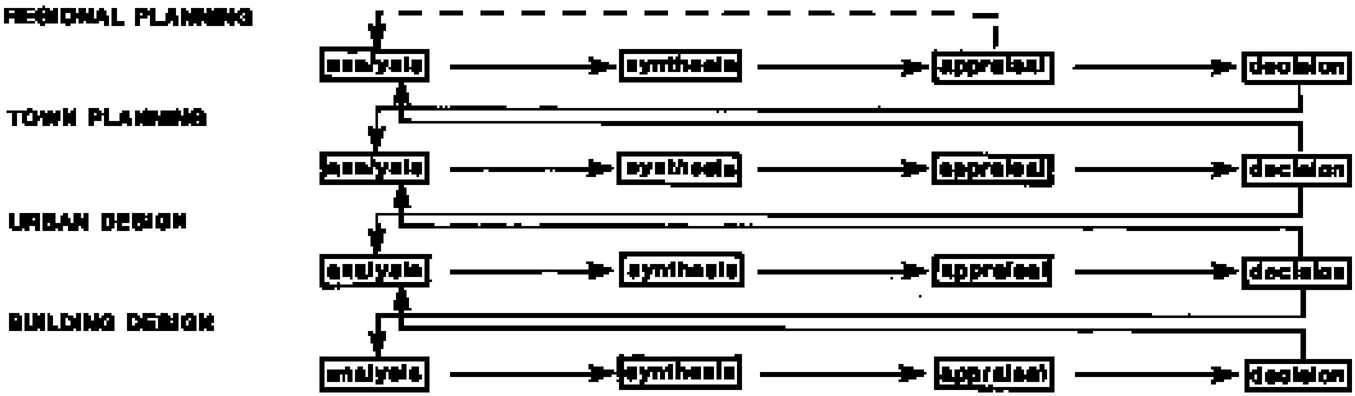

Figure 1.2 Integrated design process for planning.

city and regional planning (Figure 1.2). In this case, decisions at the higher level should inform the design process at the next lower order of design, for example, from regional to town planning. It makes most sense when each component of the environment fits consistently within the framework of a 'higher order' or contextual plan, for example, a building designed to fit within an urban design scheme which is determined by an urban structure plan based upon proposals for the region. It is, however, not simply a one-way process from large to small scale. It could be argued that each individual building should have some effect upon the larger urban grouping and that this three-dimensional design of large city areas should inform the planning of the city as a whole. Hence in Figure 1.2 there are return loops between the distinct facets of the development process for city planning.

In the discussion of design method so far there has been no overt mention of theory. Facts without theory have little or no meaning. Facts take on meaning when related to each other by a theoretical construct. Solutions to urban design problems, alternative ways of organizing city space, ideas about the relationship of function, urban structure and sustainability, have their origins in theory: in this book such concepts are considered as the technology of urban design. In order to understand the role of concepts in design and their relationship to theory it is useful to examine general scientific method. Scientific method is a direct analogy for the design process. The scientific process is illustrated in Figure 1.3: it involves five principal information components whose transformations into each other are controlled by six sets of techniques.[23] The information sets are the body of theory relating to the study area; the hypotheses thought to explain the phenomena studied; a set of observations from the specific environment and relating to the study subject; the fourth information component consists of empirical generalizations derived directly from the unique set of observations; and finally the body of decisions relating to the acceptance or rejection of the hypotheses. These information components are shown in rectangular boxes in Figure 1.3. The six groups of techniques which convert one information component to the next are shown within ovals on Figure 1.3. Theory, for example, is transformed into hypotheses through techniques of deductive reasoning. Observations are collected based on the hypotheses; the hypotheses being interpreted using forms of instrumentation, scaling and sampling. The observations are then transformed into empirical generalizations through the process of measurement, gauging the parameters of the study and the analysis and summary of the

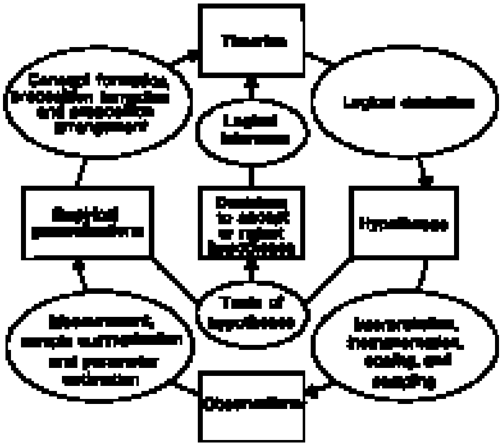

Figure 1.3 Scientific process.

sample of observations. The hypotheses can then be tested for the degree of conformity with the generalizations. The final information set, the decisions about the validity of the hypotheses, is derived from these tests. The last action in the process is the confirmation, modification or rejection of the theory through the technique of logical inference leading to concept or proposition formation and subsequent arrangement in new theoretical constructs.

This and other outlines of the scientific process appear clear, precise and systematic but, because of the pressures of time, money and politics, the scientific process is open to endless variation. Codifying method usually occurs after the event, the actual process being not always so precise as Figure 1.3 suggests. For example some elements of the process are more important for some research projects; some scientists practise a high degree of rigour in terms of method while others behave quite intuitively and informally, in a manner more usually associated with designers.

Figure 1.4 is a diagrammatic representation of the research process adapted to suit the needs of design. Entry into the design circle is possible at three points. Designers have been known to start

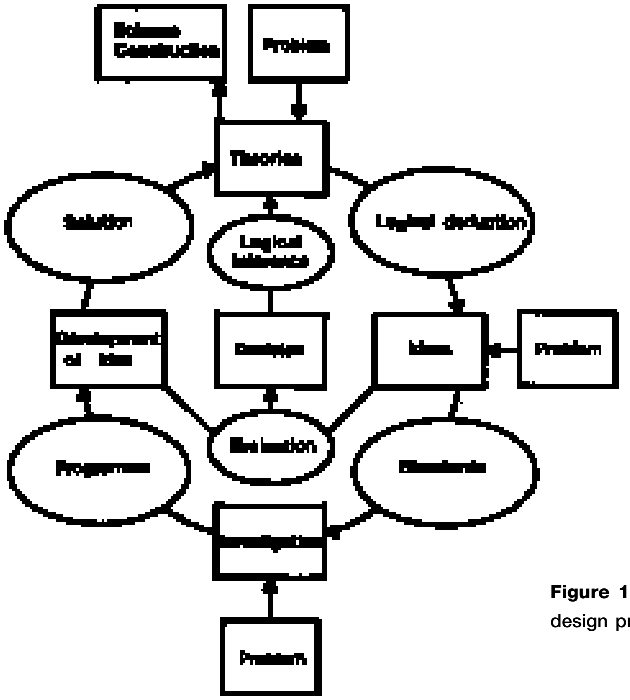

Figure 1.4 Scientific design process.

the whole process with ideas for change and intervention, that is, they start at the point where in scientific method hypotheses are formed. Or they may start the design process with survey and data collection. The more usual, classic procedure is to start by trying to understand the theoretical nature of the problem, then to proceed through steps on Figure 1.4 in a clockwise direction. Nevertheless, it is possible to move directly from a statement of the problem to ideas and concepts for its resolution or to a search for data that will assist with finding a solution. Both these procedures, however, require some preliminary notions about theory however ill-informed or unexplicit they may be; it is only through theory that design concepts and data can be organized into coherent patterns.

At the core of scientific method is asking the right question or questions. In a similar way, it is