

Map Use in Small-Town Planning Documents in Northeast Ohio¹

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ABSTRACT. Maps are of fundamental importance to the planning profession. This paper examines the use of maps in planning documents from small towns in northeast Ohio. It considers the frequency of map use, the types of maps utilized, and their quality. Map quality is evaluated by determining the presence or absence of basic map elements and the utilization of a lettering hierarchy for the various map elements. Maps are found in all the plans (median = 10) and these represent about one-quarter of non-textual materials. Maps of community facilities and land use are most common, accounting for over half of all maps. Key map elements are included on almost all maps, but few incorporate a lettering hierarchy to reflect the importance of the various elements. The increasing availability of computer mapping programs and the ease with which inadequate maps can be produced make it imperative that planners become more cognizant of the proper techniques for effective cartographic communication. More comprehensive studies are warranted examining the use of maps in planning documents from a wider range of types and sizes of administrative units—i.e., cities, metropolitan areas, and counties.

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INTRODUCTION

Maps are of fundamental importance to the planning profession. They must convey information in a clear, concise manner to people from a wide variety of backgrounds, ranging from planners and politicians to the general public. Those groups which are involved in planning have different educational levels, backgrounds, and map reading abilities. Consequently considerable thought should go into the preparation of planning documents which will be used by them.

A modest literature has developed over the last 20 years examining a range of issues related to the use of maps in planning documents. In an early paper Stringer and Taylor (1972) critiqued the guidelines given planners in Great Britain in the Town and Country Planning Act of 1968 for preparing effective maps and diagrams for public plans, and offered some of their own suggestions. In a similar vein, McClendon (1988) has summarized his experience observing and preparing planning maps and has offered solid advice to planners on issues to consider and how to prepare better maps in planning documents. The value of maps in environmental impact statements has been touted by Pantouso and Williams (1974) in a short paper, and Delucia (1979) attempted to determine experimentally whether line maps or oblique aerial photographs allow citizens participating in the planning process to conceptualize planning problems and solutions more effectively. Most recently, Monmonier (1991) in his book *How to Lie with Maps* devoted an entire chapter to the function of maps in city and regional planning; however, he emphasized that these maps can be used as tools of persuasion by both developers and homeowners to advance their own interests with local government officials.

The present paper takes an approach more empirical

than that of other literature on planning maps noted above, by examining a small set of local planning documents and evaluating the maps contained in them. Specifically, it evaluates the factors that contribute to the effective communication of information on maps from the planner to the public. Plans from small urban centers in Summit and Medina counties in northeastern Ohio are analyzed to determine how effectively maps are employed. The frequency of map use, types of maps employed, and their quality are determined. The evaluation of quality is based on the presence or absence of the basic elements of a map and the utilization of a lettering hierarchy reflecting the importance of the elements of a hierarchy.

MATERIALS AND METHODS

The maps included in five public planning documents from three small cities in Medina and Summit counties in northeastern Ohio were examined. The plans used were the Wadsworth Comprehensive Plan (W.C.P.) (City of Wadsworth 1980), Medina Comprehensive Plan Update (M.C.P.) (City of Medina 1983), Barberton Neighborhood Analysis and Socio-Economic Profile (B.N.A.) (Barberton Planning Commission 1973a), Barberton Community Facilities Plan (B.C.P.) (Barberton Planning Commission 1973b), and the Barberton Land Use and Thoroughfare Plan (B.L.U.) (Barberton Planning Commission 1973c). All of the planning documents were produced during a ten year period between 1973 and 1983. The towns to which these plans correspond are all small urban centers—in 1980 Medina had a population of about 15,000 and was the county seat of Medina County. Wadsworth, also in Medina County, similarly had a population of about 15,000, while Barberton in neighboring Summit County had close to 30,000 residents. The planning documents from these towns were selected for analysis because it is believed that these towns are fairly representative of other small urban centers in Ohio.

The analysis of the plans examined the frequency of map use as compared to other graphic and tabular material, the type of maps employed, the presence of the basic map elements, and the presence of a hierarchically

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coordinated lettering scheme. In evaluating the plans, special attention was paid to the presence or absence of a set of several of the basic map elements, title/figure heading, legend, year, scale, and source (Lloyd and Yehl 1979). These elements are essential if the map is to successfully communicate its message. Without a title or a figure description, the subject of the map can only be speculated. Legends are indispensable on a map since they explain the symbolism that is used. The year to which the data refer is of paramount significance in the evaluation of maps or other materials in planning documents, and hence was considered here. Scale is necessarily a consideration in the interpretation of maps and spatial problems—and a scale, preferably a graphic scale, should be present on all maps in planning documents. The citation of source for the data lends credibility to the map.

Since these elements vary in their significance, the degree of importance should be reflected in the hierarchy of the lettering used for each element. Lettering hierarchies should result in less visual confusion, and so produce more effective maps and, as a result, plans which are better understood by their users. Research by Lloyd and Yehl (1979) has demonstrated that map readers assume a hierarchy of importance among the various map elements, and that if the lettering hierarchy of those elements reflects this, then recall patterns by map users are more accurate. Thus, the use of a lettering hierarchy for the basic map elements in each of the planning maps was analyzed to determine how closely it corresponded to the hierarchy of importance of map elements.

RESULTS

Maps were found in all of the plans, with the median number being ten. Overall, maps represented about one-quarter of all non-textual materials (figures, tables, and maps) used in the plans (Table 1). Among the plans, however, a considerable difference existed in the proportion of maps, ranging from a low of 11% to a high of 67% of the non-textual materials (Table 1). Tables constituted the majority of non-textual materials in plans, about 65%, whereas figures other than maps only constituted 10% of these materials (Table 1).

Six categories of map types were considered in this analysis: physical environment, location, population, land

use, transportation, and community facilities. Two of the plans had maps in each of the six categories while the remaining plans had maps in five, three, and two of the thematic categories, respectively (Table 2). Maps of community facilities were the most common, representing 27% of all maps, followed closely by those of land use, 25%. Approximately equal proportions, 14 to 15% of all maps, fell into the transportation, physical, and location categories. Surprisingly, maps of population characteristics only accounted for 3% of the maps used in the plans and were only found in three of the plans. The predominance of maps on community facilities, 27%, is probably a bit of an aberration because one of the plans included in the analysis is a community facilities plan (Table 2).

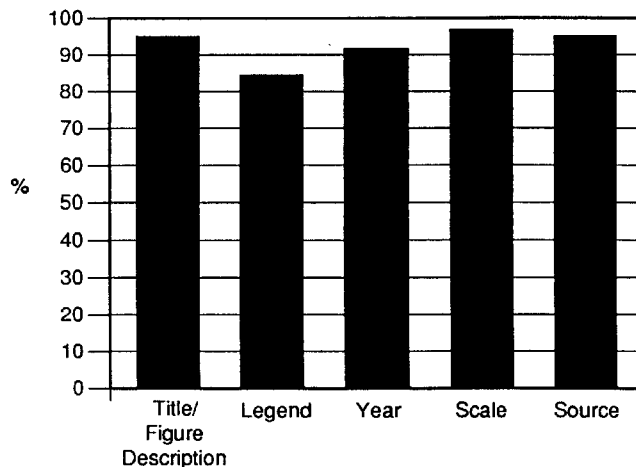


FIGURE 1. Presence of map elements in planning document maps.

The basic map elements, title/figure description, legend, year, scale, and source, were found on almost all of the maps examined (Fig. 1). Nevertheless, they were absent from a small percentage of the maps. The title/figure description was not included on 5% of the maps examined. Curiously, the map legend was the element most frequently omitted from the maps in planning documents, being omitted in almost 16% of the cases. A reference date was missing on 8% of the maps, a scale on 3%, and a source on 5% (Fig. 1).

TABLE 1

The use of non-textual materials in planning documents.

Planning Document	Figures		Tables		Maps		Total	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Wadsworth City Plan	15	24	26	42	21	34	62	100
Medina City Plan	9	23	20	51	10	26	39	100
Barberton Neighborhood Analysis	0	0	84	89	10	11	94	100
Barberton Community Facilities	0	0	18	44	10	56	28	100
Barberton Land Use	0	0	4	33	8	67	12	100
Total	24	10	152	65	59	25	235	100

TABLE 2

Map types used in planning documents.*

Map Type	W.C.P.		M.C.P.		B.N.A.		B.C.F.		B.L.U.		Total	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Community Facilities	2	10	1	10	4	40	9	90	0	0	16	27
Land Use	6	28	3	30	3	30	0	0	3	38	15	25
Transportation	2	10	2	20	0	0	0	0	4	50	8	14
Physical	5	24	1	10	1	10	1	10	1	12	9	15
Location	5	24	2	20	1	10	0	0	0	0	9	15
Population	1	4	1	10	1	10	0	0	0	0	2	3
Total	21	100	10	100	10	100	10	100	8	100	59	99**

*Abbreviations for planning documents identified in the text.

**Does not equal 100% due to rounding.

In stark contrast to the frequency with which the basic map elements are found on the planning maps, very few of the maps studied incorporated a lettering hierarchy. Indeed, in two of the plans none of the maps utilized a lettering hierarchy for the principal map elements, while in two other plans 30% or less of the maps incorporated a lettering hierarchy. In only one case did more than half of the maps (70%) found in a plan incorporate a lettering hierarchy (Fig. 2).

In many of the plans it appeared as though the importance of the lettering sizes of the various map elements was not considered (Fig. 2). For example, in two of

the plans studied, the lettering documenting the source material for the map was larger than the lettering used to identify the scale or the year to which the data pertained. Further, the letters used for the legend material were as large as those used to identify the title. Poor cartographic techniques, like these, disturbed the orderly interpretation of the textual information presented on the maps and, consequently, reduced the communicative effectiveness of the maps in the plans.

Besides the omission of the basic map elements or the failure of the many of the maps to include a lettering hierarchy, technical errors are evident on many of the

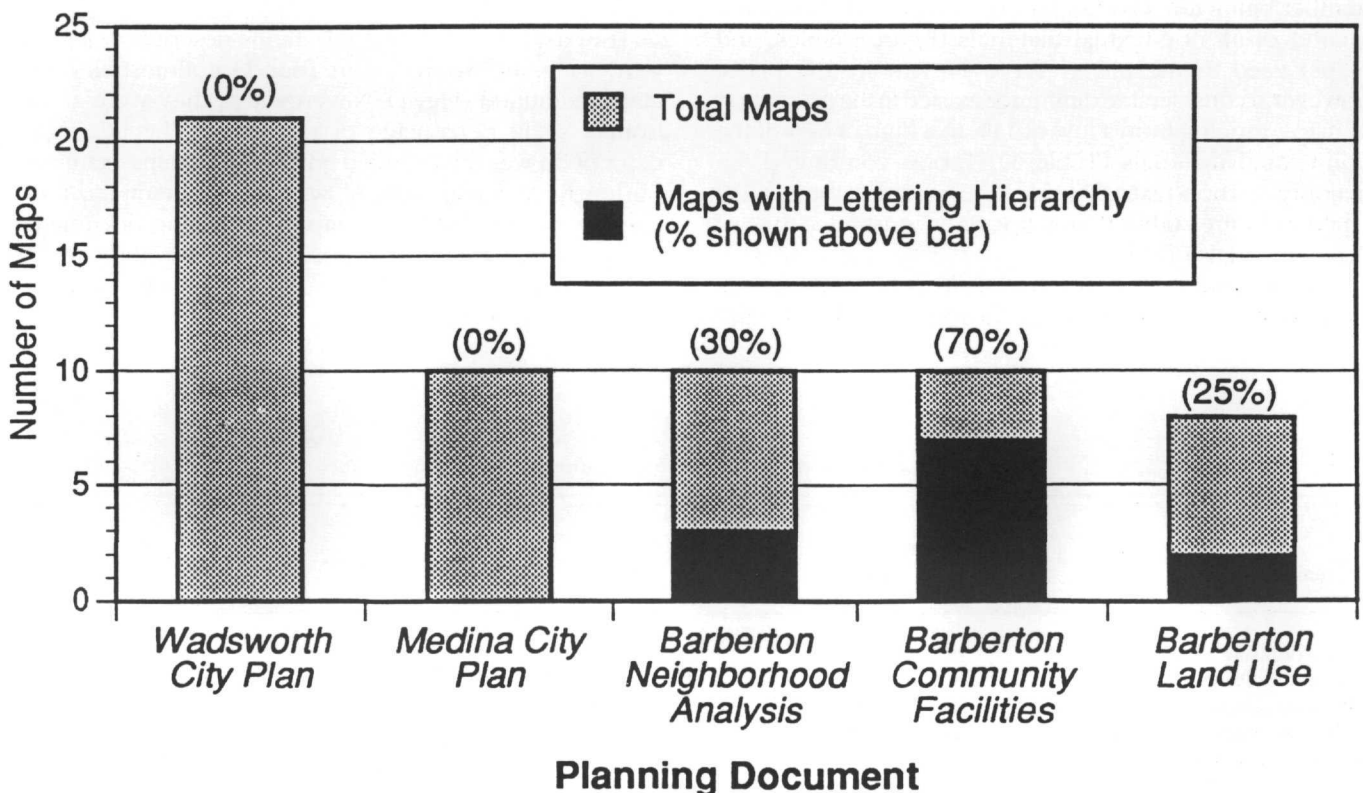


FIGURE 2. Use of lettering hierarchy on maps in planning documents.

maps. For instance, the effects of reduction are frequently not considered. This is especially evident on the maps in the Barberton plans, and in several cases the line work has been reduced to such an extent that it is barely legible. Lettering also exhibits similar problems, generally being much too small to be easily read from the map.

DISCUSSION

In the limited sample of small town planning documents examined in the present study, maps were used relatively effectively. Generally, line work and symbolization were all of good quality. But, in some instances the omission of certain key map elements, failure to take into account the effects of reduction, and the absence of a clear lettering hierarchy detracted from the overall 'professional' appearance of maps used in planning documents and reduced their communicative effectiveness. Since maps often play an integral part in the planning analysis, attention must be given to the most effective way of communicating this information (Delucia 1979).

If planning maps are to be more effective, then the effects of reduction must be taken into account and all the map elements must be present on the map. It should not be necessary to search for the relevant piece of text to explain what the map means. Not only is this awkward but poor visual presentation reduces the authority of the map and the information it contains. The consistent use of a clear lettering hierarchy will increase the clarity of the map and produce less visual confusion. Such standardization would produce a set of maps that are more successful in conveying their message (Lloyd and Yehl 1979).

Nevertheless, the sample of planning documents used in the present study was limited only to small urban areas and was too small to permit any general conclusions on the use and/or abuse of maps in planning documents. A series of more comprehensive studies should be performed examining the use of maps in a larger number of planning documents and from a range of administrative units (states, counties, metropolitan areas, and cities) stratified on the basis of population. This would allow a greater

understanding of the role maps play in a variety of planning documents as well as the degree of variation of map use and presentation based on the size of these governmental units and their planning staffs.

Some may argue that the increasing availability of computer-based thematic mapping programs, such as Atlas Graphics, PC Map, or MapInfo, and the ease with which these can be utilized, reduce the need for planners to be cognizant of map making theory and practice. However, the widespread availability of these programs makes it more likely that individuals with little or no training or knowledge of cartography will be able to make maps. While computers can aid in the map making process and usually help to improve them, in the hands of an untrained cartographer the odds that unsatisfactory maps will be produced are still high. Because of the significant role maps can play in the overall planning process, greater interaction between the two disciplines of planning and cartography is recommended. Planning is about generating alternative futures. If the public is to play a creative role in its future then it must be well informed. This, in part, will depend on the communicative effectiveness of maps and hence this topic deserves more serious attention by planners, cartographers, and geographers (McClendon 1988; Monmonier 1991).

LITERATURE CITED

- Barberton Planning Commission 1973a Neighborhood Analysis and Socio-Economic Profile. H.U.D.
 — 1973b Community Facilities Plan. H.U.D.
 — 1973c Land Use and Thoroughfare Plan. H.U.D.
 City of Medina 1983 Comprehensive Plan Update. Center for Urban Studies, Univ. of Akron, Akron, OH.
 City of Wadsworth 1980 Comprehensive Plan. Center for Urban Studies, Univ. of Akron, Akron, OH.
 Delucia, A. A. 1979 An analysis of the communication effectiveness of public planning maps. *Canadian Cartographer* 16: 168-182.
 Lloyd, R. and S. Yehl 1979 Orderly maps and map communication. *The American Cartographer* 6: 148-167.
 McClendon, D. 1988 Tips for better maps. *Planning* 54: 14-19.
 Monmonier, M. 1991 How to Lie with Maps. Univ. of Chicago Press, Chicago, IL.
 Pantouso, J. A. and S. H. Williams 1974 Cartography in environmental impact statements. *East Lakes Geographer* 9: 47-54.
 Stinger, P. and M. Taylor 1972 Plans as seen by the public. *Built Environment* 1: 121-124.