856

TERRITORIALITY: SPATIAL BEHAVIOUR

"TERRITORIALITY:" A FUNDAMENTAL CONSIDERATION OF SPATIAL BEHAVIOUR

by

DANIEL B. EDGAR

A 4C6 Research Paper
Submitted to the Department of Geography
in Partial Fulfilment of the Requirements
for the Degree
Bachelor of Arts

McMaster University
April 1973

BACHELOR OF ARTS (1973)
(Geography)

McMASTER UNIVERSITY
Hamilton, Ontario

TITLE: Territoriality: A Fundamental Consideration of Spatial Behaviour

AUTHOR: Daniel B. Edgar

SUPERVISOR: Dr. J. F. Betak

NUMBER OF PAGES: vi , 63

ABSTRACT:

The central theme of this paper is territoriality. Essentially, I am concerned with the part that territoriality plays in determining spatial behaviour. Part One introduces the subject and demonstrates the need for geographers to examine territoriality more thoroughly. The newly developed field of behavioural geography is assessed, the importance of scale being a fundamental consideration. Part Two deals with definition of territoriality in animal and human populations. The problems encountered in definition and delineation of human territories are discussed. Part Three poses two important questions. 1. What function does territoriality serve? 2. Is territory innate or a cultural acquisition? Although the answers to these questions are subject to further research, the importance of these considerations is demonstrated. Part Four considers dominance and leadership. The spatial implications of these concepts are developed. Part Five centres about territorial encroachment and the subsequent reaction. Essentially

territorial encroachment (or intrusion) is conceived as a violation of regular spacing patterns. Possible reactions to encroachment are considered. Part Six deals with typology. Two levels of study are distinguished those being Micro territories (personal space) and macro territories (larger units of territory). These two concepts are differentiated by scale. Studies conducted at each of these levels are discussed. Part Seven puts forth a hypothetical construct which integrates the work of several researchers. The "interaction distance" equation is a model which, hopefully, assists the researcher in understanding and possibly predicting the space maintained between interactants. Briefly, the model consists of the subject, the object and the situation. These components determine the interaction distance. Although quantification of the components is not included in this paper, problems in calibration are considered. The utility of the model is also discussed. Part Eight applies a methodological construct, of field theory, to spatial behaviour. The essential concepts of field theory, (the life space, boundary zones, and space of free movement), are discussed in a conceptual and physical sense. Finally, the life space concept is conceived as a territorial range or orbit in which the spatial behaviour of the individual is conducted. In fact, the field theory might greatly assist geographers in understanding and predicting spatial behaviour.

ACKNOWLEDGEMENTS

Special thanks to Dr. J. F. Betak for the selection of much of the material considered in this paper and offering direction when needed. All content, however, where not otherwise acknowledged, is the responsibility of the author.

TABLE OF CONTENTS

I INTRODUCTION

1. The Relevance of Territoriality

Economic theory was largely responsible for the main thrust of the quantitative movement in geography. The genesis of this movement can be retraced to the classical statements of Ricardo (rent theory) and much later Christaller, (central place theory). These theories were based on the established principles of economics. The rigidity of these theoretical relationships and the underlying assumptions, e.g., economic man, perfect competition, an isolated state, etc., alarmed many geographers. Seemingly, some very essential considerations of spatial behaviour could not be handled adequately using economic theory. In particular, considerations of spatial preferences, environmental perception, territoriality, etc., could not be dealt with in terms of the existing theories and methods of economic geography.

In response to the need to examine spatial behaviour more thoroughly a new field of study emerged. Behavioural geography,[1] despite its youth, has attracted a great deal of attention. Its potentialities are incalculable at the present time. All that we can say with certainty is the field will be marked by changes and rapid development. This will occur, hopefully,in the not to distant future as

1. Behavioural geography recognizes theory which has not yet been expressed in quantifiable terms.

theory and techniques are brought forth, those of merit to be developed, others to be discarded,

An integral part of behavioural geography deals with man's spatial behaviour. It is this part of the field which holds my interest. Various approaches have been proposed to better understand man's spatial behaviour, e.g., trip generation, migration, interaction models, etc., however, the one which I have selected is that of territoriality. The distinct advantage that the researcher enjoys in the study of territoriality is that he/she is studying the most basic aspect of spatial behaviour. The concept of territory is not a statistical or theoretical abstraction, like information levels, distance decay, relative attractiveness,[2] and other concepts which are generally considered to affect spatial behaviour. Territoriality is an actual human quality,[3] which may affect movements in a variety of ways. For instance, the way in which one perceives a particular environmental setting will affect his/her conception of personal territory. In turn this may induce interactions or discourage them,[4] as simply as

---

2. Morrill,R., "The Development of Spatial Distributions of Towns in Sweden: An Historical - Predictive Approach", Annals of the Association of American Geographers, Vol.53, No.1, March,1963, esp. Morrill's determinants of migration.
3. By human quality I mean a "state of mind" or some specific mental process.
4. Sommer, R., "Personal Space: The Behavioural Basis of Design", Englewood Cliffs, N.J., Prentice-Hall Inc., 1969. esp. Sommer's work with sociofugal, sociopetal settings.

it may promote free movements or constrain them.[5] However, we must always be mindful that since territoriality is a fundamental human quality, it is subject to the variability, flexibility, and the many other behavioural complexities of our species.

A respectable amount of literature has approached the study of territoriality. A good deal of this literature has been presented by anthropologists,[6] nonetheless, sociologists[7] and psycholgists[8] have made contributions. Indeed if a void exists in the study of territory and its many ramifications, that gaping hole is in geography, for it is among geographers that the study of territoriality had barely been recognized. Excepting the work of Saarinen[9] and Soja,[10] territoriality remains a subtle and unassuming skelton in the closet of geographical thought. Anthropologists have made some gains in picking the bones of this neglected

---

5. Webber, M. esp."Cosmopolite-Localite" Issue "Culture, Territoriality and the Elastic Mile," Proceedings of R.S.A. Vol 13 1964, pp 59-64.
6. The work of Ardrey and Lorenz, (See Bibliography)
7. The work of Lyman and Scott, and Gans, (See Bibliography)
8. Particularly the work of Robert Sommer (See Bibliography)
9. Saarinen, T.F., "Perception of Environment" Resource Paper No.5, College Commission on Geography, Washington, D.C.,: Association of American Geographers,1969.
10. Soja, E.W."The Political Organization of Space", Resource Paper No.8. College Commission on Geography. Washington, D.C.: Association of American Geographers, 1971.

skelton. Seemingly, geographers are waiting for the autopsy.

It is not my intention in the writing of this paper to fill the void and to provide an entire framework in which territoriality may be examined. I can only hope to demonstrate with some measure of validity, that territoriality despite its uncertain status, is relevant in the work of geographers.

2. . The Importance of Scale in Behavioural Studies

T.F. Saarinen is among the few geographers who have recognized the need to study territorial behaviour.[11] Although "Perception of Environment" deals with a wide range of human uses of space, Saarinen realizes that territoriality is a key concept for geographic study of environmental behaviour. Essentially he doesn't attempt to separate what he calls the social, natural or man-made environments, nor does he separate the work of geographers from other social scientists. The only separation of environments that he makes

---

11. Saarinen, T.F. (op.cit.,) * Saarinen notes with some dismay that "more research has concentrated on human behaviour in unusual environments than in every-day situations. Probably more is known about the likely physiological and psychological reactions to environmental extremes then to normal conditions". This may be attributed to the fact that under extreme conditions certain behavioural characteristics become intensified. (See Altman and Haythorn,"The Ecology of Isolated Groups",)who discovered that territorial behaviour among dyads of sailors, isolated from normal living conditions, became much more accentuated.

is on the basis of scale. He examines the effect of the environment on man and vice versa, the effect of man on the environment, organizing from small scales to larger scales. For instance, he conceived scale to vary from personal space, (that of room geography), to neighbourhoods and to larger units, e.g., cities, countries, and finally the world scale.

A similar separation of behavioural environments using scale is presented by Sonnenfeld.[12] Sonnenfeld conceives these environments as being nested, the smaller within the larger. The largest environment, "the geographical", includes all which is external to man, the entire world. Nested within the geographical environment is the "operational environment" or that part of the world in which he operates. Sonnenfeld believes that the operational environment consists of any part of the world which affects mans behaviour directly or indirectly. It is important to remember that only that part of the environment which influences human behaviour, or which in turn is influenced by human action, is considered in the operational environment. Nested within the operational environment is the "perceptual environment". The distinction between the two is that man is aware of the

---

12. Sonnenfeld, J., "Geography, Perception and the Behavioural Environment", paper presented at Dallas, A.A.A.S., Dec. 27, 1968, in symposium on "The Use of Space by Animals and Man."

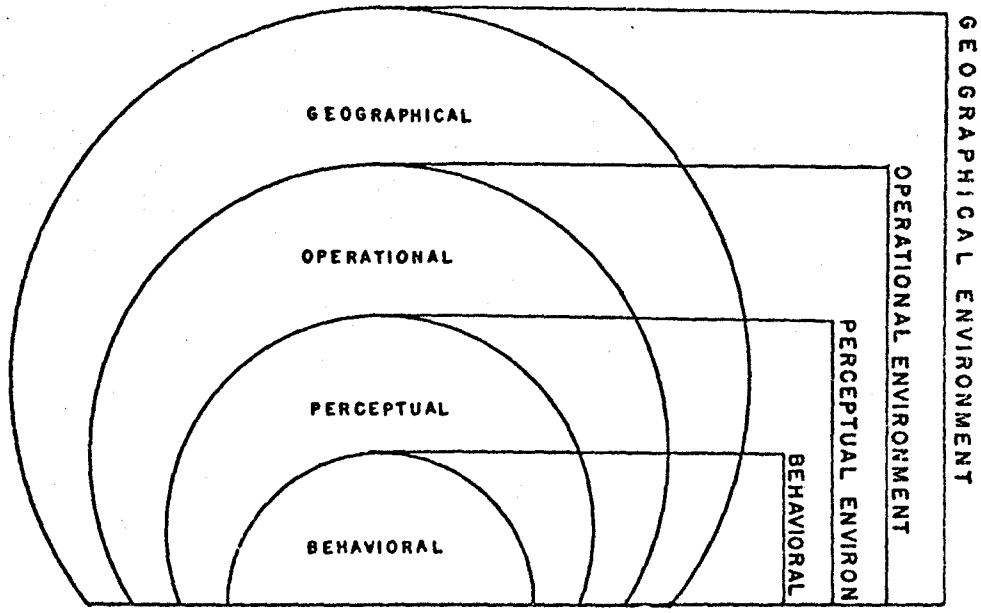


Figure 1. Nested Set of Environments from J. Sonnenfeld, 1969.

perceptual environment, whereas, he may not be cognizant of parts of the operational environment. The lowest or least inclusive level is the "behavioural environment" which consists of only the portion which elicits a response, or to which a response is directed from an individual or group.

Philip Roos[13] also suggests that scale can be used to study environmental behaviour. Like Saarinen and Sonnenfeld, he conceives human environments to be nested. The largest environment is the "range" of the individual, or the total area traversed. Within the range is the "territory", defined as the area which is defended; the "core area" which is preponderantly occupied; and the "home area" which is slept in.

Evidently scale is a useful means of separating the various environments. In the latter part of this paper I will also use scale to distinguish between two levels of human behaviour, those being "micro" and"macro" territorial behaviour.

---

13. Roos, P., "Jurisdiction: An Ecological Concept" Human Relations, 1968, 21, 75-84.

II DEFINITION OF TERRITORIALITY

1. Among Animals

Zoologists[14] were the first to deal with territoriality. From observation of animal groups....the primates in particular, a workable definition was formed. They conceived territory to be a place that was habitually used and defended by an animal or animal group. Ardrey[15] and Pitelka[16] both extend this definition, adding that territory is not merely a defended area, but also an exclusive area in which the proprietor enjoys undivided use of certain resources, e.g., food. This is rather rigid. Few territories can be treated as exclusive to one proprietor although the proprietor may use the existing resources better than any conspecifics.

Common to most investigations of territoriality among sub-humans was the realization that most territories were rarely discrete areas, but often overlapped with other territories, even among like species. It became evident that the strength of the proprietor to hold a territory varied,

---

14. Carpenter, C.R., "Territoriality". In "Behaviour and Evolution", eds. Roe, A., G.G. Simpson, New Haven, Conn. Yale Unv. Press, 1958.
15. Ardrey,R., "The Territorial Imperative," Dell Publishing Co., New York, 1966.
16. Pitelka, F.A., "Numbers, Breeding Schedule and Territoriality in Pectoral Sandpipers of Northern Alaska", Condor 61: 233-264, 1959.

reaching the lowest point near the overlapping area. However, towards the centre of the territory the proprietor gained strength and confidence (if such a state of mind is imaginable among sub-humans) to hold his/her territory. One could only conclude that territories, (at least among some higher animals,) consisted of both a core and periphery. The core was the "heartland" of the territory, the animal reacting most intensely with this area and less intensely towards the periphery.

2. Toward a Definition of Human Territoriality

Providing a workable definition of territory among humans, (although much can be borrowed from animal studies), is a more difficult task. David Stea[16] reminds us that since men are partial products of widespread cultural forces, the study of human territories is much more complex, indeed, than among animal groups. Let us be mindful that among sub-humans territory is defined by the area which is actively defended by its proprietor. In men, unlike animals, aggression has become highly socialized so we can't reliably use this form of overt behaviour as an index of territoriality. Break-ins, assault and wars are perhaps among the few situations in which humans physically defend a territory. This is not to say that men will tolerate intrusion of territory.

16. Stea, D., "Space, Territory and Human Movements", Landscape, Vol. 15, No.1., Autumn, 1965, pp.13-16.

In most cases, however, humans will defend territory by non-physical means, e.g., a verbal defense.

The definition of human territory is further complicated since men are capable of organization at many different levels, e.g., home life, business life, recreational life. As a result, interaction may occur in intimate, personal, or in very impersonal situations. As to just how men will conceptualize territory will vary under these diverging circumstances. For the most part, man will react very intensely if a toothbrush, bed, or even spouse in his/her possession is violated. The reaction will be considerably less intense if another seeks the use of something less personal, e.g., the use of a ball-point pen during lectures.

It is hardly a novel proposition that mankind has evolved into different cultural and ethnic strains, many of which treat territory differently. E.T. Hall[17] has used the term "proxemics" to describe this. Proxemics defines the various "interrelated observations and theories of man's use of space". In his book, the "Hidden Dimension", he contends that the Germans, the English, and the French have some very dissimilar attitudes toward space and territory. Clearly, a recognition of cultural forces is critical if one is to fully understand human spatial relations.

---

17. Hall, E.T., "The Hidden Dimension" Doubleday and Co., New York, 1966.

The last but not the least of considerations in the formulation of a definition of human territories is that of technical knowledge. Rapid advances in transportation and communication systems in particular, have imparted in man the ability to alter the traditional limits dictated for instance, by distance. Only in the last thirty years has a weekend hundreds of miles from home been feasible. This dramatic increase in range that a person may travel has definite implications in his/her conception of space.

It should be noted that the territorial concept can be extended. Such an extension is presented by Parr[18] in his concept of an orbit. He reasons that an orbit may contain two or more territories, i.e., the home, the office; but will also include the area in which the individual habitually or occassionally roams. The concept of orbit is similar to that of range, previously discussed by Roos.

It is clear that human territories cannot be defined exclusively by defense. It is equally clear that the nature and extent of human territories is conditioned by situational, cultural, and technical considerations. Because of this, the definition of human territories must be extended. Territory should be conceived as an attempt to control space including areas in which an individual or group either defends, lays claim to "own", or habituates.

---

18. Parr, A.E., "In Search of Theory" Arts and Architecture, Sept. 1965, 82, 14-16.

3. The Difficulty of Delineating Human Territories

Among animal populations territories are not usually physically delineated and only through observation of animal behaviour can the observer actually judge what area we may call a territory. The situation is complicated among human populations where often an array of artificial boundaries split up the land surface. The most obvious example is that of fences dividing up residential properties. It must be emphasized that although visible boundaries may often modify human behaviour, spatial behaviour is not explicable in terms of physical boundaries alone. This is reasonable. Boundaries are violated, fences are climbed. Although spatial behaviour, for the most part, is conducted through normative channels or desire lines, nevertheless, these movements are not necessarily co-incidental with formal boundaries, such as fences or hedges, which enclose a residential property. So it will often be misleading and frustrating for students of behavioural sciences to observe a myriad of bounded properties connected by paths and channels; then only to witness human behaviour which ignores the pathway and passes through the boundary as if it were non-existent. We need only peep through the kitchen window and watch the trail of school children trekking across the back yard and through the hedge or even the unhampered rapport of adults over the picket fence. Seemingly, there

are times when a physical boundary has nothing at all to do with a human territory. Doubly frustrating it will be when these same suburbans feud over a neighbour's garage which protrudes over one foot of another's property. Clearly, physical boundaries do not affect behaviour exclusively nor do boundaries necessarily enclose and define human territories.

III THE TERRITORIAL FUNCTION

1. What Function Does Territory Serve?

The function of animal territories, however manifold, is basically that of survival value. Ardrey[19] enumerates, suggesting that the territorial function includes, obtaining sufficient food, security from predators, selection of mates, and the rearing of offspring. Proshansky (et. al.)[20], add that generally territory helps preserve the various species by establishing appropriate ecological balances. In a similar vein, Hediger[21] maintains that territoriality insures propagation of the species by regulating density.

Among humans the function of territory is somewhat more complex. Although territory may offer security from outsiders and play an integral part in the rearing of children, it is felt that territory serves a more general function. Proshansky (et. al.)[22] believe that territorial behaviour is instrumental in the definition and organization of

---

19. Ardrey, R., "The Territorial Imperative", Dell Publishing Co., New York, 1966.
20. Proshansky, H.M., W.H. Ittelson, H.G. Rivlin, Eds. "Freedom of Choice & Behaviour in a Physical Setting" in Environmental Psychology pg. 173-183.
21. Hediger, H., "Wild Animals in Captivity", Butterworth, London, 1950.
22. Proshansky, W.M. W.H. Ittelson, H.G. Rivlin, Eds., Environmental Psychology

various role relationships among people. For instance, the father's place at the dinner table has traditionally been the head of the table. This re-inforces that the father is, in fact, the head of the household. Similarly, the mother will sit opposite the father, reaffirming her dominance from the other end of the table. Children will occupy chairs to the side of the table,....positions which are less dominant than those of their parents.

Territoriality may also contribute to the establishing and maintaining of a sense of personal identity. A child upon reaching a certain age may request that he/she be given his/her "own" room, or to extend our original analogy further, if a child breaks with the regular seating arrangement at the dinner table, he/she more than likely will be reprimanded and told to return to his/her "own" chair. It is evident that even chairs at the dinner table are closely linked with a sense of personal identity.

Lyman and Scott[23] emphasize that territory affords man the opportunity for idiosyncrasy and identity. Such sentiments have long found expression in adages such as, "a man's home is his castle" and "home sweet home". Lyman and Scott believe that an area which is habitually used by an

---

23. Lyman, S.M., M.B.Scott, "Territoriality: A Neglected Sociological Problem", Social Problems, XV, 1967, 236-249

individual or group, can through familiarity become a studio in which self-expression may occur without unnecessary fear of persecution, alienation, and the like. Such an area is referred to as a "free" territory[24]. What should be stressed, is that a free territory is not a vacant area which can easily be possessed. It is an area which upon occupation, offers the proprietor an opportunity to behave freely. A "free" territory, however, may be inaccessible to outsiders, e.g., strangers are regarded as trespassers if they intrude upon private property, and even guests in a strange home may feel ill at ease, denied the opportunity to behave freely. A street gang's turf or a neighbourhood bar may constitute a "free" territory for those who patronize it, but, to a stranger who unwittingly enters the forbidden area, it will be "off-limits". An intrusion of this kind would be met with hostility on the part of the in-group. In-group members might either ignore the intruder or, take more positive action, such as unfriendly gestures or verbal utterances, to hasten the departure of the unwanted one. A vagabond entering an equisite country club, or conversely, a well dressed man entering a gathering of vagabonds, might elicit this response. In-group members would feel that

---

24. A "free" territory, according to Lyman and Scott, is realized when boundary creation and enclosure occurs. If an outsider penetrates the boundary, the condition of enclosure is no longer satisfied and the territory ceases, in the conceptual sense, to be "free".

their privilege to behave freely has been threatened by an intrusion of their territory. In order to preserve this privilege, the intruder must necessarily be ignored or expelled.

In most cases, it seems that territoriality in humans is best defined as achieving and exerting control over a particular segment of space, however, this always seems instrumental in the achievement of a more primary goal. Proshansky (et.al.)[25], believes that the inner determinant of territorial behaviour is the individual's desire to maintain or achieve privacy. Achievement of this most basic goal, privacy, increases the range of options, and in so doing maximizes the freedom of choices for the individual in any given situation. Proshansky (et.al.) writes that "psychological privacy serves to maximize freedom of choice, to permit the individual to feel free to behave in a particular manner, or, to increase his range of options by removing certain classes of social constraints."

2. Is Territoriality Innate or Learned?

Although this issue tends to be tangential, taking the geographer into the realm of anthropology, it should be

---

25. Proshansky, H.M., W.H. Ittelson, H.G. Rivlin, Eds. "Freedom of Choice & Behaviour in a Physical Setting" in Environmental Psychology pg. 173-183.

noted that an understanding of the "innate versus culturally learned" issue, is of significance to geographers. For instance, if territoriality is innate, man will require a permanent domain of a specific size and quality, for his own long term welfare. As a result, only recently have planners considered territoriality, and the provision of adequate living space, e.g., green belts, in housing schemes. Moreover, if a person requires "social" or interactive" territories, in which he/she may enjoy a healthy amount of affiliative behaviour with his/her peers, some attempt must be made to build these features into the city. Although it is only recently that space has been treated as a resource, the relationships between physical space and social space is an important issue.

The issue, whether territoriality is innate or a cultural derivative is, indeed, complex. There is evidence to support the view that man's minimal requirement for territory is innate.[26] Virtually all human groups exhibit

---

26. Hypothetically, it is the minimal requirement of territory which is innate. Any quantity of quality of space, which is required over and above the minimal requirment is the product of culture. This minimal requirement of space can be likened to what Calhoun describes as "physiological space". "Physiological space" entails the space required for eating, sleeping, food gathering, and other functions, essential to man's survival. "Psychological space", or, the space required to lead a mentally healthy and rewarding life, is a by-product of culture.

territorial behaviour of one kind or another. Certainly, there are cultural differences in the perception of space, (particularly those pointed out by Hall[27]), however, it is incumbent that geographers understand that all men have definite spatial requirements. An architect would not ignore man's need for water. The architect would provide drinking fountains. Similarly, the planners and city-builders must not ignore man's territorial requirement. They must provide adequate living space.

Does man have an instinctual need for territory? Whenever this question arises, the work of Ardrey immediately comes to mind. He argues, that man, like many of his ancestors, has an inherent territorial drive. He writes that "(this) is scarcely a new thought,it is merely an ignored one. It has been pressed aside by our political antipathies, by our sexual preoccupations, by our romantic fallacies concerning the uniqueness of man, by our contemporary dedication to the myth that man is without instinct and a creature solely of his culture."[28] Ardrey continues his argument, attributing much of the pathology and alienation which per-

---

27. Hall, E.T. "The Hidden Dimension", Doubleday and Co., New York, 1966. Chapter. IX

28. Ardrey, R., "The Territorial Imperative", Dell Publishing Co., New York, 1966. pg. 94

vades among men to a "deterritorializing" process, which has found expression in housing problems, broken homes, crowding and the like. He reasons, if "we seek to repair (man's) dignity and responsibility as a human being, should we not first search for means of restoring his dignity and responsibility as a proprietor."[29]

Although the field is divided as to whether man is truly a territorial animal or not, Ardrey presents a convincing argument. "If we behave as we do in our attachment for property because we have been taught to, because our culture and our social mechanisms demand it of us, then we deal with nothing fundamental. What is learned may be unlearned, and we may assume that man will adjust himself to collective existence or to the lonely crowd. But if, in sharp contrast, we deal with an innate behaviour pattern, an open instinct, an inward biological demand placed in our nature by the selective necessities of our evolutionary history, then we deal with the changeless. And we hold in our hand a secret key: If lost, it will leave locked and starved and frustrated a vital portion of our nature, but if used, it may open human potentials which today we cannot glimpse."[30]

---

29. Ardrey, R., "The Territorial Imperative" pg. 95

30. Ardrey, R., op.cit., pg. 95

Although Ardrey contends that the value of territory is twofold: 1. to reinforce the pair bond, insuring that offspring will be cared for, and 2. to enhance the powers of the male, (in matters of defence for instance,) harnassing energy which was otherwise unavailable to the family; this dual value of territory is most applicable in studies of sub-humans. . In humans, Ardrey's best example of what he has called the "territorial imperative", is illustrated by the declining productivity of the Russian communal agricultural system. "Private plots occupy about 3 percent of all Russian cultivated land, yet they produce almost half of all vegetable consumed, almost half of all milk and meat, three quarters of all eggs, and two thirds of that staff of Russian life, potatoes. After almost half a century the experiment with sceintific socialism despite all massacres, despite education and propaganda and appeals to patriotism, despite a police power and a political power ample, one would presume, to effect the total social conditioning of any being within its grasp, finds itself today at the mercy of an evolutionary fact of life: that man is a territorial animal."[31]

---

31. Ardrey, R., "The Territorial Imperative" Dell Publishing Co., New York, 1966, pg. 107

Some believe that territory is not instinctual in man, and if it ever was, the influence of culture has so far removed man from his primeval drive to possess and defend an area, that he may no longer be considered a territorial animal. Yet if cultural processes are responsible for the universal tendency of men to personalize space and to stake out territories, how might we explain the sheer reality, that virtually all primitive human groups were also "land-owning" groups?

Julian H. Steward "brought together observations of twenty-four different hunting peoples so primitive that their ways differ little in all probability, from the ways of paleolithic man. Their homes were isolated and far-spread ....in Philipine and Congo forests, in Tasmania and Tierra del Fuego, in Canada's MacKenzie Basin, in the Indian Ocean's Andaman Islands, in Southwestern Africa's Kalahari Desert. So remote were they from each other that there seemed small likelihood that any one could have learned its ways from others. Yet all formed social bands occupying exclusive permanent domains."[32]

Again Ardrey delivers forcefully. He reasons that territoriality is as innate among men as among lower animals.

---

32. Ardrey, R., "The Territorial Imperative" pg. 4

(A) "dog barking at you from behind his master's fence acts for a motive indistinguishable from that of his master when the fence was built."[33]

Among modern men, private property does not yield more utility than communal property yet, it is at the very foundation of Western thinking, and the laws regarding private ownerships of space are rigorously enforced to this day. If man claimed ownership to an area because he was sapient, wouldn't he favour a communal ownership of land? In so doing, he might derive a great deal more utility, than from private ownership. It is evident that territoriality is not governed by human reason. Territorial behaviour is largely a process which is involuntary. It has pervaded among men since our earliest days, and although culture tempers mans territorial requirements, it has not created a territorial need within men. Culture has modified man's territorial nature as it has modified and restrained his sexual desires, but, culture alone did not spawn private property or any other expression of human territoriality.

---

33. Ardrey, R., "The Territorial Imperative" Dell Publishing Co., New York, 1966, pg. 5

IV DOMINANCE AND TERRITORY

1. Dominance

An important aspect in the study of territoriality is that of dominance, particularly among members or groups occupying a common area. Where interaction is likely so is the likelihood that one member or party will dominate over the rest. Seldom if ever, will there arise a situa-tionin which members treat space in a purely egalitarian fashion. This was originally noted in studies of animal populations[34] in which, almost invariably, dominance among certain members was observed. The "dominance hierarchy" which was displayed could be best described as a power structure in which animals at the top controlled more resources (e.g., space) and activities than animals near the bottom. Although the term was originally coined to better understand the power structure of monkey colonies, since then it has found widespread application in the study of human groups.

Esser, (et.al.),[35]..., in a study of patients on a research ward noted that some patients were highly dominant...the leaders and initiators, while others were low in

---

34. Leyhausen, P., "Dominance and Territoriality as Complemented in Mammalian Social Structure", paper presented at the A.A.A.S., in Dallas, Texas, 1968,

35. Esser, et.al..."Territoriality of Patients on a Research Ward. Pt.III Environmental Psych." Recent Advances in Biological Psychiatry, (see Biblio.)

dominance. He carefully observed the patterns of interaction using various indices of spatial behaviour and concluded that only one half of the patients made use of the total available space. Even more enlightening, he found that three quarters of the patients occupied specific territories; most of them exhibited aggressive actions when their territory was intruded upon.

The most interesting of his conclusions, however, was that patients whose position in the dominance hierarchy was uncertain, were more likely to become involved in aggressive incidents when territory was violated, than patients whose position in the dominance hierarchy was firmly established. Esser could find no obvious correlation between aggression and position in the dominance hierarchy, be it high or low; yet he did find that the likelihood of aggression was increased if the patients position in the dominance hierarchy was uncertain.

Sommer,[36] bearing in mind the findings of Altman and Haythorn, (see biblio) believes that territoriality and dominance are two ways of maintaining social order within the group. When one cannot operate the other will. For instance, among dyads of sailors compatible in dominance, (one

---

36. Sommer, R., "Personal Space - The Behavioural Basis of Design", Englewood Cliffs, N.J. : Prentice-Hall, Inc., 1969.

high and the other low), dominance behaviour is operative, however, among dyads of sailors incompatible in dominance, rigid territorial behaviour is operative.

2. Leadership

Sommer[37] also distinguishes between dominance - one individual intimidating or threatening another - and leadership - one individual directing the group. Particularly, among human groups, leadership is a better word, inferring some degree of consensus and agreement. In fact, it is rarely through threat or display of force that one individual becomes dominant over others. Usually through cognitive mental processes, humans select and of their own volition follow an individual, who exhibits leadership qualities. It has been noticed, however, that in cases where humans have no a priori knowledge of which individual is to lead, the spatial positions of certain individuals encouraged others to ascribe qualities of leadership, to these strategically positioned individuals. For instance, Strodtbeck and Hook[38] found that jurors gathered around a rectangular table, tended to elect the person who was seated at the end of the table to the position of foreman. This ten-

---

37. Sommer, R., "Personal Space" pg. 20

38. Strodtbeck, F.L., and Hook, L.H., - "Social Dimensions of a Twelve Man Jury Table," Sociometry XXIV 1961, 399-415 - in Sommers - Personal Space, pg. 20-21.

dency among jurors was attributed to the propriety of the chairman being at the head of the table as well as to avoid the unpleasantness of making the person at the head of the table feel rejected if someone else was elected chairman.

V INTRUSION AND DEFENSE

1. Violation of Spacing

Heini Hediger[39] has researched the subject of territorial intrusion and defence among captive animals. Under normal conditions, e.g., animal behaviour conducted under non-stress conditions, Hediger identifies "individual distance", or the minimum distance maintained between con-specifics, and "social distance", the maximum distance that an animal will venture away from the group. Both "individual" and "social distance" are spatial concepts and only operative among conspecifics. Under abnormal conditions, when the regular spacing pattern has been broken, e.g., under threatening conditions, a predator being near at hand, two different distances become operative. "Flight distance" is the point at which an animal may tolerate an intruder, however, violating this distance the animal will flee. (In essence, an open confrontation is averted through avoidance behaviour). If a situation arises where an animal is confronted at close quarters, and flight is not possible, another distance is realized. "Critical" or "fight distance" is the point at which an animal will no longer tolerate intrusion and will begin to actively defend the territory. Hediger illustrates

---

39. Hediger, H., "Wild Animals in Captivity", Butterworth, London, 1950.

this by using the example of the lion tamer who must be aware of the "fight distance" of the stalking animal. Once he steps away from the lion, out of the "fight distance", the lion will cease to stalk, however, penetrating this invisible boundary the animal will resume stalking.

Robert Sommer maintains, "the best way to learn the location of invisible boundaries is to keep walking until somebody complains."[40] This statement probably best describes the trial and error process that humans undergo in the acquisition of a "territorial sense". Glen McBride points out that "each human acquires a full knowledge of the spacing rules of his culture, yet most of these appear to be learned without the use of man's unique gift of speech".[41] Ardrey[42] notes that this learning process is well retained over time. He cites the observations of Hall, Washburn, and Devore, who in 2000 hours of baboon troop observation never once witnessed a territorial conflict, despite the overlap of many of these territories. Apparently the troops remained exclusive through avoidance behaviour. Similarly,

---

40. Sommer, R., "Personal Space - The Behavioural Basis of Design", Englewood Cliffs, N.J.: Prentice: Hall, Inc., 1969. pg. 26
41. McBride, G., "Theories of Animal Spacing: The Role of Flight, Fight and Social Distance", paper presented at the A.A.A.S., in Dallas, Texas, 1968. pg. 65
42. Ardrey, R., "The Territorial Imperative" Dell Publishing Co., New York., 1966. pg. 228

territorial conflict among humans is rare. For the most part, if two individuals or groups are knowledgeable of each others role and dominance, territorial disputes are seldom.[43] This only serves to emphasize Esser's most valuable contribution, that the degree of certainty with which one regards another's position in the dominance hierarchy, is the trigger mechanism of territorial conflict. If we are uncertain of the extent of another's territory, we may deliberately intrude, so that we may become more knowledgeable. Upon learning the limit, however, we rarely enfringe a second time, some sort of avoidance behaviour having set in. Ardrey attributes this avoidance behaviour to a mutual recognition of another's territory. In lieu of this he writes; (although) some mysterious flow of energy and resolve invests a proprietor on <u>home grounds</u>, (likewise), so marked is the inhibition lying on the intruder, so evident his sense of trespass, we may wonder if in all territorial species there does not exist, more profound than simple learning, some universal recognition of territorial rights."[44] Evidently, the proprietor has an advantage over the intruder. The influence of home grounds has been the subject of con-

---

43. Esser, (et.al), A.H., A.S. Chamberlain, E,D. Chapple, and N.S. Kline, "Territoriality of Patients on a Research Ward," <u>Recent Advances in Biological Psychiatry</u>, ed. J.Wortis, Vol.8 (New York: Plenum Press, 1965).

44. Ardrey, R., pg. 3

siderable research.[45] One study ascertained the dominance order of twenty eight possible pairs of monkeys over a seven day period. Later when the animals were tested by competing for a piece of food both as host in their own cage and a guest in another's cage, it was found that the originally dominant monkey obtained in excess of ninety-six percent of the food as host, yet only sixty-two percent as guest. At the human level, hockey teams and many other sports teams enjoy a comparative advantage when playing at home where knowledge of the playing surface is intimate and fan support boosts morale. Similarly, Allied Strategists during the Second World War noted that the resistance of the enemy stiffened as the Germans were forced across the Rhine and were now defending their native soil.

Among humans, Lyman & Scott[46] distinguish three types of territorial encroachment. Violation of a territory occurs when another party exercises unwarranted use of an area, The violators either repulse or circumvent those who would deny them access. Invasion occurs when those not entitled to use a territory, cross the boundaries, halt, interrupt and/or change the social meaning of the territory. Contamination occurs when a territory is rendered impure with

---

45. Sommer, R., "Personal Space - The Behavioural Basis of Design"., pg. 14

46. Lyman, S.M., and Scott, M.B., "Territoriality: A Neglected Sociological Problem" Social Problems., XV., 1967, 236-249

respect to its definition and useage. It should be noted that a time continuum exists between violation, invasion and contamination. Violation, in this sense, is the first step, invasion and contamination might possibly follow. To illustrate this progression, we might envision an army invading a neighbouring country of different culture. The first step, violation, will occur when the territorial boundary is crossed and the invading army defeats the native army. The second step, invasion, would be realized when the flag of the victorious country is raised and the sovereign possession of the newly invaded lands changes hands. Military strategy might change to political and social strategy at some later date. However, only if occupation by the foreign country becomes permanent, the constitution and culture of the invaded country changing hands or being modified, could we consider the final process, contamination, to have occured.

2. Reaction to Encroachment

Lyman and Scott[47] hypothesize three types of reactions that may be elicited from the proprietor(s) when spatial invasion occurs. Turf defense, particularly noticeable among street gangs, (hence, the name turf) occurs when the proprietor(s) discriminate as to who the intruder is. This

---

47. Lyman,S.M., and Scott, M.B., "Territoriality: A Neglected Sociological Problem" Social Problems., XV., 1967, pg. 237-249

screening process will allow some individuals to enter but restrict others from entering. Insulation, occurs when the proprietor(s) places some sort of barrier between themselves and the potential invader. The design of libraries is usually conducive to insulation, e.g., desks facing corners or portable partitions erected between desks. Linguistic collusion is another form of defense. In this process the territorial integrity of the group is reaffirmed by exaggerated linguistic collusion in order to confuse the intruder. For instance, individuals of a minority ethnic culture may feel that a stranger is too close for comfort. By exaggerated gestures, by speaking over - emphatically, they will set the intruder apart, and more than likely hasten his departure.

VI TYPOLOGY: MICRO AND MACRO TERRITORIES

The typology I have selected, although it may lack sophistication, makes a clear distinction between two levels of territoriality. On the one hand, micro-territories include all personal space, (what might be referred to as a "space cushion", or,"buffer zone", by the layman.) It might be conceived as a portable shell or what Horowitz, et. al.,[48] have described as an internal projection of the space immediately surrounding the body. The prime characteristics of micro-territories are small scale and a tendency towards portability. Small scale emphasizes that only the immediate area within detection of the human senses (especially sight and touch) need be included. The tendency towards portability emphasizes that since human activities are generally distributed over space, micro-territories will tend to accompany an individual during locomotion. This, becomes especially noticeable when a (spatial) position becomes fixed for a given period of time.

Macro-territories consist of larger territorial units, (what Stea[49] refers to as a territorial complex, the

---

48. Horowitz, M.J., D.F. Duff, L.O. Stratton, "Personal Space and the Body-Buffer Zone", Archives of General Psychiatry, Dec, 1964. II, 651-656

49. Stea, D., "Space, Territory and Human Movements" Landscape, Vol. 15., No. 1, Autumn, 1965 pp. 13-16.

aggregate of smaller territorial units.) Macro-territories are characterized by large scale (space which may be too distant to stimulate the human senses,) and a tendency towards a fixed geographical location. Although the macro-territory will more than likely be extended throughout a human life time, it is rarely picked up and relocated geographically. There are exceptions, of course, e.g., a family who moves from Toronto to Vancouver has also moved to macro-territory. The father and mother will find new jobs and social lives, the children attending new schools, etc. Nevertheless, the movement of the macro-territory is much less frequent than micro-territories which may change geography many times a day.

1. Micro-Territories

Lyman and Scott[50] distinguish "body territory as the space encompassed by, and the anatomical space of, the body. This is probably the smallest conceivable unit of territory, privacy being the most important consideration in this case. The body territory might be defined spatially using Hall's[51] classification of intimate distance, which includes a separation of not more than eighteen inches be-

---

50. Lyman, S.M., M.B.Scott, "Territoriality: A Neglected Sociological Problem", Social Problems, XV, 1967 236-249

51. Hall, E.T., "The Hidden Dimension", Doubleday and Co., New York, 1966.

tween interactants. What has been investigated as personal space (Sommer,[52] Little,[53] and Horowitz, et.al.,[54]) the area immediately surrounding the individual, is also a micro-territory. It is this part of micro-territorial studies which I shall examine.

(a) Personal Space

Although Hediger's schema for the classification of animal distances (flight & fight distances under abnormal conditions) cannot be directly applied to humans, many of his concepts can be modified when dealing with human spatial behaviour. Horowitz et.al.,[55] in a study of schizophrenic and non-schizophrenic patients, distinguishes a personal "aura" or what he calls a body buffer zone maintained by individuals, comparable to individual distance of animals. Horowitz discovered that humans tend to keep a characteristic distance between themselves and other people and inanimate objects. He observed that this "body buffer zone" is portable and extends further directly in front of the person

---

52. Sommer, R., "Personal Space - The Behavioural Basis of Design"., Englewood Cliffs, N.J.

53. Little, K.B., "Personal Space" Journal of Experimental and Social Psychology, 1965, I, 237-247.

54. Horowitz, et.al.,"Personal Space and the Body-Buffer Zone," Archives of General Psychiatry, Dec, 1964 II, 651-656

55. Horowitz, et.al., op.cit.,

than to the side or behind. Maximum extension of the buffer zone occurred when threatening objects confronted the subjections, (humans as opposed from non-threatening inanimate objects.) Schizophrenics also maintained a larger buffer zone than non-schizophrenics. Horowitz, et. al., concluded that the size, shape and penetrability of the buffer zone varied according to the interpersonal situation and the internal conditions of the subject.

Little[56] has also researched the perception of interaction distances among humans. From his investigations he concludes that: 1. perceived interaction distances in a dyad (two person confrontation) are markedly influenced by the degree of acquaintance of the two members, separating distances being progressively greater among Friends, Acquaintances, and Strangers; 2. the setting in which the meeting takes place will influence perceived interaction distances, especially for females. For instance enclosed waiting rooms encouraged more distant interaction than open air settings.

Altman and Haythorn[57] in a study of pairs of isolated sailors discovered that as the period of confinement

---

56. Little, K.B., "Personal Space", Journal of Experimental and Social Psychology,

57. Altman, I., W.W. Haythorn, "The Ecology of Isolated Groups", Behavioural Science, 1967, XII, ppg. 169-182

increased, individuals gradually withdrew from another or "cocooned".[58] It became evident that territorial behaviour intensified, isolates confining their activities to the use of particular chairs, sides of tables, beds, etc. Strict adherence to territorial rights was particularly noticeable among sailors who were incompatible in terms of dominance, (either both high or low in dominance). The order in which certain objects became regarded as part of an isolates territory seemed to be very personal objects first, (e.g., bed,) with less personal objects, (e.g., chairs and table positions), becoming a part of the isolates territory next. Objects which could be moved about were not regarded strongly as a part of an isolates territory at first. Only after the period of confinement increased were these movable objects drawn into the isolates territorial projection.

2. Macro-Territories

Macro territories are larger territorial units, a part and parcel of concepts such as home range, or orbit, presented by Parr[59] and discussed earlier in the paper, (p. 11). Macro-territories can also be conceived as a ter-

---

58. Territoriality was operationally defined as mutually exclusive use of certain objects or an attempt to control the use of the object.

59. Parr, A.E., "In Search of Theory" Arts and Architecture, Sept. 1965, 82, 14-16.

ritories can also be conceived as a territorial unit which is common to a group sharing a particular area. Studies of macro-territories are extensive particularly at the neighbourhood level. Gans[60] and Lee[61] have contributed much to an understanding of the neighbourhood. Glass[62] has even proposed a definition of neighbourhood as a "territorial group, the members of which meet on a common ground within their own area for primary social contacts." The focus of this section of the paper, however is the importance of two variables, social class and stage in the life cycle, in determining the nature of territory at the macro-level.

(a) Territoriality and Social Class

Melvin M. Webber[63] has completed some research concerning the differences in territorial types between highly mobile and immobile people. Webber illustrates this

---

60. Gans, Herbert J., "Urban Villagers" New York, Free Press of Glencoe, 1962

61. Lee, T., "Urban Neighbourhood as a Socio-Spatial Schema" Human Relations, 1968, 21, 241-268 Prosh, et al.

62. Glass, R., "The Social Background of a Plan: A Study of Middlesbrough" London: Routledge and Kegan Paul, 1948.

63. Webber, M.M. and C.M. Webber, "Culture, Territoriality and the Elastic Mile", Proceedings of R.S.A., Vol. 13, 1964, pp. 59-64

by analyzing two groups, the intellectual elites (the cosmopolites), and the working class (the localites); the latter being much less mobile than the former. He suggests that a continuum exists from either extreme (cosmopolite to localite), with most attitudes of the middle classes toward space and territory, falling somewhere in between. The cosmopolites, Webber contends, exercise mobility to interact freely with spatially dispersed peers who might be as far away as another continent. Consequently, the cosmopolite must be able to adjust from one role to another as rapidly as he changes location in space. The "life spaces" of these highly specialized and professional people are characterized as multi-dimensional and supra-territorial. Whereas the socio-spatial behaviour of the cosmopolite is flexible, the localite or "working man" exhibits a more rigid type of behaviour. The localite conducts his social relations through very close-knit networks, and logically enough, the primary social unit of the localite is the extended family. Since usually all friends and most kin are within walking distance, the territory of the localite is uni-dimensional. However, within this neighbourhood or single dimension, the life of the localite is conducted intensely. Webber writes that "the street....thus becomes an extension of the house, itself a place where people live and where much of the social interaction takes place (...) in striking contrast to middle

class groups, social organization (encompassing both family and friends) is territorially coterminus with neighbourhood place. Just outside the few blocks that surround the resident's apartment lies foreign territory...strangers treated with suspicion and hostility.

It is evident that the human perceptions of distance, space, and territory differ from one another, mindful of the behavioural differences between the intellectual elite and the working class members, we might conclude that personalized perceptions of space are largely responsible for the varying propensities of people to travel, to relocate households, etc. Such variations in spatial perceptions could be incorporated into household location, and traffic models, to better understand the operations of the city. This would be worthwhile investigating.

(b) Territoriality and Stage in the Life Cycle

Among the existing literature at the macro-territorial level, Barker and Barker[64] incorporated the concept of territorial range into their study. Using data collected in Midwest, Kansas and Yoredale, Yorkshire, community spatial behaviour was assessed in terms of the existing physical

---

64. Barker, R.G., L.S. Barker " The Psychological Ecology of Old People in Midwest, Kansas and Yoredale, Yorkshire," Journal of Gerontology Vol. 16., No. 2. (April 1961) pp. 144-149

setting. For senior citizens, for instance, activities were restricted to sidewalks, park benches old aged homes, certain shops, etc. It was found that in these particular settings, the older folk would conduct the bulk of their daily activities. By recording the movements of these older people, the Barkers were able to discern their territorial range. Similar monitoring procedures for the spatial activities of younger age groups enabled the researchers to observe the changes in territorial range throughout the varying stages of the life cycle.

TABLE A From Perception of Environment

POPULATION (P), TERRITORIAL RANGE (TR), AND TERRITORIAL INDEX (TI) OF AGE GROUPS IN MIDWEST AND YOREDALE.

Age Group	Midwest			Yoredale		
	P	TR	TI	P	TR	TI
Aged (65 years and over).....	162	462	80	178	332	67
Adult (18–64 years).....	375	578	99	770	491	99
Adolescent (12–17 years).....	50	464	80	107	329	67
Older School (9–11 years).....	26	389	67	51	274	55
Younger School (6–8 years)....	28	359	62	72	251	51
Preschool (2–5 years).....	50	363	63	81	214	43
Infant (under 2 years).....	24	329	57	41	125	25
All ages.....	715	579	100	1300	494	100

Although differences were noted between the territorial range of similar age groups of Midwest and Yoredale, a similar pattern of spatial behaviour emerged during the "lives"[65] of the residents of both centres. Apparently, territorial range increased from infancy through adolescence until the age of life associated with retirement. From this point on, the territorial range of the "aged" tapered off, the degree of mobility having somewhat decreased.

65. "lives" - The study did not run longitudinally over the entire course of a lifetime. For simplicity's sake, I use the word, "lives".

VII INTERACTION DISTANCE EQUATION: A HYPOTHETICAL CONSTRUCT.

From the work of Horowitz,et.al.,[66] Little,[67] and Sommer[68], I have adopted specific ideas in order to construct an "interaction distance" equation. To the best of my knowledge, a similar approach has not been devised. Although I can do little more than summarize the basic components of this equation, I am certain that further development might lend credence to my proposal. The equation is essentially a model, and may be conceived to represent the forces which determine the distance at which two individuals interact. (Perhaps with some modifications, the model might represent the forces at play for group interaction distance, however, only individual interaction will be considered in this paper).

1. The Model

For purposes of definition, a "confrontation" is a meeting of two individuals in a known space. The three

---

66. Horowitz, M.J., D.F. Duff, L.O. Stratton, "Personal Space and the Body-Buffer Zone" Archives of General Psychiatry, Dec, 1964 11, 651-656
67. Little, K.B., "Personal Space", Journal of Experimental and Social Psychology, 1965,I,237-247.
68. Sommer,R., "Personal Space: The Behavioural Basis of Design"., Englewood Cliffs, N.J., Prentice-Hall, Inc., 1969.

principal components of any confrontation are; 1. the "subject", 2. the "object" and 3. the "situation" . (It is with some reservation that I use the terms subject and object, to represent our two interacting individuals. Unfortunately the words, subject and object carry connotations that one acts upon the other exclusively, or that one is subordinate to the other. This is not the case. We must conceive of both subject and object as fundamental in the determination of the interaction distance. Although in the course of a confrontation, the subject and object may change back and forth, depending on which individual is currentlytalking to, or acting upon the other, we shall consider the "subject" and "object" merely as terms which distinguish one individual from another.)

The "situation" shall be conceived as all conditions which are exogenous to the subject and object. This will include such things as the influences of the physical setting and the relevant social parameters of the confrontation. It is conceivable that only conditions of the situation which are important in determining the interaction distance, need be considered. Those conditions which, in Kurt Lewin's terminology, have existence and contemporaneity.[69]

---

69. Lewin, K., "Field Theory in Social Sciences" eds. Dorwin Cartwright, Harper and Row, 1951.

What must be stressed is that some of the prevailing conditions of the "situation", which are initially external to both the subject and object, will be perceived by either or both subject and object, and then become internalized. Once internalized by either individual, these conditions are manifested by variations in interaction distance. For instance, an important condition of the situation, such as a night time power "black-out" , will be internalized by two approaching individuals on the street, such that communication of some sort will be induced, and perhaps close interaction encouraged. This phenomenon has been noted particularly in the work of Sommer,[70] who notes that some settings are sociopetal, (encourage interaction), while others are sociofugal, (discourage interaction.)

Both subject and object enter the confrontation with a current "state of mind". The current "state of mind" consists of what Horowitz[71] considers to be all internal conditions. This includes a summing of the current ego, the drive states, the psychologic and cultural history of the

---

70. Sommer, R., "Personal Space: The Behavioural Basis of Design"., Englewood Cliffs, N.J., Prentice-Hall, Inc., 1969.

71. Horowitz, M.J., D.F.Duff, L.O. Stratton, "Personal Space and the Body-Buffer Zone" Archives of General Psychiatry, Dec, 1964 11, 651-656

individuals. The current states of mind for subject and the object, may be considered independent of one another at the outset of the confrontation.

According to Littles observations,[72] interaction distance varies in a manner, somewhat proportionate to the degree of acquaintance between the subject and object. For example, the spatial interaction of friends is closer than that of strangers. In order to incorporate this tendency into the equation, I have introduced a parameter, which incorporates the degree of acquaintance between the subject and object. This may be conceived as an established relationship between subject and object, falling into the categories of: 1. intimates, 2. friends, 3. acquaintances, or 4. strangers.

Both subject and object enter the confrontation with a current state of mind, "state x" for the subject; "state y" for the object. Relevant parts of the situation, Z, are internalized by the subject and the object. Hence, state x becomes "state xz"; likewise state y becomes "state yz". The category designating the degree of acquaintance between subject and object is "b". The general form of the equation then takes on this appearance:

$$(\text{state } xz \cdot \text{state } yz)b = \text{interaction distance}$$

---

72. Little, K.B., "Personal Space", Journal of Experimental and Social Psychology, 1965, 1, 237-247

2. Problems of Calibration

The most difficult part of setting up the equation lies in summing all internal conditions of the "subject" and "object", which constitute "state x" and "state y". No reliable technique exists by which we may derive values for current "ego", (a term which in itself defies clear definition), drive states, psychologic, and cultural history. All that we can do is intuitively argue whether the "subject" and "object" are internally responsive or unresponsive to interaction at a given time.

Our task might be greatly simplified if we knew that one of the components of the current state of mind, was extremely active. For instance, if we knew that the current state of mind was dominated by the drive state component, one of sexual arousal; or the current state of mind was dominated by the psychologic history of the individual, one of schizophrenia; then we might be better qualified to designate the current state of mind as responsive or unresponsive to close interactions.

The prevailing conditions of the "situation" which either encourage or discourage close interactions might be classified as either positive or negative influences. For example, sexual partners might interact more readily if lights are dim, music is soft, and all other conditons of the situation are romantically inclined. (Of course, no per-

son of integrity would manipulate the prevailing conditions of "situation" to serve his/her desires, under these circumstances.)

The actual measurement of "interaction distance" might be classified using categories similar to those described by Hall[73]. These categories ranged from intimate, personal, social, and public distances, each having a close and far phase.

3. The Utility of Interaction Distance Equation

The usefulness of the "interaction distance" equation is twofold. Firstly, it would assist behavioural scientists to understand the physical or spatial relationships between the variables on the left side of the equation ("state of mind", the degree of acquaintance, and the "situation"), and the variable on the right side, ("interaction distance"). For instance, the strength of conditions of "situation" may dominate over the degree of acquaintance when individuals confront each other under conditons of duress, e.g., concerned party may confront a stranger at close range, and solicit his/her help at the scene of an

---

73. Hall, E.T., "The Hidden Dimension" Doubleday and Co., New York, 1966.

accident.

We should also remember that there is an important relationship (on the left side of the equation alone), between "situation" and the "state of mind" of the individual. Certain conditions of the "situation" become internalized, affecting change in the "state of mind". In turn, fluctuations in the "state of mind" affect change in the "interaction distance". Evidently "situation" affects "interaction distance" by initially eliciting some change in the "state of mind" of the individual.

Secondly, an understanding of "interaction distances", might improve the methods employed by those who design or manipulate space to serve a specified purpose. For example, psychologists have intuitively manipulated physical settings to suit their own purposes, however, this is a rather trial and error process. There are no established principles, which deal with the relationships between an individual's current "state of mind", his/her inter personal relations, the physical setting, and interaction distance.

Thirdly, sustained urban growth has occurred in large cities where the density of persons per unit of space is at its highest. As a result, the frequency of interactions, or confrontations, between persons is also at its highest. If this trend persists into the future, it would be helpful to understand the relationship between environmental conditions and the distances which people maintain between themselves during interactions. In this sense, the interaction distance model helps explain the physical nature of territories.

VIII THE RELEVANCE OF FIELD THEORY

In this concluding part of the paper, it is my intention to show the relevance of field theory to geographers. Briefly summarized, the advantages of using the field theory method to represent spatial behaviour are: 1. the use of a constructive rather than classificatory method, 2. an interest in the dynamic aspects of events, 3. an attempt to synthesize various behavioural relations into an integrated whole, and 4. mathematical representation of the field is possible.[74] The first section deals with the characteristics of the "field", primarily the "life space" concept. The second section applies the field theory to spatial behaviour, pivoting on the notion of physical "space of free movement."

1. Characteristics of the "Field": The Life Space

The field theory approach was developed by Kurt Lewin throughout the thirties and forties. Essentially, he conceived a field to represent all behaviour, (including action, thinking, wishing, striving, valuing, achieving, etc.) Any particular behaviour could be expressed quantitatively, as a change of some state of the field in a given

---

74. Lewin, K., "Field Theory in Social Sciences" ed. Dorwin Cartwright, Harper and Row, 1951.

unit of time, such that:

$$\text{Behaviour} = \frac{dx}{dt} \begin{matrix}\text{(change in state of field)} \\ \text{(change in time)}\end{matrix}$$

As a psychologist, Lewin believed that the "field" in which he must deal was the "life space". The "life space" consists of the person and the psychological environment as it exists for him/her. By knowing the life space of an individual, one would also be capable of explaining and possibly predicting behavioural patterns. Since behaviour is determined by the life space, it is imperative that we understand the characteristics of the life space. The three principal characteristics of the life space are: 1. the life space includes only those facts which have existence to the individual; 2. everything within the life space is interdependent with something else contained within the life space; and 3. only determinants of behaviour which are contemporary, (those factors which elicit or affectresponses in some way), are properties of the life space.

That the life space should include only those factors that have existence emphasizes that only established needs, goals, cognitive structure, and the like, are to be considered in the life space. This excludes all factors which do not have existence for the individual. For in-

stance, political and social events far removed from the individual are not determinants of behaviour. This enables the researcher to exclude a great many irrelevent events. The greatest difficulty lies in drawing the line between those factors which do and those which do not have existence.[75]

That all conditions within the life space should be interdependent, is a basic assertion of field theory. Nothing satisfying the criterion of existence can be completely independent of anything else in the same life space. Conceptually, Lewin handled interdependent facts

---

75. Toffler, A., "Future Shock" Random House, New York, 1970. pg. 16.
In lieu of what Toffler writes this task could prove to be astronomical. He believes that as technical improvements induce world wide interaction (primarily increasing communications, and the diffusion of people and ideas,) past events such as social, political, genetic changes etc., ..., which affected only a handful of people in antiguity will be transplanted in different parts of the globe in modernity. Toffler conceives that an immense backlog of past events which may have been geographically far removed from our forefathers, hence, having no effect on our ancestors behaviour, will indeed affect our behaviour in an age where communication and interaction is well advanced. Although the world is hardly a "global village" of instantaneous interaction, Tofflers point is well taken if it reaffirms the vast number of factors which lead up to the current "life space" which an individual occupies.

using the mathematical concept of space[76] and the dynamic concepts of tension and force[77].

Only determinants of behaviour at a given time are the properties of the field at the same time, is the third characteristic of contemporaneity. Although the life space endures through time and is modified by past events, only the contemporaneous system can have effects at the present time. This is reasonable. There is no direct causal relation between past and present, only the events of the past which become a part of the current state of mind, can affect behaviour. Similarly future events (unless one is predicting or anticipating) cannot become a part of the

---

76. Mathematical space was used by Lewin. It is a non-quantitative geometry, (topology), which can be used satisfactorily in dealing with problems of structure and position in a psychological field. Mathematical space permits representation of the position inside or outside of a certain region, the relations between parts and whole and a great number of structural characteristics. More specific concepts (direction, distance, and force) can be measured using "hodological space" which is a more precise geometry.

77. Tension refers to the state of one system relative to the state of surrounding systems. The purpose of the construct, tension, is to include a tendency for change in the direction of equalization of the state of neighbouring systems.
Force refers to a constellation of psychological forces which determine the direction and strength of the tendency to change for a given point of the life space. For instance, different segments of the life space will be assigned valences, force being present between segments of unequal valence.

current state of mind, hence, a part of the life space.

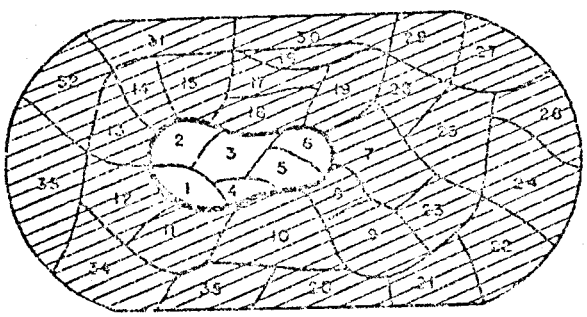
Lewin contends that certain parts of the physical and social world affect the life space at a given time. These are parts of the physical and social world, which have existence for the individual. (This bears a marked resemblance to Sonnenfelds definition of the operational environment, see page 5). It is these relevent parts of the physical and social world, which determine the boundary zone of the life space. Essentially, the boundary zone separates those factors which are, and those factors which are not a part of life space at a given time. As we might expect, the boundary zone will change from one physical situation to another. This is in accord with contemporaneity. (Only parts of the environment which affect behaviour at that time are part of the current life space.) For instance, a guest visiting in a strange home finds in order to be polite, his freedom of movement is restricted. The freedom with which the guest may engage in activities, e.g., eating or drinking, or, even using the telephone, is restricted. In this case, the boundary zone of the life space is determined by social constraints, e.g., etiquette, politeness, etc.

2. Application of Field Theory

Although Lewin concerned himself with psychological changes, as a result of some change within the life space, the geographer is concerned with locational or physical changes in the life space. Essentially, the geographer must extrapolate from Lewin's conceptual or psychological life space, and conceive of the life space as a physical phenomenon. To better understand the physical life space, the concept of space of free movement is useful. Within the life space of each individual is a space of free movement which consists of all accessible regions. The space of free movement can be likened to the territorial range or orbit, as discussed by Parr, p. 11 . This includes the areas traversed or irregularly occupied by the individual. Enclosing the space of free movement is the boundary zone. Regions outside the boundary are inaccessible and are shaded inside the diagram. Hence, the perimeter of the territorial range or orbit, is determined by the location of the boundaries.

Diagram A

Child's Life Space



Adult Life Space

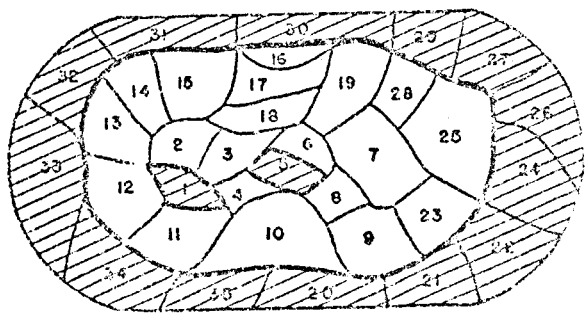


Diagram A compares the space of free movement of a child and an adult. For the child, regions 1 through 6 , , are accessible; 7 through 35, are inaccessible. Regions 1 through 6 represent the spatial location of activities which dominate in the life of a child, e.g., a primary school, a boy's club, etc. The space of free movement for an adult is much larger. (See TABLE A , the conclusions of the Barkers , p. 42, that the territorial range of humans increases from infancy to adulthood). Activities which are not accessible to children, e.g., regions 7 through 28, might include working at an adults occupation, driving a car, entering a pub, etc. Certain activities are inaccessible to adults, regions 29 through 35, including activities which are beyond the adults social or intellectual capacity. Regions accessible to children might be inaccessible to adults. This includes regions 1 and 5, such as membership at a boy's club, attendance at a primary school, etc.

What should be emphasized is that the spatial behaviour of both child and adult is conducted within the space of free movement. As to which region the individual will occupy at a given time, depends on the state of the life space at that time. Predictions of this sort, however, are beyond the scope of this paper.

The concepts of field theory developed by Lewin, especially the concepts of life space, boundary zone, and space of free movement, can be applied to models of spatial behaviour. For instance, the very different attitudes toward space exhibited by the cosmopolite and the localite, (see Webber, p39), could be dealt with using the concepts of Lewin. TABLE B compares the state of three field concepts for cosmopolites and localites.

TABLE B

Field Concept	Cosmopolite	Localite
State of Life Space	- flexible - changes frequently	- rigid - relatively stable
Boundary Zone Condition	- permeable (new activities easily incorporated into regions)	- impervious
Geographic Space of Free Movement	- large (national or international level)	- small (neighbourhood level)

The contrast between cosmopolite and localite is, indeed, obvious. Although these two types of people represent the two extremes of spatial behaviour, the field theory method is a highly instructive means of examining it.

IX CONCLUSION

In conclusion, this paper has dealt with many aspects of territoriality. As the title of the paper suggests, territoriality is an important consideration of spatial behaviour. It is this relationship which interests geographers. The precise nature of this relationship, however, is subject to further inquiry. Hopefully, some order has been established in this paper to facilitate this task. Problems of definition can be ameliorated by borrowing from the literature of anthropology and sociology. This was demonstrated in Part Two. Equally important is the territorial function. This aspect of territoriality was handled by posing two questions. What function does territoriality serve? Is territoriality innate or learned? The implications of dominance and leadership were discussed in Part Four. It is believed that dominance and leadership are intimately linked with territorial behaviour. Nevertheless, to determine the exact nature of this relationship requires further research. Intrusion and defence are important aspects of territoriality. Essentially, territorial behaviour is highly operative when intrusion occurs. The suggested typology, "micro" and "macro" - territories emphasizes the importance of scale. This was discussed in Part One. To geographers, the variations in scale are always an important distinction between one type of territorial behaviour and another. Lastly, two

methods of representing territorial behaviour were proposed. Micro-territories could be investigated, in part, using the interaction distance model. Macro-territories can be handled using the life space concept.

BIBLIOGRAPHY

Altman, I., W.W. Haythorn. "The Ecology of Isolated Groups," Behavioural Science, 1967, XII, pp. 169-182.

Ardrey, R., "The Territorial Imperative," Dell Publishing Co., New York, 1966.

Barker, R.G., L.S. Barker, "The Psychological Ecology of Old People in Midwest, Kansas and Yoredale, Yorkshire," Journal of Gerontology, Vol. 16., No. 2. (April 1961), pp. 144-149.

Calhoun, J.B., "Space and the Strategy of Life," paper presented at the A.A.A.S. in Dallas, Texas, 1968.

Carpenter, C.R., "Territoriality". In "Behaviour and Evolution", eds. Roe, A., G.G. Simpson, New Haven, Conn. Yale Univeristy Press, 1958.

Esser, A.H., A.S. Chamberlain, E.D. Chapple, and N.S. Kline, "Territoriality of Patients on a Research Ward," Recent Advances in Biological Psychiatry, ed. J. Wortis, Vol. 8 (New York: Plenum Press, 1965.)

Gans, H., "Planning and Social Life: Friendship and Neighbour Relations in Suburban Communities", Journal of American Institute of Planners, Vol. XXVIII, No. 7., 1961.

"Urban Villagers", New York, Free Press of Glencoe, 1962.

Glass, R., "The Social Background of a Plan: A Study of Middlesbrough." London: Routledge and Kegan Paul, 1948

Hall, E.T., " The Hidden Dimension" , Doubleday and Co., New York, 1966 .

Hediger, H., "Wild Animals in Captivity," Butterworth, London, 1950 .

Horowitz, M.J., D.F. Duff, L.O. Stratton, "Personal Space and the Body - Buffer Zone", Archives of General Psychiatry, December, 1964, II, 651-656.

Lee, T., "Urban Neighbourhood as a Socio-Spatial Schema" Human Relations, 1968, 21, 241-268 .

Leyhausen, P., "Dominance and Territoriality as Complemented in Mammalian Social Structure," paper presented at the A.A. A.S., in Dallas, Texas, 1968.

Lewin, K., "Field Theory in Social Sciences", ed. Dorwin Cartwright, Harper and Row, 1951.

Little, K.B., "Personal Space", Journal of Experimental and Social Psychology, 1965, 1, 237-247.

Lorenz, K., "On Aggression", trans. by M. Latzke, Methuen and Co. Ltd, 1966.

Lyman S.M. M.B.Scott, "Territoriality: A Neglected Sociological Problem", Social Problems, XV, 1967, 236-249.

McBride, G., "Theories of Animal Spacing: The Role of Flight Fight and Social Distance", paper presented at the A.A.A.S., in Dallas, Texas, 1968.

Morrill, R., "The Development of Spatial Distributions of Towns in Sweden: An Historical - Predictive Approach", Annals of the Association of American Geographers, Vol. 53, No. 1, March 1963.

Parr, A.E. "In Search of Theory", Arts and Architecture, Sept. 1965, 82, 14-16.

Pitelka, F.A., "Numbers, Breeding Schedule and Territoriality in Pectoral Sandpipers of Northern Alaska", Condor 61: 233-264, 1959.

Proshansky, H.M., W.H. Ittelson, H.G. Rivlin, Eds., Environmental Psychology: Man and His Physical Setting"., N.Y.: Holt Rinehart and Winston, Inc., 1970.

Roos, P., "Jurisdiction: An Ecological Concept" Human Relations, 1968, 21, 75-84.

Saarinen, T.F., "Perception of Environment", Resource Paper No.5, College Commission on Geography. Washington, D.C., : Association of American Geographers, 1969.

Soja, E.W., "The Political Organization of Space", Resource Paper No. 8., College Commission on Geography. Washington, D.C.,: Association of American Geographers, 1971.

Sommer, R., "Personal Space The Behavioural Basis of Design," Englewood Cliffs, N.J., : Prentice-Hall, Inc., 1969.

Sonnenfeld, J., "Geography, Perception, and the Behavioural Environment." paper presented at Dallas A.A.A.S., Dec. 27, 1968, in symposium on "The Use of Space by Animals and Man".

Stea, D. "Space, Territory and Human Movements", Landscape, Vol. 15, No. 1, Autumn 1965, pp. 13-16.

Steward, J.H., "Economic and Social Basis of Primitive Bands", Essays in Anthropology Presented to A.L. Kroeber, Berkeley, University of California Press, 1936.

Strodbeck, F.L., L.H. Hook, "The Social Dimensions of a Twelve Man Jury Table," Sociometry, XXIV 1961, 397-415.

Toffler, A., "Future Shock", Random House,New York, 1970.

Webber, M.M. and C.M. Webber, "Culture, Territoriality and the Elastic Mile", Proceedings of Regional Science Association, Vol. 13 1964, pp. 59-64.