

# Use of Space by Animals and Men

AAAS Symposium • 29–31 December 1968  
Dallas, Texas

Man, like all animals, has an inborn concern with the organizing of his environment. More specifically, he needs to place himself in the world. Civilized man is aware of this abstractly (for example, status, nationality, race) but evidence is accumulating that man's physical organization of his environment, especially of living space, is, for the greater part, unconsciously determined. Speaking of social groups in general, McBride recently stated, "Societies are structures in space with individuals as the building blocks and the behavior of the animals providing the architecture. Society structure, call it anatomy or morphology, is *all spatial*. Structure tells nothing of function but alerts us to functional differences. If societies evolve . . . , the evolution changes function but also structures, so that the spatial behavior of animals should say something of evolutionary patterns of change" (1).

The study of spatial behavior suffers from the lack of conceptualization, the absence of a dictionary of terms, and an incomplete repertoire of behavioral events. Even architecture, whose entire concern is with shaping our living space, cannot formulate its goals explicitly. To quote Hall, "Considering the architect's persisting preoccupation with space, why is it that 2400 years since the Parthenon, Western man still lacks a method for noting and describing the experience of space" (2)?

Of course there also have been accomplishments in the last several decades. To mention a few landmarks (in the English-speaking world)—E. Howard described the role of "territory" in birds in 1920 (3); architects, after World War II, introduced the concept of "townscape"; and R. Sommer measured

human expressions of "personal space" (4).

These contributions have, however, not become integrated. Animal behavior, architecture, psychology, and such disciplines as geography and anthropology which have more recently become interested in man's spatial relations, speak no common language. In the literature one finds a strange juxtaposition of terms. Early work referred to "Umwelt," territory and home range, land- and cityscape. Generally, ecology was made to apply to human behavior, for example, "microecology" as the way in which people in pairs or small groups arrange themselves. More recently, work has been done in "personal space" and the "body-buffer" zone, indicating individual spacing distances in man; and generally, "proxemics" has been proposed as the study of how man unconsciously structures microspace (2). On a larger scale there is mention of the need for "environmental psychology" (5); there is concern with the effects of increase in "population density" and the possible resulting "behavioral sink" (6). Several books have appeared which attempt to synthesize our knowledge of socio-psychophysical environment, including *Man's Response to the Physical Environment* (7), *The Hidden Dimension* (8), and *The Territorial Imperative* (9). These are relatively informal and speculative.

The intent of the 1968 international symposium of the Animal Behavior Society (Use of Space by Animals and Men, 29–31 December 1968) is to bring together scientists from different disciplines concerned with the use of space. The presentations have been restricted to investigators in the behavioral area; we need an overview of con-

ceptualizations, methodologies, and ongoing research in actual behavior, before we are ready to deal with the applied areas such as architecture and town planning. However, the discussants do represent the wide scope of spatial interests, ranging from geography to design engineering.

The contributors are those who have done experimental or field work and thus can present their concepts and experiences firsthand. Most of the material known in the United States is from English-speaking sources; therefore, an attempt has been made to get as many speakers from foreign countries as possible. Representatives of different backgrounds were chosen to provide comparison of a wide range of working methods, project approaches, and data analyses. Care was taken to insure adequate representation of certain "established" topics, such as, territoriality, crowding, and communication.

The symposium program is divided into five sessions; it also includes a "Frontiers of Science" lecture. The topics will range from the role of space in the behavior of lower animals to the complexities of use of space in human society and its implications for the understanding of human behavior. Each session has three speakers and seven to ten discussants.

The preparation for the formal presentations and discussions have been intensive. The program was conceived in 1966, and the participants are circulating their contributions before they meet. These contributions, along with the tape-recorded discussions scheduled to occupy 1 hour after each session, will be published in book form by the Indiana University Press.

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#### References

1. G. McBride, personal communication (1967).
2. E. T. Hall, *Amer. Anthropol.* **65** (5), 1003 (1963).
3. E. Howard, *Territory in Bird Life* (Murray, London, 1920).
4. R. Sommer, *Sociometry* **22**, 247 (1959).
5. K. H. Craik, *J. Environ. Design*, in press.
6. J. B. Calhoun, in *Roots of Behavior*, E. Bliss, Ed. (Hoebner Div., Harper & Row, New York, 1962).
7. R. W. Kates and J. E. Wohlwill, Eds., *J. Social Issues* **22**, No. 4 (1966).
8. E. T. Hall, *The Hidden Dimension* (Doubleday, Garden City, N.Y., 1966).
9. R. Ardrey, *The Territorial Imperative* (Antheum, New York, 1966).

Program notes appear on page 702.

## Speakers and Topics

Organizer: Aristide H. Esser

### 29 December (morning)

#### Introduction

*The Importance of Defining Spatial Behavioral Parameters*, Aristide H. Esser.

#### Relation of Territoriality to Dominance

*Description of Territorial Behavior: Behavior as Demonstrated and Modified by Territoriality*, Heini Hediger (Zoologischen Gartens, Zurich, Switzerland).

*Animal Paths: Behavior in Familiar Situations*, Fred Fischer (Zurich, Switzerland).

*Dominance and Territoriality as Complements in the Evolution of Social Structure in Mammals*, Paul Leyhausen (Max-Planck-Institut für Verhaltensphysiologie, Wuppertal, Germany).

#### Discussion

*Chairman*: Charles C. Carpenter, Kyle R. Barbehenn, J. LeGay Brereton, John H. Kaufmann, Kenneth P. I. Kinsey, Richard S. Peterson, and John R. Tester.

### 29 December (afternoon)

#### Factors Influencing Intraspecific Contact

*Theories of Animal Spacing: The Role of Flight, Fight, and Social Distance*, Glen McBride (University of Queensland, Brisbane, Australia).

*Inter-Animal Control of Space: The Role of Rank Order, Parent-Offspring Relations, and Peer-Play*, J. LeGay Brereton (University of New England, Armidale, Australia).

*The Links Between Territorial Behavior, Intraspecific Strife, Population Density, and the Environment*, Adam Watson (The Nature Conservancy, Banchory, Kincardineshire, Scotland).

#### Discussion

*Chairman*: James A. Lloyd, Stuart A. Altmann, Edwin M. Banks, Halsey M. Marsden, Emil W. Menzel, Jr., Walter Sheppe, and John G. Vandenberg.

### 30 December (morning)

#### Population Density and Crowding

*Effects of Density and Space on Sociality and Health in Mammals*, Kenneth Myers (Commonwealth Scientific and Industrial Research Organization, Canberra City, Australia).

*Behavior Under Involuntary Confinement*, Henri F. Ellenberger (University of Montreal, Montreal, Canada).

#### Discussion

*Chairman*: Chales H. Southwick, John B. Calhoun, Frederick R. Behlback, Ulla Olin, Paul G. Pearson, Delbert D. Thiessen, and Bruce L. Welch.

### 30 December (afternoon)

#### The Role of Distance in the Evolution of Communication

*The Role of Orienting Behavior in Communication*, Mario von Cranach (Max-Planck-Institut für Psychiatrie, Munchen, Germany).

*The Facilitation of Communication in a Cultural Environment*, Edward T. Hall (Northwestern University).

*Trans-Cultural Patterns of Ritualized Contact Behavior (Illustrated by Filmed Ceremonial Sequences)*, Irenaus Eibl-Eibesfeldt (Max-Planck-Institut für Verhaltensphysiologie).

#### Discussion

*Chairman*: William A. Mason, Charles C. Carpenter, Daniel Carson, Aristide H. Esser, James Marston Fitch, David Lowenthal, and Glen McBride.

### 30 December (evening)

#### AAAS Frontiers of Science Lecture III

John B. Calhoun (National Institute of Mental Health, Bethesda, Maryland).

### 31 December (morning)

#### Environmental Conditions and Human Behavior

*An Evolutionary Background to Human Behavior*, V. C. Wynne-Edwards (University of Aberdeen, Aberdeen, Scotland).

*Ecological Aspects of Interpersonal Relationships*, Irwin Altman (Naval National Medical Center, Bethesda, Maryland).

*Spatial Parameters in Naturalistic Social Behavior Research*, Robert Sommer (University of California, Davis).

#### Discussion

*Chairman*: David Lowenthal, John B. Calhoun, Kenneth H. Craik, James Marston Fitch, Gilbert Gottlieb, Ulla Olin, and Raymond G. Studer.

*General Program Notes on the AAAS Annual Meeting (26-31 December 1968) appear in the 4 October issue of Science. Hotel reservation forms and meeting and tour registration forms appear in the 1 November issue of Science and will appear in alternating issues. Reports of symposia at the Meeting appear in the following issues: 13 September, "Sport and Its Participants"; 20 September, "The Control of Fertility"; 27 September, "Unanticipated Environmental Hazards"; 11 October, "Continuing Education for Engineers"; 18 October, "Antarctic Research"; 25 October, "Water Importation into Arid Lands"; and 1 November, "Jupiter and the Outer Planets."*

# Science

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