



System Implementation

By transforming Urban Design problems and processes to their suitable abstraction, the design procedure is studied under a range of synthetic conditions. Rather than focus on one interest area, URBAN 5 attempts to abstractly simulate the total design process. In no way can it presently be used to examine real problems. The graphical language employed abstracts drawing into the simplest geometry known - the cube. In other words, the manipulation of elements is conducted within a ten-foot-cube building-block system. This abstraction provides a method of simulating the graphics of Urban Design, furnishes the necessary "frictionless vacuum" environment in which to work, and provides the full range of basic design inter-relationships.

URBAN 5 is implemented as a modal system. There are twenty-eight modes, each is assigned to a push button. Associated with each mode is a series of operations or assignments displayed on the right side of the scope screen as a string of text -- light buttons. There are five kinds of modes:

1. System mode (start, store, restart, output, end)
2. Graphical mode (draw, topography, surface)
3. Operational mode (qualify, assign, operate, initialize)
4. Interest modes (circulation, environment, user, activities, site, symbols)
5. Instructional modes (panic, dictionary, jury, history)

Within any mode there is no predetermined algorithm for the sequence of operations. The system has one central "wait state" that permits the user to change his mind or restate a situation at any time.

The machine responds explicitly or implicitly. An explicit response occurs in an operation or an assignment. It is a sequential action:

Operation: "How many families with two or more children have direct outdoor access."

Explicit Response: "42 FAMILIES"

Implicit responses, meanwhile, are temporal actions that have clocks associated with the criteria. Should the user specify: "Over 80 % of families with two or more children should have direct outdoor access", a timer is set according to the severity of the criteria, such that the machine verifies the criteria after a certain time and every



increment (for example: a minute) thereafter.

Example: Ten minutes after the criteria statement the machine checks for the specified state once a minute. Should a conflict exist, the error message might be displayed: "ONLY 20% OF THE FAMILIES WITH TWO OR MORE CHILDREN HAVE DIRECT OUTDOOR ACCESS."

The frequency of such an implicit response is also controlled by a monitor that surveys the kind and frequency of decisions the user is making. Should the user be making one decision per minute in the "circulation" mode, conflicts of privacy (for example) are checked more rarely than when user is in "surface" mode making twenty decisions per minute.

Modes

Start initializes the system permitting the user to start a new job or read off tape the status of a previous effort. Should it be a new project, START requires the user to type in his name and the volume of the site. The volume is restricted to a rectangular chunk of space composed of no greater than 24,000 elements (or 24,000,000 cubic feet).

INITIALize permits the user to specify up to one hundred general criteria. The initialization process occurs in natural language where the system presently uses a one hundred word dictionary to analyse a sentence. The underlying assumption is that within a small linguistic context (Urban Design) the syntax of the English language does not significantly effect the meaning of a phrase.

TOPOgraphy allows the user to describe his site in terms of a warped surface within his given horizontal and vertical dimensions. The user can re-enter this mode at any time and "move earth". The described ground surface is displayed in section for each vertical slice through the site.

DRAW mode provides the user with graphical manipulations within the given abstract drawing system. The following operations are available: SCALING, PLAN, SECTION, LOOKLEFT (rotate counter clockwise 90°), LOOKRIGHT (rotate clockwise 90°), ADD, SUBTRACT, MANY, STEP IN, STEP OUT, INSLICE, INFRONT, INBACK, TRANSLATE, PERSPECTIVE, AXONOMETRIC, FIGURE, TREE. When in PERSPECTIVE the following