

The Ekistic Index

Why an Ekistic Index of Periodicals?

Introduction

To help readers benefit as much as possible from the documentation and retrieval effort of ACE, let us explain here the rationale behind this undertaking, borrowing from texts that have been published in the past in *Ekistics*, giving references at the end of the text to the authors and the sources.

Ekistics and the Ekistic Grid

"Human settlements are so numerous and so different from each other that any attempt to study or understand them is meaningless unless we classify them in an orderly way. Certainly this has been generally understood, but the classifications now in existence have three basic deficiencies:

First, they differ from profession to profession ...

Second, they do not cover the spectrum of settlements ...

The third deficiency is that several basic methods of classification that have proved very useful for other disciplines have not been used at all for human settlements ...

All fields of knowledge which gradually become scientific pass through a state of effort towards a systematic classification in spite of the resistance that is sometimes made to this effort."

C.A.Doxiadis set up the framework for the study of Ekistics, the science of Human Settlements (see *EKISTICS*, inside front cover), through the establishment of a classification system for settlements — the Ekistic Grid. This has been used to further develop ekistic concepts, and also in the application to practical problems.

Planning Tools and Grids

In the history of planning, there are predecessors in such a classification approach:

Around the turn of the century, Patrick Geddes, a Scottish botanist better known as the "father of town planning," developed the first matrix for urban analysis.

The second was the CIAM Grid, invented a generation later by Le Corbusier, a Swiss architect and urbanist who practiced throughout the world.

Then, in the mid-1950s, C.A. Doxiadis conceived both Ekistics, the science of human settlements, and its representation on a grid.

Symbolically, each of these matrices encompasses the totality for analysis of urban problems and also sets the framework for new developments. Such grids display any

component within two dimensions at a point of intersection of abscissa and ordinate
 There are common traits in the three grids. The first two were totally unconnected, but both (the first certainly and the second probably) were derived from the work of the Frenchman Frederick Le Play (1806-1882) who, although trained as a mining engineer, did pioneer work in the methodology of social research, particularly in the study of family budgets emphasizing the relationship between the family, its physical environment and its work patterns.

The Ekistic Grid

A major contribution of the ekistic grid is that it incorporates a complete spectrum of the range of human settlements — from the single man to the world — encompassing Ecumenopolis. This makes it a most powerful tool for urban analysis.

COMMUNITY SCALE		i	ii	iii	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
EKISTIC UNITS		ANTHROPOS	ROOM	HOUSE	HOUSE GROUP	SMALL NEIGHBORHOOD	NEIGHBORHOOD	SMALL POLIS	POLIS	SMALL METROPOLIS	METROPOLIS	SMALL MEGALOPOLIS	MEGALOPOLIS	SMALL EPEROPOLIS	EPEROPOLIS	ECUMENOPOLIS
EKISTIC ELEMENTS	NATURE															
	ANTHROPOS															
	SOCIETY															
	SHELLS															
	NETWORKS															
SYNTHESIS: HUMAN SETTLEMENTS																
POPULATION																
T (Thousands)							1.5 T	10 T	75 T	500 T						
M (Millions)		1	2	5	40	250					4 M	25 M	150 M	1,000 M	7,500 M	30,000 M

Ekistic Logarithmic Scale

Ekistic units

In fact, C.A. Doxiadis' abscissa introduces, for the first time, the important notion of the scale of human settlements which, he said, must "include units as small as a bed, where

Anthropos settles for one night, and as large as the entire surface of the planet." The first three of the 15 ekistic units that occupy the abscissa of the ekistic grid have a simple and obvious relationship, and have been assigned arbitrary population figures: anthropos (1 person), room (2 persons), dwelling (4 to 5 persons). The average

population given for the following twelve units starts with 40 for the house group and rises to 4 million for the average metropolis and 25 million for the small megalopolis. These are not unfamiliar scales of magnitude, but the next three columns denote the urban agglomerations which are now emerging: the true megalopolis (150 million people), the small eperopolis, the eperopolis (or urbanized continent) and, finally, Ecumenopolis, the world city of about 30 billion people, which is expected to represent the condition of the world in the 21st century (assuming we escape a totally catastrophic breakdown into barbarism).

The units increase in logarithmic progression by multiples of six or seven, a mathematical relationship of urban settlements (that was first noted by the central place theorists and particularly developed by Walter Christaller.

The names given to the ekistic units are oriented towards a western urbanized culture. None the less their relationships hold true even if one is considering a much more rural constellation of settlements. It is just that the names could be changed, not their positions in the scale. For instance, the urban dwelling group becomes a rural hamlet; the small neighborhood becomes a small village; the characteristic urban neighborhood a large village. In this context, the names describe freestanding settlements that form part of a geographically separated system of settlements, whereas in an urban setting they are the physically juxtaposed subunits of a major settlement. One can liken the comparison to pulling the units apart, as though they were linked to one another by elastic bands. Even when the world reaches the stage of Ecumenopolis, its components are likely to be identifiable at the scales of megalopolises, metropolises and urban neighborhoods.

Ekistic elements

The abscissa of ekistic units remains constant in all uses of the ekistic grid, and the most usual ordinate consists of the five ekistic elements, NATURE, ANTHROPOS (MAN), SOCIETY, SHELLS (dwellings or buildings), and NETWORKS, with a sixth line denoting their SYNTHESIS.

NATURE, the first element, represents the ecosystem within which rural settlements must exist. It involves a number of component processes including the hydrologic cycle, biosystems, airsheds, climatic zones, etc. Archaeological studies show that even primitive man with limited tools made profound changes in natural systems. Overcultivation in the Thar desert of the Indian subcontinent and overgrazing in the Middle East are two examples of how early cultivations weighted the natural balance and tipped it towards an uninhabitable landscape. If such significant changes in the natural system could be brought about by such limited numbers of men, it seems logical to suppose that today's 6,000 million persons must have far greater effectiveness in fouling the planet. And, if the earth is to support 30,000 million people in the future, the interrelationships and ranges of adaptability of human settlements and natural processes must be very clearly understood and observed, for neither can survive without the other. At another level we cannot forget man's psychological and physical needs for contact with the world of nature.

ANTHROPOS (MAN) himself is also constantly adapting and changing. The medical profession, in its move from "barbarism" to concepts of the constitution of the healthy individual, can contribute many important inputs to the better organization of urban life. Studies have shown that certain physical and psychological diseases are directly associated with urbanization. These include obesity, respiratory ailments and alienation (anomie). This gives rise to many questions, such as whether it is possible for mankind to adapt to a completely urban world with no rural escapes; what urban densities "are tolerable"; and how the city may be made a satisfactory environment for the growing child. Thus, just as forward-looking medical and public health schools find a need to study the city, city builders must turn to study man.

The realm of SOCIETY comprises all those aspects of the urban or rural scene that are commonly dealt with by sociologists, economists and administrators: population trends, social customs, income and occupations, and the systems of urban government. One of the most urgent aspects of society seems to be the problem of the retention, or reorganization, of values inherent in independent small communities after these have become incorporated in megalopolis — in other words, the place of the neighborhood in megalopolis.

SHELLS, or the built environment, is the traditional domain of the architectural and engineering professions. Here a central problem is how mass-produced, anonymous housing can cater for the needs of very diverse individuals and family groupings. Where can man make his own mark? Where can he leave the touch of his own hand?

NETWORKS provide the glue for all systems of urbanization. Their changes profoundly affect urban patterns and urban scale. We have only to think of the effect of the advent of the railroad, or of piped water supplies, or of the telephone, upon the extent, the texture and the densities of human settlements. The increasingly rapid developments of all types of networks — coupled with population pressures — have been the most potent heralds of megalopolis. The enormous growth in the uses of energy for the communication of ideas has whetted man's appetite for participating in all sorts of things that were formerly outside his ken. The television screen has stimulated desires both to participate in new sports, such as skiing, etc., and to participate in debates — political representation, etc. To respond to man's demands, transportation, communication and utility networks must all expand even faster than the anticipated growth of settlements.

SYNTHESIS arises from a consideration of the interactions of all the ekistic elements in terms of a single ekistic unit: for example, the interactions of Nature, Man, Society, Shells and Networks may be considered in terms of megalopolis. Or Synthesis can comprise a single ekistic element in terms of the whole range of ekistic units: for example, the effect of certain aspects of society (changes in the birth rate) or networks (advent of the automobile) upon all scales of human settlements. Again synthesis can arise from synergetic associations with the total result having positive benefits greater than the individual inputs; for example, a health facilities program

and air pollution control in conjunction may lead to lower mortality rates than predicted by each of the independent programs.

Other uses of the ekistic grid

But the ekistic elements are not the only items that can occupy the ordinate of the ekistic grid. Sometimes it is illuminating to relate the ekistic units with historic time (past, present and future). This immediately points up the spectacular recent growth of megalopolises. Another time it may be helpful to use the traditional academic disciplinary fields (sociology, economics, political science, technology, the arts). Or the ordinate may be used for percentage ratings of a special factor, such as population types, housing types, etc. Use of the ekistic grid in this way can serve as a means of opening up many insights into the processes of urbanization.

In summary, the two dimensions of the ekistic grid can encompass the developed and the undeveloped, the individual and the mass, the natural and the man-made, the spontaneous and the planned. In the use of the grid, comparison may relate local problems of a community to the range of ekistic problems found in similar sized settlements, or to similar problems as evidenced by settlements of other sizes. In this process universal issues may be distinguished from parochial ones. Similarly, those actions which might have the most far-flung effects may be sorted from those that are most limited.

The need for an Index

Obviously such a classification system could be also used for the establishment of a broader system of documentation. The latter has been available to the public through the journal *Ekistics*, *The Problems and Science of Human Settlements*, since 1955.

The establishment of an index of relevant materials for a new, comprehensive approach to the broad field of Human Settlements was definitely crucial to the overall effort of ekistics, as such a development has been one of the marks of achievement of any new discipline or profession, e.g. the *Index Medicus* which was established in 1879 and *The Management Index* which started in 1963. But at the time when the effort started — in the 1960s — there was no index that precisely covered the area of ekistics, although there were many that were peripheral. *Housing and Planning References of the U.S. Department of Housing and Urban Development* provides a monthly index of journal articles relevant to their clientele in U.S. housing and planning offices. *The Art Index* covers settlements primarily in terms of their architectural and design components. *The Public Affairs Information Service Bulletin* includes articles on settlements from a policy aspect. Other indexes cover settlements from the standpoint of individual disciplines.

Ekistic Index of Periodicals

The Athens Center of Ekistics felt the need to undertake the effort of producing a list of cross-referenced articles (by author, country and subject, etc.). Generally speaking, the

interest was to collect information relevant to Human Settlements from several hundred periodicals concerning all fields of human knowledge published in as many countries as possible. The selection should be based on the interest of the articles to planners, architects, social scientists, engineers, economists, ecologists, environmentalists and others concerned with developments in the field of Human Settlements — small and large, rich and poor — in the past, the present and the future.

The Ekistic Index of Periodicals, a documentation system for articles on human settlements published in periodicals having as a focus the various fields of human knowledge, started in 1966 and after four years of evolution ended its first experimental phase.

The subjects covered in the Ekistic Index, the sources from which it draws, the criteria for article selection, and the format have been established according to the concepts of ekistics.

Subject areas and Descriptors

Subjects covered in the Ekistic Index of Periodicals are basically defined by the two dimensions of the ekistic grid (fig. 2):

- the ekistic units which relate to settlement size; and,
- the ekistic elements which relate to the substantive components of each settlement.

The ekistic units of settlement size range from the individual ANTHROPOS (MAN) to ECUMENOPOLIS — from 1 man to 30-50 billion men. They are divided into 15 classes on a logarithmic progression. Each relevant article is classified by its ekistic unit, but not all articles can usefully be classified by scale.

The ekistic elements — NATURE, MAN, SOCIETY, SHELLS, NETWORKS — provide the second dimension of the grid (and so does SYNTHESIS). Each of these elements has been subdivided into four components — SYNTHESIS into two — and appropriate descriptors have been selected.

Each of these components has at least one descriptor, and the largest has ten. The glossary is subject to revision if the need arises. Since each article is denoted by up to four descriptors, this allows for over eight billion different combinations to reflect the range of diversity of problems and approaches.

A group of descriptors that cannot be classified on one or the other of these two dimensions of the grid is the group that comes under the general head of HISTORY. This includes ten descriptors which range from Prehistory, Ancient, Classical, Byzantine, Medieval, Renaissance history to history of the 18th, 19th, and 20th Centuries — and ends with the category of Existing Primitive.

The glossary of descriptors is made up of commonly used words and is free of specially invented terms, yet it is well representative of its discipline.

Descriptors are selected on the basis of three major characteristics:

- clarity or conceptual acuity;
- discreteness or lack of ambiguity; and,
- utility which reflects the generalness of use for retrieval.

An extensive list of additional words, such as "see" references, points out the selected descriptor. For example, such specialized terms as bidonville are listed, indicating the descriptor: Squatter. Very general terms such as architecture and planning are also avoided. The "see" reference to Planning directs the user to Regional Planning, Urban Planning, etc.

Geographic coverage

An important aspect of settlements is their location in space. This component is classified in two ways:

First, a fifth descriptor regularly records the geographic locale of the article by country or geographic region. Major cities are also recorded, but districts and states are not referenced.

Second, a special classification places the article in one of 22 Ekistic Homogeneous Regions (EHR), and also indicates the level of its economic development (using the index established by the World Bank). Thus it is possible for a special printout to be made of all data by country, by development stage, or by Ekistic Homogeneous Region.

The purpose of defining these regions was to ascertain areas which can logically be expected to produce similar settlement patterns. The land boundaries of the regions follow national boundaries, to facilitate manipulation of statistical information. The sea boundaries follow parallels and meridians or their diagonals, to facilitate the classification of minor islands into one or another EHR. With these constraints the regions were delimited as groups of adjacent national units (countries) with certain common physical characteristics (climate vegetation, etc.) as well as common ekistic characteristics (similar settlement types, economic development, political conditions, etc.).

Periodical sources

Over 700 journals are reviewed annually for ekistically significant articles. Of these around 100 are regularly indexed.

New journals are appearing all the time, and with the greater awareness of the problems of human settlements, many of these are appropriate and are incorporated.

A few periodicals are fully indexed, many are more highly indexed and some are regularly indexed. Only one of these, Ekistics, is specifically focused on the subject. The others are from related disciplines.

Periodicals from planning and architecture, the professions historically concerned with human settlements, account for over one third of the total.

In analyzing the periodicals that are regularly reviewed, it becomes clear that, with time, the spectrum broadens both geographically and by discipline. So the list increasingly includes a number of periodical from developing countries which usually only publish articles that are unique to their setting but which occasionally have more generally useful articles. It also includes a number of periodicals from less closely related disciplines, such as anthropology, medicine and computer science, and others from a wider spectrum of other fields which occasionally publish articles of significance to ekistics.

The Index makes a determined effort to maintain a high level of quality in the articles it selects, and also to attain a wide geographic coverage. A major limitation is that a high percentage of the material surveyed is written in English and in terms of coverage is from Europe, the USA and Canada. This is hardly surprising since almost 90 percent of the journals are published in these areas.

Each issue of the Index contains a complete list of the periodical from which articles have been indexed, together with the CODEN abbreviation of their title. These lists change from issue to issue and usually reflect a mix of the regularly and irregularly indexed journals.

Notes

1. C.A. Doxiadis, *Ekistics* (London, Hutchinson, 1968), pp. 31-33.
2. J. Tyrwhitt, "Planning tools and grids," *Ekistics*, vol. 52, no. 314/315 (Sept./Oct.-Nov./Dec. 1985).
3. C.A. Doxiadis, "Order in the field of ekistics," *Ekistics*, vol. 19, no. 110 (January 1965).
4. Walter Christaller, *Die zentralen Orte in Suddeutschland* (Jena, 1933); translated by Carlisle W. Baskin, *Central Places in Southern Germany* (Princeton, NJ, Prentice-Hall, 1966).
5. G. Bell and J. Tyrwhitt, *Human Identity in the Urban Environment* (Harmondsworth, Pelican Books, 1972), pp. 21-28.