forceful (**Fig. 6**), this last graphic mechanism is reinforced with the addition of lines marking the boundaries, in black or in colour, which, while keeping the criteria of line thickness and type, provide the reader with a clear and sharp image that avoids any confusion when specifying the scope of action.

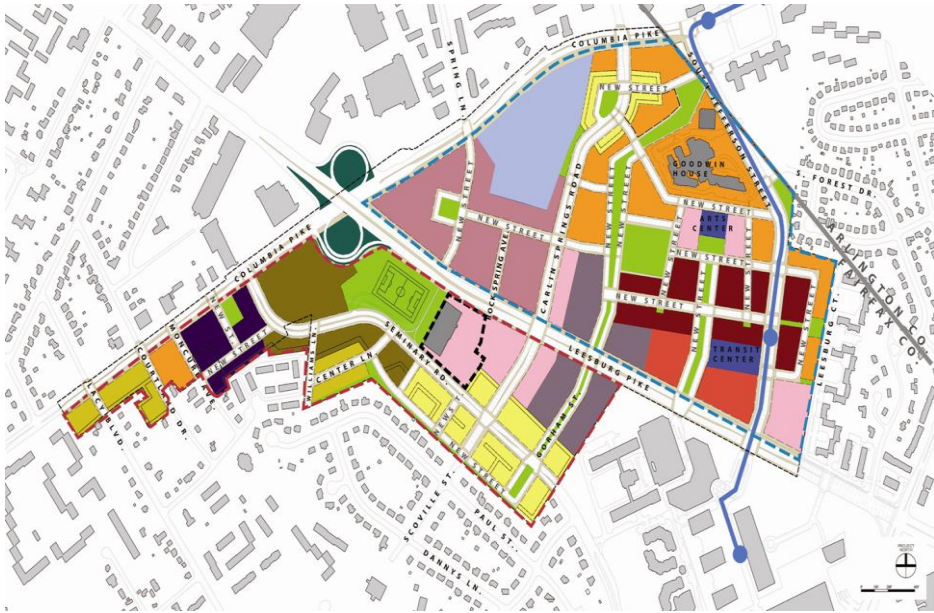


Fig. 6 Map of the upgrade and rehabilitation plan of Columbia Pike in Arlington County -Virginia, United States- (Arlington County, 2011).

Finally it should be noted that, in general, plans made as of the end of the first decade of the 21st century curiously comply with the guidelines, with respect to the lines delimiting planning areas, set out in the “Proposition de sémiologie pour l’édition des PLU à partir d’un SIG” (Conseil National de l’Information Géographique, 2006). This proposal, made from a semiological and perceptual point of view, advises, in the case in hand, against using dashes or dashes and dots that are too thin, especially if they delimit areas represented by patterns or textures and not compact colours.

This document, which is unfortunately hardly disseminated outside of French-speaking areas, is based on such “logically” visual and perceptual criteria that probably many drawing technicians, who are unaware of its guidelines, implement instinctively in their planning drawings.

REFERENCES

- Arlington County, Virginia (2011) *Columbia Pike form based code*. [Online] Available from: <http://www.arlingtonva.us/departments/CPHD/forums/columbia/current/CPHDForumsColumbiaCurrentCurrentStatus.aspx> [Accessed 15 March 2017].
- Bertin, J. (1998) *Sémiologie Graphique: Les diagrammes, les réseaux, les cartes*. Éditions de l’École des Hautes Études en Sciences Sociales, Paris.
- Bosma, K. and Hellinga, H. (1997) *Mastering the city: North-European city planning 1900-2000*. NAI Publications, Rotterdam.

- Conseil National de l'Information Géographique (2006). *Proposition de sémiologie pour l'édition des PLU à partir d'un SIG*. Groupe de travail "Informatisation PLU", Paris. [Online]
Available from:
<http://archives.cnig.gouv.fr/Front/docs/cms/annexe9-proposition-semiologie_124142795286107400.pdf> [Accessed 23 June 2017]
- Esteban, J. (2007) *L'ordenació urbanística: Conceptes, eines i pràctiques*. Diputació Barcelona.
- Ferencvárosi Önkormányzat Képviselőtestületének (2010) *Budapest IX Kerület Ferencváros*. [Online]
Available from: <<http://www.ferencvaros.hu/index2.php?name=orept>>
[Accessed 15 March 2017].
- Gomis, J., Turón C. & Ripoll, R. (2015) Conceptual and instrumental influences in the graphic representation of urban planning during the 20th century. *Geographia Technica*, 10 (2), 41-49.
- Peris, D. & Almarcha, E. (2009) *La ciudad y su imagen*. Colegio Oficial de Arquitectos de Castilla La Mancha, Ciudad Real.
- Sambrico, C. (1990) El "Límite" de la ciudad ilustrada: La ordenación de un espacio urbano. *Arquitectura* (Revista del Colegio Oficial de Arquitectos de Madrid), 286-287 (sept.-dec.), 168-183.
- Solomon, J. (2008). Caves of Steel: Mapping Hong Kong in the 21st Century. *Architecture Theory Journal*, 2 (spring), 77-90.
- Stella, F. & Moschini, F. (1991) *Progetti Di Architettura 1970-1990*. Kappa, Roma.
- Vartic, L. (2015) Cartographic visual expression, a means of communication and exploration in architecture and art. *Geographia Technica*, 10 (1), 90-95.