

further operations appear: TURN RIGHT, TURN LEFT, TURN UP, TURN DOWN, STEP UP, STEP DOWN, STEP IN, STEP OUT, RETURN NEW, RETURN OLD. These operations simulate walking through the environment. The RETURN light buttons permit the user to end his visual sequence at the point he entered perspective or at the point he terminated the sequence.

OPERate, QUALIFY and ASSIGN are modes that put the machine into the respective operational context. A further button must be pushed to describe the interest area.

SURFACE allows the six surfaces of an element to receive one of four properties or without the attribute of ACCESS: TRANSPARENT, SOLID, PARTITION, ABSENT. Although SOLID and PARTITION have the same physical properties, they permit the user to differentiate between a unit (apartment, office, store, etc.) and an element or sub-division (bedroom, conference room, storage space, etc.)

CIRCulation mode, ENVIRonment mode, ACTivities mode and SITE mode are presently being designed and implemented.

USER mode has been designed using a neighborhood as the set of elements to be examined or labeled. The population contents of a neighborhood can be explicitly described in density, income, ethnic group, sex, and age groups. The implicit interaction of neighborhoods has not been implemented. The system presently permits the description and location of one hundred neighborhoods.

ELEMent mode has seven qualitative attributes applicable on a per-element (cube) basis: VISUAL PRIVACY / ISOLATION, ACOUSTICAL PRIVACY / ISOLATION, OUTDOOR ACCESS, DIRECT ACCESS, DIRECT LIGHT / SUN, INTENSE, DEAD SPACE. These spacial qualities are implicitly assigned by the machine. For example, an element that has an exterior surface with access will be implicitly ascribed the quality OUTDOOR ACCESS. On the other hand, the user can explicitly describe, for example, VISUAL PRIVACY to an element. Should this element be on a main circulation route and have a TRANSPARENT surface facing this route - CONFLICT will occur.

PANIC, JURY, DICTIONary, HISTory are instructional modes and are in their infancy of design. They are intended to make the user-machine interface as conversational and personal as possible, permitting the user to articulate himself in the privacy of himself.

SYMBOL buttons permit the user to establish his own vocabulary. There are six "SYM'S"; each can hold sixteen user or machine defined symbols. Symbols describe activities, uses, or composite qualifications. The user can draw upon a dictionary of predefined symbols (nursery school, library, bank, etc.) or he can define his own, relating them to any combination of the available sixteen use generics (daily commercial, education, service, private, etc.). A symbol can be stored in any one or more of the six "SYM" buttons. For example: he could put all educational symbols in SYM2 and all symbols relating to little children in SYM4. In this case, the symbol NURSERY SCHOOL would probably be under both symbol buttons. Once the symbols are defined they can be assigned to units. Presently, the system can accept sixty four symbols; each unit can have one associated symbol.

OUTPUT mode takes the image on the scope and prints it. This is not plotted but printed with dots, dashes and various characters. The printer is fast and can rapidly describe the associated symbols, qualities, and surfaces in text form.

RESTART reinitializes the system permitting the user to study new departures and different assumptions.

STORE has seven light buttons: WRITE DISK, READ DISK, WRITE TAPE, READ TAPE, NEW NAME, DELETE NAME, IN TIME. READ and WRITE DISK have ten sequential files that the user can NAME as he chooses. He can store preliminary designs and retrieve them by name. For example, at a certain stage he can store his project on disk, name it HARRY, and proceed on a new tact. Later he can return to a previous state to redepart in a different direction. In this case, he READs DISK, HARRY. Should the user not remember a preliminary design by name, he can retrieve it IN TIME:

"I AM INTERESTED IN THE PROJECT AS IT STOOD 10 OR 15 MINUTES AGO."

When the user is finished WRITE TAPE stores the ten files, the criteria, and the symbols to be reused at a later date.

END terminates the job and gives the user a diagnostic of how many minutes he ran and how many decisions he made.