Human Ethology Newsletter

1978 #23

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EXECUTIVE REPORT

At the annual Animal Behavior Society meeting, hosted by Joan Lockard at the University of Washington, a meeting of the human ethology participants was chaired by Larry Stettner. Several issues were discussed which are summarized below.

A Rose Is A Rose....

A general discussion concerning the name of the society was held. In particular, it was suggested and voted upon by those present that the society should add "International" so that our name would now be International Society for Human Ethology. A poll of the executive board indicated general approval of the action, and our official title now includes "International."

Committees

It was the general consensus that some working committees should be formed. This is a brief outline of some of the problems and issues pertinent to the committees.

1. Constitution and Bylaws

If we are to become a formally structured society we should be thorough in our organization. This committee should address itself to questions concerning officers of the society (how they are nominated, how elected), offices and positions within the society, membership (dues, eligibility, privileges), and other similar topics. This committee should also develop a statement of purpose and goals for the society, with the advice and consent of the membership.

2. Nominations and Elections

We do not at this point have a president of the society. I have agreed to serve as temporary administrator of this initial round of reports and letters, after which we will hopefully have a better picture of our status. According to the guidelines of the initial steering committee the president is to be elected by the total society membership. This would probably require some advance work by the nominating committee and then a ballot sent out to all members.

3. International Meetings

There was general agreement that regardless of other arrangements for regional or national meetings, there should be an international congress of human ethology every two years. Sources of funding were briefly mentioned, which might include NSF, or perhaps NATO. This committee should address itself to the problems of host location, calls for papers, dates, guest panels, etc., as well as formulating strategies for funding.

4. National Meetings

If the society wishes to continue meeting with ABS, the format and coordination of participation should be discussed with the executive board of ABS. A request for a scheduled time for a business meeting & integration of papers should be part of the agenda. This committee might also request someone to organize a special workshop or panel to become part of the ABS program. Other meeting options should also be discussed. ABS may not be sympathetic to our meeting as a formal society with them. I would suggest a poll of our members on these topics.

5. Publications

For several years, we have excitedly discussed the possibility of a journal that would focus primarily on human ethology. Such a journal would be of obvious value in facilitating the publication of ethological research on humans and would allow us to remain informed of recent developments in the field. A new journal, Ethology and Sociobiology, may in fact accomplish both goals (see Human Ethology Newsletter #22). Apparently this is an idea whose time has come, there are two American publishers, Erlbaum and Garland, who have indicated a favorable attitude toward another ethology journal which would include human ethology. At the meeting, a number of question and concerns were expressed which this committe should address.

a. is there really a need for such a journal
b. what sort of editorial control would the society have over such a journal
c. what would the costs of such a journal
d. could we insure a high quality

e. what would the editorial policy of such a journal be and what review procedures would be established
f. would it be possible for the society to affiliate with Ethology and Sociobiology, or at least to receive a discount on the price.

6. Membership

Once the constitution and bylaws committee makes recommendations concerning membership, we will also need a committee to disseminate the information and extend invitations for membership, and perhaps to establish a roster of members with a brief statement of interests and papers. Such a roster with current addresses could be distributed at a small additional cost to members.

VOLUNTEERS

Our society has operated on an informal basis for several years. Unfortunately that meant that often only a few people completed the necessary preparation and planning for meetings, newsletters, etc. The limited participation among members in general also produced a sense of isolation, uncertainty and frustration for many people. Now is your opportunity to help make ISHE work. Please become a shaker and mover of the society; volunteer to be a member of one of the working committees. Look over the committees and send me (Cheryl Travis) a letter indicating your area of interest and your opinions about the major goals of the committee. People at the general meeting this summer did sign a sheet indicating their area of interest, but this was a rather informal process and I would like everyone, whether they have signed an earlier sheet or not, to respond to me with their particular interests and comments. Several of the committees may seem to be low on glamour, but remember that every society is ultimately shaped by such factors as bylaws and statements of purpose.

OFFICERS

The members of the executive board for ISHE are listed below along with their current addresses. Please keep these for your future reference.

William Charlesworth
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HUMAN ETHOLOGY ABSTRACTS

The Human Ethology Abstracts have been published in two parts by Man-Environment Systems (part 1: M-E S 1977, vol. 7, no. 1; part II M-E S 1977, vol. 7, no. 5). Copies of part II are available from Cheryl Travis. Please send one dollar to cover costs.

Human Ethology Abstracts III is in the beginning stage of preparation. The first two collections of abstracts were edited by Cheryl Travis; the third will be edited

by Bob Adams and is expected to be published by Man-Environment Systems in 1979.

Please send copies of any completed manuscripts, published or unpublished, for consideration. In the case of manuscripts such as book chapters which contain no abstract, your submission of an abstract would be very helpful. Author abstracts may be modified, but every attempt will be made to retain the author's intent, terminology, and emphasis. Any suggestions or comments regarding the preparation of the abstracts would also be welcomed. Please send manuscripts and abstracts as soon as possible to:

Robert M. Adams
Department of Psychology
Fort Hays State University
Hays, Kansas 67601
913-628-4405

As a separate, but related project, he is preparing for distribution an indexed bibliography in Human Ethology and related areas. If you have reference lists you would be willing to share, he'll attempt to repay you with the first complete version of his, with index.

BOOK REVIEWS

Book reviews will become a regular feature of the newsletter in the future. Marjorie Elias (The Children's Hospital Medical Center, 300 Longwood Avenue, Boston, MA 02115) has agreed to become editor of this section of the newsletter. She would appreciate receiving suggestions about books to be reviewed and would also like to develop a list of potential reviewers. Subscribers may also submit reviews directly to Marjorie for her evaluation. Some of Marjorie's thoughts about the nature and function of the book reviews are as follows: The book review section should include books which might be of interest to human ethologists in a general way as well as books concerned specifically with human ethology. It might be lively as well as useful to have occasional critiques of some fad books purporting to discuss the topic as well as scholarly works. The main purpose of the section would be to draw new books to people's attention so reviews should be short and informative rather than heavily critical.

BEHAVIOR AND EVOLUTION by Jean Piaget. Translated by Donald Nicholson-Smith. New York: Pantheon Books, 1978. $2.95

Reviewed by: Marjorie Elias, Children's Hospital Medical Center, Boston, Mass.

"Behavior is the motor of evolution" concludes Piaget. This book is a theoretical treatise developing the argument that behavior serves as the dynamic force that drives evolution. Piaget sets for himself the task of demonstrating that behavior has a formative role in evolution rather than simply being affected by it. He distinguishes behavior from morphology by citing its inevitable exchange with the environment. He asserts that this distinction requires that the role of behavior in evolution be distinct from that of structure. Five chapters are devoted to discussion of hypotheses ranging from the Lamarckian view of behavior as the source of evolutionary variation to the opposite view of behavior as an effect of evolution and in no sense a cause. Piaget develops his argument by discussing the Lamarckian thesis and then considering other less extreme positions taken by Baldwin, Waddington, and Weiss. He characterizes the position of ethologists as attributing an evolutionary role to behavior at the level of selection only, and not at a formative level. In the last four chapters Piaget sets forth his own formulation of the role of behavior in evolution. He postulates phenocopy as the process by which behavior influenses evolution. "...a new trait first manifests itself in phenotypical form and then after a phase characterized by a blend of phenotypes and incipient genotypes, the same trait, or in any case a "copy" of it, emerges as the property of a stable genotype." (p. 74). In other words, phenocopy is a process by which the genotype copies the phenotype. The process is asserted to be indispensable for supplying hereditary forms of behavior with environmental information essential for functioning. He then proceeds to apply these postulations to speculation about the nature of instincts.

Human ethologists are likely to notice this book because of its author and title. Piaget does not, however, concern himself here with human behavior. He seems to be returning instead to themes from an earlier period of his life when he studied paleontolog His dissertation was on Jurassic gastropods. The book appears to be an attempt to incorporate behavior into his picture of evolution, but the attempt is not entirely successful. There is a chicken/egg problem implicit in consideration of behavior as either a cause or an effect of evolution. Although he recognizes the problem he fails to solve it

satisfactorily. The concept of phenocopy is another part of the argument which raises problems. Piaget tries to separate the concept from Lamarckian theory, but does not succeed fully. The chief interest of this book for ethologists lies in the controversial issues it raises for evolutionary theory as applied to behavior. The argument may not convince the reader, but is likely to stimulate thought.

INTERNATIONAL COMMUNICATION ASSOCIATION

The International Communication Association was formed in 1950 to bring together academicians and other professionals whose interest is focused on human communication. The Association maintains an active membership of more than 2,200 individuals of which some two-thirds are teaching and conducting research in colleges, universities and schools around the world. Other members are in government, journalism, the media, communication technology, business law, medicine and other professions. The wide professional and geographical distribution of the membership provides the basic strength of the ICA. The Association is a meeting ground for useful dialog about common communicational interests. Through its Divisions, publications, annual conferences, student summer conferences, and its relations with other associations around the world, it stimulates the systematic study of communication theories, processes and skills.

Part of ICA's membership is outside the United States. ICA's Board of Directors maintains a policy of conducting Annual Conferences in the U.S. for four consecutive years and each fifth year conducting the Annual Conference outside the U.S.

ICA's principal areas of concern are represented by its eight main Divisions:

Division 1: Information Systems
Division 2: Interpersonal Communication
Division 3: Mass Communication
Division 4: Organizational Communication
Division 5: Intercultural Communication
Division 6: Political Communication
Division 7: Instructional Communication
Division 8: Health Communication

The Association founded the Journal of Communication and Human Communication Research. There is also a newsletter. For further information, write to International Communication Association, Balcones Research Center, 10,100 Burnet Road, Austin, Texas 78758.

NEWSLETTERS

The center for Biopolitical Research (Northern Illinois University, DeKalb, Ill. 60115) has a very informative newsletter which regularly lists recent articles and papers in the area, announces new books and future conferences. It is a good way to keep up with work in progress in the field and often offers the exchange of course syllabi and other teaching aids.

ETHOLOGY AND SOCIOBIOLOGY

Ethology and Sociobiology is now reviewing manuscripts for Volume 1. Manuscripts should either deal with man, or if the focus is on another species the possible relevance of what is said to the study of man should be made clear.

Manuscripts from the Americas and Pacific should be sent to Michael McGuire. European, African, and Asian manuscripts should be sent to Nick Blurton Jones at the following respective addresses:

Michael T. McGuire
Neuropsychiatric Institute
760 Westwood Plaza
Los Angeles, CA 90024

N. G. Blurton Jones
Institute of Child Health
University of London
30 Guilford Street
London, WCIN 1 EH
England

Instructions to authors: submit the original and three (3) photocopies of the manuscript. The entire manuscript should be typed double-spaced on 8 1/2 x 11 inc. (or A4) bond paper.

The pages of the manuscript should be arranged as follows:

1. First page: Title page containing title, names and addresses of authors, including academic or other affiliations, acknowledgements and support, and the complete address of the author to whom proofs and correspondence should be sent, and the name and address for requests for reprints if different.

2. Second page: A running title to appear on alternate pages in the Journal.

3. Third page: An abstract of not more than 200 words, including statement of the problem, method, results, and conclusions of experimental and methodological articles or a summary of major issues, source of observations, and conclusions of theoretical articles. The abstract is followed by descriptor terms which best code the contents of the article for literature retrieval. For short communications, the abstract should be no more than 50 words.

4. Fourth page: The first page of the text proper, which begins with the full title and names of authors. Number pages consecutively from this point, and type the first author's last name on each page.

5. Further sections are ordered as follows, each section beginning a new page: References (see following section for format), Reference Notes, Footnotes, Tables, Figure Legends, and Figures. Each table and figure should be on a separate page, typed and double-spaced. Tables and figures are numbered consecutively in Arabic numerals; each should have a brief descriptive title. Footnotes to the text are also numbered consecutively with superior Arabic numbers.

Textual references are cited by name(s) of author(s), followed by year of publication in parentheses. For references authored by more than two contributors, use first author's name followed by et al. For multiple citations in same year, use a, b, c after year of publication. The reference list should be typed alphabetically according to the following style:

Book: Barash, D. Sociobiology and Behavior. New York: Elsevier North-Holland, 1977.

Edited Book: Conner, R. L. Hormones, biogenic amines and agression. In Hormones and Behavior (S. Levine, ed.) pp. 209-233. New York: Academic Press, 1972.

Journal: Hinde, R.A., and Y. Spencer-Booth. Effects of brief separation from mother on rhesus monkeys. Science, 173: 111-118, 1971.

Illustrations in the form of unmounted, glossy, black and white photographs or of india ink drawings on white paper should accompany the original copy of the manuscript. Photocopies are suitable for the other three copies of the manuscript. Each illustration should be identified by figure number, first author's name, and which side is top. Write this information lightly with pencil on the back of the figure. Illustrations should be mounted on white bond paper with rubber cement or Pritt glue stick used sparingly. Figure captions should be placed on the white bond paper, not on the same paper as the illustration.

The author designated as correspondent will receive proofs, which should be proofread and returned within 48 hours of receipt. Corrections in proof are limited to printer's errors; no substantial author changes allowed at this stage. Twenty-five reprints per article will be supplied free of charge. Additional reprints may be ordered prior to publication; consult the price list accompanying proofs.

No page charges are applied in this Journal.

Upon acceptance of an article by this Journal, the author(s) will be asked to transfe copyright of the article to the publisher. This transfer will insure the widest possible dissemination of information under the U.S. Copyright law.

FORTHCOMING CONFERENCES

International Political Science Association

The IPSA Biology and Politics Research Committee met at Villa Serbelloni, Bellagio, Italy, to make initial plans for the Biology and Politics panels at the 1979 IPSA Congress. Members of the Research Committee present were: Professors David Easton, Jean A. Laponce William J.M. Mackenzie, John Wahlke, and Albert Somit. Also participating were: Professors Gerard Baerends, George Barlow, Heinz Eulau, Rollo Handy, Steven Peterson, Glendon Schubert, Joseph Tanenhaus, and Thomas C. Wiegele.

The Committee would welcome communications from individuals interested in presenting papers in the general area of Biology and Politics at the 1979 meeting. While first priority will be given to empirical research findings, papers dealing with philosophical, conceptual, methodological, etc., aspects of this general area will also receive serious consideration. Proposals and/or requests for further information should be addressed to Albert Somit, Executive Vice President and Professor of Political Science, State Univ. of New York at Buffalo, 503 Capen Hall, Amherst,New York 14260.

2nd Congress of the International Association for Semiotic Studies Vienna, July 2-6, 1979 Plenary sessions, section meetings, roundtables and working groups. Art and music performances, exhibitions, poetry readings. Social and cultural program besides the congres

DEADLINE FOR ABSTRACTS: OCTOBER 15, 1978.

Send your abstract and ask for registration form:
SEMIOTIK-KONGRESS
Postfach 35
A-1095 Vienna
Austria

Summer Institute on the Origins and Growth of Communication

The Society for Research in Child Development will sponsor an interdisciplinary research institute from June 10 to July 6, 1979 at the University of Delaware on the topic of the origins and growth of communication during infancy and the preschool period. Funds from the Carnegie Foundation will provide travel and living expense support for the participants. Interested advanced doctoral students and postdoctoral faculty who have a commitment to research in communication should inquire further about application procedures by writing to Dr. Frank B. Murray, Chair, Selection Committee, 221 Willard Hall, Univ. of Delaware, Newark, Delaware, 19711 (phone 302-738-2325).

FORUM

FUNCTIONAL SIGNIFICANCE OF THE PSYCHOLOGY OF MEN AND WOMEN

Martin Daly and Margo Wilson

Traditional ethological approaches to male-female interactions, and in particular to courtship, emphasized the communicative process, the causation and information content of signals, and such immediate functions as species recognition and the synchronization of the partners' motivational states and activities. In studying these phenomena ethologists gave center stage to the overt structure of behavior. It is this feature of ethology--its objective methodology more than its theoretical concepts--that motivated the development of human ethology. But if human ethology arose largely as an atheoretical methodological reaction to obscure and untestable theories in the social sciences, animal ethology was at the same time experiencing a resurgence of theory inspired by W. D. Hamilton and G. C. Williams. Adoption of the perspective of evolutionary functionalism and attention to the questions it poses seem to us the most productive course now open to human ethologists.

In the case of courtship, it has been apparent since Triver's 1972 paper that analysis of the selective pressures upon individual reproductive strategists produces a different view of male-female interaction than the traditional ethological one--behavior functions to protect the actor's personal reproductive interests which are never fully consonant with the mate's. Where males make some parental contribution, the asymmetrical risk of cuckoldry and misdirected parental care is an ever-present selection pressure that tends to keep the male's investment smaller than the female's. It behooves the female, on the other hand, to extract as much investment from the male as she can, and as a valued resource for which males compete, she has some opportunity to insist upon male parental investment as a condition for mating. Among insects, females commonly demand a material investment from potential males; a male must offer food or a proteinaceous spermatophore that represents a significant proportion of his bodily reserves or indeed even his entire body, and the female's egg production for fertilization by a particular male may be directly proportional to the size of his offering (Thornhill, 1976). In birds, males sometimes construct nests as courtship inducements, and they commonly engage in courtship feeding. In territorial species, females may opt for the best resource situation, and mate selection often appears to be incidental to this choice (Orians, 1969). Perhaps more important, in birds and many mammals too, is the temporal commitment that is required by the female's only gradually responding to the male's efforts; this in effect protects the female from the risk of mating with a philanderer with commitments elsewhere (Daly & Wilson, 197

Homo sapiens can be characterized from cross-cultural evidence as a biparental species of polygyny where men can afford it. Men may participate directly in parental care, but their primary investment is more literally economic--they confer resources on offspring and perhaps status too. These circumstances suggest that both sexes should be selective in sexual relations but women more than men, and that women should be more responsive to signs of affluence in a prospective mate. These expectations are supported by various findings in the social sciences, and might profitably be used to generate predictions in observational studies by human ethologists.

Strategic analysis of sexual attraction and mate selection in people is complicated by the fact of familial influence. Free mate choice appears to be rather rare, characterizing only 5 of 34 societies in Stephens's (1963) sample, for example. Analysis of the decision-making process in these matters is needed (and perhaps calls for more ethological

methods, rather than reliance on the reports of the participants), especially in pre-agricultural hunter-gatherer societies which may be representative of the social milieu prevailing through most of human evolution. Who, after all, are male displays (such as the trophyism which Randall Eaton hypothesizes to have motivated prehistoric cave paintings) intended to impress? Men have gained status, goods and wives by impressing other men with their abilities as hunters, warriors and leaders; is male psychology such that men attend more to the male competitive milieu than to courtship per se?

A further issue when families exert influence in mate choice is whether interests different from those of the bride and/or groom are being served. We might expect a young woman and her parents, for example, to agree upon a suitable husband, but conflict in these matters is apparently widespread. It would be of interest to know just how common such conflicts are in a society under study, and what are their strategic underpinnings: parents and offspring might have identical interests but a difference of opinion on how to fulfill them, or there may be parental manipulation in Alexander's (1974) sense. In at least some cases, arranged marriage practices hinder the reproductive success of the couple (Wolf, 1970), but the political interests of parents evidently take precedence.

Regardless of the extent to which women are able to exercise choice of mates, an important strategic concern of wives must be the monopolization of their husbands' resources for themselves and their children. Much uxorial behavior must function to promote paternity confidence and to convince the male that the wife and children need his time and resources. Feminist aspirations to pride and self-sufficiency notwithstanding, women's selective circumstances have been such that it pays them to present themselves as more needful and dependent than they are. This is especially the case when the husband's aspirations to polygyny put him at odds with his present wife over the allocation of his resources. As might be anticipated, such conflict is mitigated when polygyny is sororal and wives are then likelier to share a dwelling.

In all the above discussion, the central issue is the functional significance of human psychology and sex differences therein. A crucial ingredient for a real synthesis between evolutionary biology and behavioral sciences more concerned with causal analysis may be the delineation of relevant "personality" variables. Sexual desire, jealousy, parental feelings, inclinations to dominate or submit, attachment, fidelity, needs for achievement and recognition--these and other attributes vary between individuals and, within individuals and, within individuals, over time and varying situations. The variations may have consequences for inclusive fitness and may be in part determined by constitutional factors with some degree of genotypically-correlated variability. They are therefore potentially subject to adjustment and optimization, over generations, by natural selection. In the animal behavior literature, it is generally accepted that time budgets, response thresholds, and other such variable aspects of behavior that could be termed "psychological" are evolutionarily labile, and have been and are constantly being optimized by the natural selective process. This optimality is an average outcome, and there is no reason to expect that evolved psychological mechanisms will be error-free in maximizing inclusive fitness. A woman may fall in love with a pauper, and a bachelor may make a dog his heir. As in the classical ethological analysis of sign stimuli, it is precisely such mistakes that afford insight into the nature of the mechanism.

To further complicate matters, modern technocultural circumstances are obviously different from those to which natural selection can have adapted human psychology, with the result that fitness consequences are unlikely to be optimized even on average. This provides a loophole for the human sociobiologist when behavior is manifestly unfit, as for example severe family size limitation with modern contraceptive techniques. When behavior is fit, however, the same scientist will consider it support for his theoretical perspective. Human sociobiology will gain scientific rigor when a priori grounds for predicting fit and unfit behavior are developed.

Alexander, R.D. (1974) The evolution of social behavior. Annual Review of Ecology and Systematics 5: 325-383.

Daly, M. & Wilson, M. (1978) Sex, evolution & behavior. Adaptations for reproduction. North Scituate, Mass.: Duxbury.

Orians, G.H. (1969) On the evolution of mating systems in birds and mammals. American Naturalist 110: 153-163.

Stephens, W.N. (1963) The family in cross-cultural perspective. New York: Holt, Rinehart & Winston.

Thornhill, R. (1976) Sexual selection and parental investment in insects. American Naturalist 110: 153-163.

Trivers, R. L. (1972) Parental investment and sexual selection. In B. Campbell, ed. Sexual selection and the descent of man 1871-1971. Chicago: Aldine.

Wolf, A.P. (1970) Childhood association and sexual attraction: a further test of the Westermarck hypothesis. American Anthropologist 72: 503-515.

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THE ETHOLOGY & ECOLOGY OF HUMAN RELATIONS

Cheryl Travis

There has been no little amount of bias concerning the personal attributes, behavior, and proper roles of women. Biblical wisdom held that a man is the image and glory of God; but the woman is the glory of man (1 Corinthians 11). Psychoanalytic tradition has also contributed a large share of similar gabble: "Most women have the worst opinion of members of their own sex--a much lower opinion than even cynical men have. Why? Because women know women better" (Theodore Reik, The Many Faces of Sex, 1966).

Unfortunately, human ethology is particularly susceptible to such biases and some popularized accounts have fallen into the comfortable paths of other authors. Desmond Morris described the development of all male hunting groups and the subsequent mating strategies of early humans, "...if the weaker males were going to be expected to share in the hunt...the females would have to be more shared out, the sexual organization more democratic and less tyrannical" (The Naked Ape, 1967). Females were essentially chattel to cement male relationships; from the female's point of view one could hardly describe such an arrangement as democratic or less tyrannical. Anthony Storr carried on this biased tradition, "...And it is highly probable that the undoubted superiority of the male sex in intellectual and creative achievement is related to their greater endowment of aggression" (Human Aggression, 1968).

Such biases are ethically wrong. They have taken a toll on the political-economic status of women and on their health and psychological well-being. But for purposes of this statement, they are wrong because they make bad science. The issues of animosity vs. affiliation or competition vs. cooperation between men and women are significant issues. There are some basic principles and some real facts to be discovered here, if we can set aside our previous misconceptions.

The concept of parental investment (Trivers 1972) offers the possibility of new formulations concerning social relations. Trivers emphasized the fact that when females make a larger investment in offspring relative to the investment of males, the females will tend to be more selective in sexual behavior and males will tend to be indiscriminate or at least inconstant. Taken as it stands, this formulation might be construed as post hoc justification for sexual promiscuity among males, because the simple statement suggests that males will increase their inclusive fitness by mating and then abondoning offspring. Before we accept the above formulation as a simple and sovereign theory of human sexual relations, it is important to recognize a few other significant variables. Two critical factors are a) the ability of the solitary female to successfully rear the offspring once abandoned by the male and b) the probability of the male finding a subsequent unmated female (Maynard Smith, 1977).

It is of absolutely no advantage for a male to abandon one set of offspring to seek another female unless the probability of their survival without his investment is fairly high. Two factors which tend to promote high male parental investment are a prolonged infancy and childhood and the opportunity for the male to make significant contributions, as by, hunting, to the nourishment of the offspring (Barash, 1977). For example, ungulates are generally precocious and able to walk and even run a few hours following birth. Furthermore, the caloric value of grasses and leaves, which constitute the bulk of their diet, is low. Accordingly, one observes little male parental care. In contrast, humans have a prolonged infancy, and, being omnivorous hunters and gatherers, can take advantage of the protein-rich flesh of other animals. These two factors, long considered to be some of the most significant in human evolution, should be given considerable weight in making any estimates about adaptive gender roles. They strongly suggest that females did not rear their young alone.

There are several possible social relationships that would be compatible with this set of conditions. One, of course, is monogamy fostered by unique pair bonds based on attachment, love, and perhaps jealousy. A second possibility would be group marriages where all children are treated as the offsprin of the entire group; a nice arrangement, but one that is susceptible to invasion by selfish genes. Another option is that females

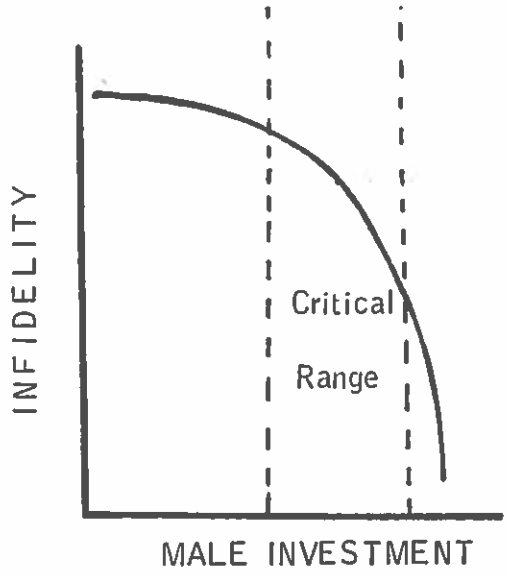
constituted the permanent core of early social groups and periodically sought out or attracted males during breeding seasons, while older siblings or aunts contributed to childcare. Each option ought to be evaluated on its own merits from an evolutionary point of view.

While ruminating on the strengths and weaknesses of the various social systems, one must be aware of the influence the structure of a question has on the answers to such analyses. It may very well be that each of the systems was or is a perfectly adaptive system in and of itself. The problem must be recognized as an issue of social relations where individual patterns may be more or less successful (in terms of inclusive fitness) depending on the patterns of other individuals in the group. One of the patterns may have become an evolutionaryily stable strategy such that individuals who deviated from that social pattern of mating were not as successful as those who adhered to the pattern.

Rather than looking for the best system, a more profitable approach might be to examine those conditions under which one of the systems will become a stable strategy. I propose that a socioecology of mating systems among humans may be fruitful. Denham (1971) proposed a model for predicting mating systems in nonhuman primates based on three variables, food density, food predictability, and anti-predator strategies. With this model he was able to make predictive statements about the social systems of gibbons, lemurs, patas, macaques, langurs, gorillas, and chimpanzees, as well as baboons.

Among humans, one might very well pose questions that relate to qualitatively different marriage systems, such as monogamy vs. polygamy. One might also pose questions reflecting concern with quantitative characteristics, such as duration of marriages, degrees of promiscuity, or rates of infidelity. Suppose infidelity were plotted as a function of male parental investment. One might very well find a function similar to the one depicted below where low levels of male parental investment are associated with infidelity, but high levels of male parental investment are associated with very low levels of infidelity. The point of inflexion in such a function and an adjoining range in male parental investment could be viewed as a critical area, highly susceptible to perturbations. In societies falling within this range one could predict the emergence of cultural traditions which tend to promote greater stability, such as stringent rules concerning male-female behaviors, responsibilities and interactions. These societies in the critical range should also follow a tradition of prolonged courtship, bride prices, and elaborate weddings which invoke a host of social commitments to in-laws.

The example given here is rather simple, and a complete analysis of social systems would necessarily involve more variables. Identifying the critical range within predictor variables and their relative importance with respect to one another would not be an easy task. However, it does offer the possibility of establishing a model whereby the important variables are identified and it offers the opportunity of empirical cross-cultural testing of the model. Formalizing the relationships between important variables in such a way as to not only explain but to also predict outcomes will go a long way towards reducing the influence of chauvinism and may actually produce new insights.



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EVOLUTION AND HUMAN SEXUALITY

Jerome H. Barkow

Look at your hand. Those grasping fingers are there for you to climb trees with. Those whirls and ridges at the ends of your fingers are there because they once steadied a hand

which gripped a slippery branch. Our ancestors became our ancestors because they were the individuals who climbed most successfully, who gripped most surely. They lived longer than did others and therefore had more children--children who, ultimately, are ourselves. Later, they made possible the fasioning of tools and weapons. Again, our ancestors were those who excelled in manipulating objects and so had more offspring--ourselves--than did others. The grasping human hand with its fingerprints and large, opposable thumb, thus makes sense in terms of evolutionary biology and in terms of the way of life of our ancestors. We understand the hand.

Now look at your orgasm. Look at your sexual jealousy. Look at your love and desire and even at your adulteries. Can these, too, be explained as we explained the shape of the hand, in terms of biological evolution? To do so, we will need to understand both evolutionary theory and the social organization and adaptation of early man. As we shall see, our understanding of the theory of evolution is far more advanced than is our knowledge of the way of life of our distant ancestors.

Evolutionary Theory

The basic unit of inheritance is the gene. Very few genes actually "determine" a specific bodily or behavioral trait. Rather, most genes interact with each other and the environment in so complex a fashion that we can only say that they increase or decrease the probability of a particular trait or behavior appearing in a particular form. Nevertheless, evolution can be thought of as involving not individuals competing with one another to have more offspring, but genes competing with each other to increase their respective frequencies in the total pool of genes in the population. Another way of expressing this idea is to say that individuals compete not to survive and reproduce for their own sake but in order to increase their genetic representation in the next generation. That is, they compete to increase their inclusive fitness.

Individuals strive to maximize their genetic representation in the gene pool. From this idea stems Trivers' hypothesis that the sex which invests more of its total potential for reproduction in a fertilization will be the more discriminating in selecting a partner. In other words, the sex which invests the most has the most to lose, and will therefore be the most selective. Trivers himself speaks of "parental investment," which he defines as "any investment by the parent in an individual offspring that increases the offspring's chance of surviving... at the cost of the parent's ability to invest in other offspring."

For most species, including our own, the female invests far more in a fertilization than does a male. An egg costs more than does a sperm cell, both in terms of physiological effort and of reproductive potential. More important, fertilization means that the female's ability to reproduce is tied up for a lengthy period. For our species, that period includes not just gestation but the time until the woman resumes her menstrual cycle and is once again fertile. Since breast-feeding delays the return of fertility and, in some societies, a post-partum sex taboo holds for two to three years or while the child is nursing, a woman may risk from two to four years of her reproductive potential with each copulation. In contrast, a man risks almost nothing. Minutes after copulating, he is likely to be able to fertilize a second woman. Both men and women strive to maximize their inclusive fitness, of course, but the fact that sexual activity binds so much more of the woman's reproductive potential than it does that of the man has profound implications for the evolution of human sexual behavior.

Gingerly Applying Theory

Let us first see how the evolutionary theory sketched above might be applied to us. Then we will discuss how different scenarios of human evolution alter our predictions about human sexuality. But please keep in mind that italicized word above, might.

What is courtship about, in evolutionary terms? We have seen that the reproductive potential of the female is more at risk in a copulation than is that of the male. Since both sexes strive to maximize their inclusive fitness, this means that the female should be much more selective in her choice of partners than is the male, because it is the female who has the most to lose. Selection will therefore favor the more discriminating women, the women who are able to choose males who are both in good health (and therefore presumably have good genes) and who are willing to share in the care of the young. Courtship thus has to do with females seeking to make a good choice, and with males competing with one another to convince females of both physical superiority and of willingness and ability to invest in the care and protection of offspring.

Many female behaviors can be interpreted not just as evolutionary mechanisms to attract males, but also to retain them. For example, alone among animals, the human

female is sexually receptive the year-round, rather than just periodically. This receptivity may once have served to keep the bonded male from wandering. Similarly, only human females have orgasms, a trait which may also bond males. One would expect that, immediately after coitus, the female should make strong attempts to keep the male with her: is that what the common female demand for "tenderness," following sexual relations, is all about? The male, on the other hand, is likely to attempt to maximize his inclusive fitness by leaving the just-fertilized female and seeking another.

For the human male, adultery represents both the best and worst possible of worlds (at least from an inclusive fitness point of view). If I can fertilize another man's mate then I can trick him into investing in my offspring. Evolution must balance the increase in inclusive fitness resulting from successful adultery with the decrease in fitness resulting from being found out! After all, selection will favor behaviors on my part which minimize my being the victim of adultery. One of these behaviors is obviously that of jealousy. All societies recognize the likelihood of jealous and often homicidal rage on the part of the cuckold. Sexual jealousy is an inclusive fitness device: if my jealous behavior interferes with the copulations of other males, then my chances of fertilizing additional females have increased.

Adultery may permit a woman to choose a more attractive de facto father for her children while retaining the support of a male willing and able to invest in her offspring. Then, too, having lovers means that if a woman's current bond does rupture, she may have a replacement male available immediately. In general, however, a woman has somewhat less inclusive fitness to gain and more to risk than does a man, in adultery.

When should a woman feel sexual jealousy? Women, too, compete for the males who are most attractive (and who presumably have the "best" genes) and who are most able to invest in offspring. Women should therefore be jealous of one another, at times. But this jealousy should be much higher if it involves a woman's bonded partner. On the other hand, a woman may better maximize her inclusive fitness by being the second or even the n^{th} wife of a wealthy and powerful man than by being the sole wife of a man unable to invest substantially in any offspring at all. Thus, polygyny (one husband with more than one wife) should be fairly common, in our species. But polygynous households should also be jealous ones, since wives and their respective children are in effect in competition for the investment of their shared husband or father.

Problems with Evolutionary Interpretations of Human Sexuality

Evolution does not control our decision making by having us consciously calculate the probability of someone having "good genes" or of their being willing to invest in the care of our offspring. Evolution simply makes us feel like doing those things (or learn easily to do those things) which, among our ancestors, tended to maximize inclusive fitness. These feelings are often quite difficult to consciously control. Behaving rationally about love is extremely difficult for our species, even though the evolutionary wisdom which guides our decisions in matters of the heart is often out-of-date.

To apply evolutionary theory validily, it is necessary to understand the ecology, demography, and social organization of a species. For example, earlier we interpreted sexual jealousy to be a means of maximizing inclusive fitness by leading us to interfere with the copulations of others. But the strength of this prediction depends on just how many genes we shared with those others, that is, on just how inbred our ancestors' social groups were. If we evolved in the context of small and heavily inbred groups in which almost everyone shared most of their genes with everyone else, then not even adultery could trick a man into investing in offspring totally unrelated to him. Since the group was heavily inbred, he would share most of his genes with any infant, including the one borne by his unfaithful partner. This does not mean that there would have been no selective advantage in being jealous--he still would be more closely related to his own child than to someone else's--but the selective advantage would be rather low. The advantage of jealousy would be lower still if most of the other males in the group were actually his brothers. On the other hand, if these groups were heavily outbred and a man was likely to share relatively few genes with an infant sired by another, then selection for jealous behavior would have been quite strong. But we do not know just how inbred early human and protohuman groups were.

We do know that our ancestors lived by hunting game and by gathering fruits, vegetables, roots and seeds. We also know that

their environment was a dangerous one, filled with predators. Male protection would have aided the survival of the young and the females, particularly when the latter were pregnant or encumbered by infants. This dependency on male protection would have been increased by two related trends: the increase in the duration of infancy and childhood, and the growth in the size of the brain.

The lengthening of childhood obviously meant a longer period of dependency on mother, increasing the length of her reliance on the male adults for protection from predators. The longer childhood may have been related to the development of intelligence: certainly, the increase in brain size was. This last factor would in itself have intensified mother-infant dependence on males , both directly and indirectly.

The question is, which males? The answer will affect our predictions about human sexuality.

Perhaps all males, acting together, protected all females and young. This is the pattern followed by the savanna baboon, for example. But we were hunter-gatherers and both game and vegetable foods are at times scarce and widely scattered. There would have been a selective advantage in favor of those individuals able to form small units and leave the group for lengthy periods. Such units would have consisted of a male or two and an equal number of females, plus their offspring. Again the question arises, which males?

Perhaps it would have been a group of siblings that formed the basic social unit of our ancestors. Certainly, there are many contemporary societies in which a man has more responsibility for his sisters and nephews than for his wives and children. But for small hunting units, this kind of social organization would have been conducive to incest. Incest lowers inclusive fitness by increasing the probability that deleterious recessive genes will come together in the offspring and weaken or even kill them.

If this scenario is accurate, then there would also also have been very strong selective pressure on females for the ability to bind males to them. Parental investment theory already predicts that such selective pressure should exist. With the kind of ecology and social organization suggested here, however, that pressure would have been extremely intense. We would also predict fairly strong selective pressure on males to bond to and remain with particular females, since otherwise their (joint) offspring would be unlikely to survive. Human beings should therefore be a strongly pair-bonding species in which female sexuality is primarily organized around retaining mates and seeking replacements for mates who are killed or who desert.

As we shall see, the scenario leading to these predictions is correct. As is the scenario of all the males of the group protecting all the females and young as a whole. As is the scenario of brothers protecting sisters and sharing food with them. Human beings simply did not evolve with a single kind of social organization in a single environment in a single place. Many different scenarios are likely to have been correct at one point or another.

For most of our history, we have probably been separated into relatively small groups which would evolve independently for a time and then either die out or merge with other small groups. Our ancestors clearly inhabited numerous environments and probably had a considerable variety of social organizations, both at different points in time and in space. It is much more difficult to apply evolutionary theory to Homo sapiens than it is to species with more limited ranges of behavior. We human beings were biologically selected for the ability to adapt by changing our cultures, instead of breaking apart into many separate species.

Conclusions

The way we express our evolved sexual behavior tendencies is patterned by our culture. If we were selected for the ability to adapt to diverse environments and social organizations, then we must have been selected for the ability to express our sexuality in a variety of ways. Human behavioral evolution seems to generate tastes and preferences rather than conscious calculations of genetic advantage, or inflexible, "wired in" instincts Thus, it is relatively easy for culture--via our personal life experiences--to shape the expression of our sexuality. There are, of course, limits to the flexibility of our sexual behaviors, just as there are limits to the cultural variability of taste in food and drink.

We, as individuals, by appreciating both the standards of our culture and the biological evolution of our sexual preferences, can more readily come to terms with our own sexuality, more readily accept it as our personal share of the general human heritage. Such an understanding may make life easier for those of us who choose to regulate our sexual behavior by conscious will rather than solely

in terms of the preferences produced by biological evolution and patterned by culture.

No analysis of the evolution of human sexuality, however, will tell us what we should do. Parental investment theory, for example, predicts that males tend to be more promiscuous than are females. It does not support any claim that males should be promiscuous, or that such promiscuity is inevitable. Parental investment theory may suggest that the "double standard" is a reflection of our biological evolution, but it does not justify it. All that the theory can tell us is that, in the absence of explicit pressures against male promiscuity, it will generally occur.

It will occur for the same evolutionary reasons that we find the healthy more attractive than the unhealthy, and the wealthy more attractive than the poor. It will occur for the same reasons, ultimately, that we fall in love.

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JANUARY FORUM

It seems likely that over the next decade ethologists and sociobiologists increasingly will turn their attention to the study of man. If so, a number of theoretical and methodological problems can be anticipated. One concerns the definition of adaptation. Wilson (1975) defines it as follows: "...any structure, physiological process, or behavioral pattern that makes an organism more fit to survive and reproduce in comparison with other members of the same species." (p. 577). This definition has worked well enough for many nonhuman species. But with man, a long life span, the possibility of delaying child bearing, extended male fertility, etc., make research using this definition difficult.

One possible approach to this problem is statistical. For example, a large population might be studied and profiles of adaptation determined, presumably qualified by such variables as sex, age, class, etc. By profiles of adaption I mean sets of adaptive behaviors. Deviations from these profiles could then be established for subpopulations. An alternate approach would be to focus on individuals. Here the problem would be assess what behaviors are likely to be competively advantageous relative to an appropriate referrant. Both approaches are plagued with methodological problems. Comments are invited and should be addressed to: Michael T. McGuire, M.D., Director, Biobehavioral Sciences Program, School of Medicine, Univ. of Calif., Los Angeles, CA 90024. Manuscripts must be received by Dec. 1.

HUMAN ETHOLOGY NEWSLETTER

The newsletter is published quarterly in January, March, June, and October. Deadline for submission of announcements, comments, or other items is the first day of each quarter. Information concerning conferences work in progress, new methodology, books, or events of interest to human ethologists is solicited. Send material to Cheryl Travis, Dept. of Psychology, Univ. of Tennessee, Knoxville, TN 37916.

Subscription rates for the newsletter are $3.00 on a calendar year basis, renewable each January. Please send your checks payable to the Human Ethology Newsletter along with your complete mailing address to Cheryl Travis.

MARCH FORUM

The March issue of the Forum will be concerned with the relevance of modern hunter gatherers to the evolution of human behavior. One point of focus concerns the theoretical question of whether or not such groups are at all relevant. A second point of focus is a methodological issue, in that the extent to which information about such groups is relevant may be highly dependent on the type of methodology adopted.

Accordingly, the following statement is offered as a proposition for debate: Given appropriate methodology, recent hunter-gatherer groups are extremely relevant to the reconstruction of human behavioral evolution. One point of view might be that each hunter-gatherer group has its own unique recent history and therefore cannot become a basis for generalization to Homo; the alternative point of view might be that information about such groups is not only relevant, but essenti to a discipline of human ethology.

The topic was suggested by Glen King and he will edit this issue of the Forum. If you have any thoughts and care to express them formally, submit an essay to Glen (his address is listed as a member of the executive board on page 2) by February first of 1979.