DOCUMENT RESUME

ED 106 950 EA 007 143

AUTHOR Seaton, Richard W.
TITLE Architectural Simulation: A Mini-bib. Exchange Bibliography No. 200.
INSTITUTION Council of Planning Librarians, Monticello, Ill.
PUB DATE Jul 71
NOTE 8p.
AVAILABLE FROM Council of Planning Librarians, P.O. Box 229, Monticello, Illinois 61856 ($1.50)

EDRS PRICE MF-$0.76 HC-$1.58 PLUS POSTAGE
DESCRIPTORS *Architectural Programing; *Architecture; *Bibliographies; *Models; *Simulation

ABSTRACT

If the profession of architecture is to become knowledge-based, architectural variables as stimuli must be amenable to simulation that is cheap, flexible, transportable, reduced in size, and valid in terms of responses elicited by "real" construction. Forty-four publications relating to these considerations are listed in this bibliography. (Author/MLF)

Council of Planning Librarians EXCHANGE BIBLIOGRAPHY

200

July 1971

ARCHITECTURAL SIMULATION: A Mini-bib

Richard W. Seaton,
Environmental Psychologist, Associate Professor of Architecture
The University of British Columbia

COUNCIL OF PLANNING LIBRARIANS Exchange Bibliography #200

ARCHITECTURAL SIMULATION -- A MINI-BIB

Richard W. Seaton
Environmental Psychologist
Associate Professor of Architecture
University of British Columbia

If architecture -- -- defined as "the design of environments at human scale" -- -- survives as a profession, it will be because it has access to a body of empirical knowledge often established by controlled experimentation. Unfortunately, like foreign-policy, architecture is antipathetic to experimentation . . . and its practitioners often share that antipathy. Grounds for the difficulty are extensive. (a) Experimental environments at full scale are excessively costly, so much so that owners of real buildings are most reluctant to experiment with them. (b) Experimental environments at full scale are so bulky that users or judges must be transported to them, rather than varying stimuli being assembled for the judges. (c) Experimental environments are so complex that at full scale single variables are difficult to manipulate without confounding, and the natural and social surrounds of full-scale representation almost never can be controlled. (d) Effects of built environments may vary from short to long time and between diverse population, whether composed of owners or lenders, occupants or inhabitants, visitors or customers, and the rest of us who merely have to live with and look at edifices in our surrounds.

Thus, if the profession of architecture is to become knowledge-based, architectural variables as stimuli must be amenable to simulation which is cheap, flexible, transportable, reduced in size and -- -- above all -- -- valid in terms of responses elicited by "real" constructions.

This is not news to architects -- they have been using models, photographs, drawings, plans and elevations as simulations since the profession began. Great commissions (e.g., the Sydney Opera House) and gold medals (e.g., the triennial Massey Awards in Canada) are awarded among competitors on the basis of simulations and representations they submit. Issues of validity almost always arise, however, not only in terms of evaluative procedures in such competitions but also in terms of the simulations themselves. Architectural photography and rendering, for example, are applied arts demanding high skill which probably contribute to the selection of this or that submission. Even architectural plans can mislead, insofar as the judge sees a complete floor layout entirely different from the "mental map" likely to be developed by the user of a real building. Architects, of course, pooh-pooh the likelihood of their being misled by artifactual characteristics of design simulation; they tend to assert that just as a radiologist can validly "read" an x-ray despite its distortions and vagueness, so the experienced architect can "cut through" the artifice of photographs, renderings or models to see the essential qualities of an environment that will be manifest after it has been built. This proposition of the architect's skill at "reading" simulations validly has not been tested experimentally, although we do know that design students tend to view architectural representations differently from laymen (e.g., Hershberger, 1968; Collins, 1969; Canter, 1970; Viehhauer, 1965); we know more generally that similar stimulus representations elicit differing responses from different cultures (Osgood, Archer and Miron, 1963).

Various representations of designed spaces as stimuli have been described and used empirically by Appleyard, 1971; Carlstam, 1968;

Carr and Schissler, 1969; Lowenthal, 1967; Michelson, 1966; Ratter and Hibb, 1969; Rose and Pierce, 1966; and Vigier, 1965, among others. Theoretical issues with perception of simulations as stimuli have been the concerns of many people like Arnoult, 1960; Canter, 1969; A & B, 1970; T. F. W. M. Heath, 1966; Harrison, 1969; Michels and Zisne, 1965; and Gauthier as far back as 1926. Broader issue in (architectural) evaluation methodology are exposed cogently in a variety of works of which those by Brunswick, Hull and Lewin, 1943; Creick, 1968 and 1970; Rosenthal, 1966; Webb et al, 1966; and Wohlwill, 1966, are representative. However, only a relative small number of studies have undertaken specifically to examine how comparison between changing simulations of an architectural "event" can change or even reverse response patterns; these include studies reported by Bennett, 1969; Dosey and Meisel, 1969; Heath, T.H., 1968; Galvin, 1970; Hesselgren, 1967; Manning, 1965; Lycan and Sewell, 1968; Lau, 1970 A & B; Petersen, Woodman and Eaton, 1968; Seaton and Collins, 1971; Smith, Smith & Hubbard, 1958; and Wools, 1970. No doubt there are many more direct comparisons between different means of showing congruencies and distortions in responses gained under varying architectural stimulus representation conditions; the author of this bibliography will be grateful to all readers who detect serious omissions in the above list. Valuable in this regard are reports like that of Sanoff, who discovered that models and drawings, of experimental homes for farm workers were well liked in a San Joaquin Valley small town but the real buildings based on the models were scorned. Surely the survival and growth of architecture as a profession depends on being able confidently to predict in vivo responses to the extent that results of experiments in vitro with alternative simulated designs can validly predict in vivo responses of users after designed environments are built.

Architectural Simulation - A Mini-bib

Appleyard, D. Uses of the environmental simulator in the assessment of environmental quality. Paper read at the Western Psychological Association Annual Convention, San Francisco, 24 April 1971.

Arnoult, M.D. Prediction of perceptual responses from structural characteristics of the stimulus. Perceptual and motor skills, 1960, 2, 261-268.

Bennett, E. Product and design evaluation through the multiple forced-choice ranking of subjective feelings. In Bennett, E., Degan, J., and Spregel, J., (eds.) Human factors in technology, New York: McGraw-Hill, 1969, 521-555.

Brunswik, E., Hull, C.L. and Lewin, K. Symposium on psychology and scientific method. Psychol. Rev., 1943, 50, 255-310.

Canter, D.V. Attitudes and perception in architecture. Architectural association quarterly, 1969 (April), 1 (2), p. 21. ff. (A).

Canter, D.V. Should we treat building users as subjects or objects? In D.V. Canter (ed.), Architectural psychology, London: RIBA Publications, 1970, 11-18.

Canter, D.V. The subjective assessment of the environment. Glascow, Scotland: University of Strathclyde Building Performance Research Unit, 1969 (B).

Carlestam, Gosta. Investigation of outdoor activities with an automatic camera. Stockholm, Sweden: National Institute of Building Research Report 16/68, 1968.

Carr, S. and Schissler, D. The city as a trip. Environment and behavior, 1969 (June), 1 (1), 7-35.

Collins, J.B. Perceptual dimensions of architectural space validated against behavioral criteria. Salt Lake City, Utah: University of Utah Department of Psychology unpublished Ph.D. thesis, 1969.

Collins, J.B. Semantic dimensions as architectural discriminators. Paper read at the Western Psychological Association Annual Convention, San Francisco, 24, April, 1971.

Craik, V.H. The comprehension of the everyday physical environment. Journal of the American Institute of Planners, 1968 (Jan.), 34 (1), pp. 29-37.

Craik, K.H. Environmental Psychology. In K.H. Craik et al. New directions in psychology, New York: Holt, Rinehart & Winston, 1970, 1-121.

Dosey, M. & Meisel, M. Personal space and self-protection. Journal of personality and social psychology, 1969, 11, 93-97.

Galvin, F. The design of an experimental simulation instrument to be used as a tool for correlating architectural space with psychological effectuation. Urbana, Ill.: University of Illinois Department of Architecture unpublished Ph.D. dissertation, 1970.

Gauthier, M. Studying in three dimensions. Pencil points, 1926 (July), 7, (7), 407-416.

Harrison, James D. An annotated bibliography on environmental perception. Monticello, Ill.: Council of Planning Librarians Exchange Bibliography #93, Aug., 1969.

Heath, T.F.W.M. Experimental aesthetics and architecture, with three experiments. Architectural science review, 1966, (June), 9, 56-58.

Heath, T.H. Problems of measurement in environmental aesthetics. DMG Newsletter, 1968 (Oct.), 2 (1), pp.5-6 (abstract).

Hershberger, R.G. A study of meaning and architecture. Philadelphia, Penn.: University of Pennsylvania, School of Architecture unpublished Ph.D. dissertation, 1968.

Hesselgren, S. The language of architecture. Lund, Sweden: Student-litteratur, 1967.

Lau, J.J.H. The use of scale models as a stimulus mode. EDRA 2 (Proceedings of the 2nd Annual Environmental Design Research Association Conference, October 1970, Pittsburgh, Pennsylvania), pp. 72-76. (B).

Lau, J.J.H. Differences between full-size and scale-model rooms in the assessment of lighting quality. In David V. Canter (ed.) Architectural psychology, London: RIBA Publications, Ltd., 1970, 43-48. (A).

Lowenthal, D. An analysis of environmental perception. New York: American Geographical Society, 1967.

Lycan, D.R. and Sewell, W.R. Duncan, Water and air pollution as components of the urban environment of Victoria. Geographical perspectives, 1968 (Spring), 13-18.

Manning, P. (ed.) Office design. Liverpool, England: Liverpool University Department of Building Science, 1965.

Michels, K.M. and Zusne, L. Metrics of visual form. Psychological bulletin, 1965, 63, 74-86.

Michelson, W. An empirical analysis of urban environmental preferences. Journal of the American Institute of Planners, 1966, 32, 358-360.

Osgood, C.E., Archer, W.K., and Miron, M.S. The crosscultural generality in meaning systems. Urbana, Ill: University of Illinois Institute of Communication Research, 1963.

Peterson, J.M., Woodman, D. and Eaton, R. Critical judgments based on direct vs. indirect experience: photos vs reality, DMI Newsletter, 1968 (April), 2 (4), p. 5 (abstract).

Rese, S.W. & Pierce, M.S. Television as an architectural design tool. Lincoln, Neb.: University of Nebraska School of Architecture, 1966.

Ritter, P. and Hibb, Ralph. A method of colour cinematography of design models through a modelscope in architecture, planning and other fields, Architectural Science review 1969 (March), 12 (1) 78-84.

Rosenthal, R. Experimenter effects in behavioral research. New York: Appleton Century Crafts, 1966.

Sanoff, Henry. Low income housing demonstration. Berkeley, Calif: University of California Department of Architecture Research Office, 1965.

Seaton, R.W. and Collins, J.B. Architectural simulations as stimuli. Paper read at the Western Psychological Association Annual Convention, San Francisco, 24 April 1971.

Smith, O., Smith, P.C., and Hubbard, D. Perceived distance as a function of the method of representing perspective. American journal of psychology, 1958 (Dec.), 71 (4), 662-674.

Viehauer, J.A. The development of a semantic scale for the description of the physical environment. Baton Rouge, La.: Louisiana State University Department of Psychology, unpublished ph.D. thesis, 1965.

Vigier, F.C. An experimental approach to urban design. Journal of the American Institute of Planners, 1965 31, 21-30.

Webb, E.J., Campbell, D.I., Schwartz, R.D., & Sechrest, L. Unobtrusive measures. Chicago: Rand McNally, 1966.

White, W.P.D. Meaning of character in architectural space. Raleigh, N.C.: North Carolina State University School of Design, 1967.

Winkel, G.H. and Sasanoff, R. An approach to an objective analysis of behavior in architectural space. In Proshansky, H.M., Ittelson, W.H., and Rivlin, L.G. (Eds.) Environmental psychology. New York: Holt, Rinehart and Winston, Inc., 1970, pp. 619-631.

Wohlwill, J.F. The physical environment: a problem for a psychology of stimulation. Journal of social issues, 1966, 22, 29-38.

Wools, R. and Canter, D. The effect of the meaning of buildings on behavior. Applied ergonomics, 1970 (June) 1 (3), 144-150.

Wools, R. Representation and evaluation. Paper read at the British Psychological Society Conference, Southampton, 10 April 1970.

Council of Planning Librarians Exchange Bibliography #200
ARCHITECTURAL SIMULATION -- A MINI-BIB
Additional copies available from: Council of Planning Librarians
Post Office Box 229
Monticello, Illinois 61856 for $1.50