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ARTICLES

Walking Speed and Depression: Are Sad Pedestrians Slow?

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It has been known since the early days of psychiatry (e.g., Kraepelin, 1913) that a depressed mood is often accompanied by psychomotor slowdown (see DSM-III). This has been quantitatively demonstrated by both sophisticated, rather complex methods (Fisch et al., 1983) and by quite simple ethological methods (Sloman et al., 1987). The latter found that depressed individuals show a smaller push-off force during normal gait and thus have a "heavier step" than those in a good mood. The biologists' claim is that individuals signal their inner state to others by body motion. Our model (Schmitt & Atzwanger, 1995) suggests that, besides factors such as culture, sex, age, body height, men's socioeconomic status, and women's attractiveness, mood correlates with walking speed. In particular, we hypothesized that the better the mood, the more dynamic the gait and the faster the walking speed.

Method

We unobtrusively measured the walking speed of randomly selected pedestrians and determined their mood by questionnaire (Beck Depression Inventory, $N = 279$).

Results

Since the Beck Depression Inventory only allows one to classify people into three categories, all other factors potentially influencing walking speed were also reduced to three categories. This enabled us to perform a simple factorial ANOVA which revealed main effects only for the variables of age, destination, mood, and height. Sex, socioeconomic status, citizenship, number of fixed dates for completing tasks, rating the street as ugly or beautiful (aesthetic), and traffic flow had no effect on walking speed (Table 1).

The next step was to drop the non-significant factors and to control for interaction effects of the significant factors. There were no two-way or higher-order interactions (ANOVA, 2-way interaction, $p = 0.69$). Thus, it was possible to reach maximum statistical power by performing a final ANOVA without interaction effects. This revealed highly significant and moderately strong effects of all variables (Table 2).

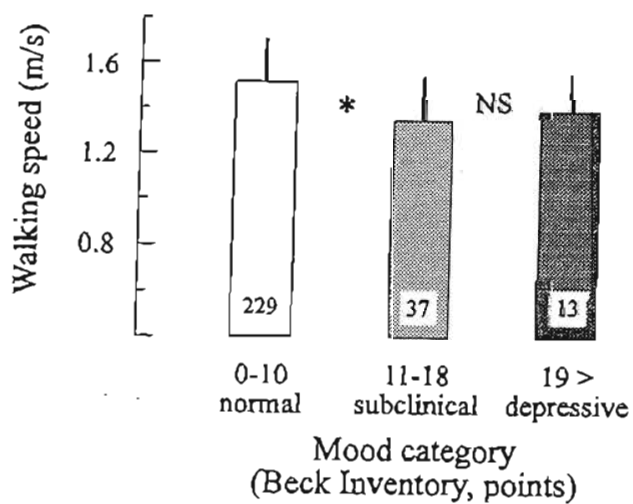
Table 1

Variable	Sum of Squares	DF	F	p
Main Effects	3.49	18	6.14	.0001
Age	.89	2	14.09	.0001
Destination	.33	2	5.2	.006
Mood	.29	2	4.60	.011
Body height	.28	2	4.51	.012
Aesthetic	.08	2	1.35	.262
Dates	.05	2	.78	.458
Status	.02	2	.314	.731
Traffic flow	.014	2	.218	.804
Sex	.003	1	.1	.748
Citizenship	.001	1	.02	.884

Table 2

Variable	Sum of Squares	DF	F	p
Main Effects	3.304	8	13.13	.0001
Age	1.05	2	16.67	.0001
Body height	.42	2	6.72	.001
Destination	.38	2	6.05	.003
Mood	.30	2	4.8	.009
Explained	3.304	8	13.13	.0001
Residual	8.495	270		
Total	11.798	278		

Figure 1



When one-way ANOVAs were then calculated to further analyze the results, we found that people walked more quickly the younger and taller they were ($F = 28.4$ and $F = 15.0$, both $p < 0.00001$) and the more pressed they were by fixed dates ($F = 11.4$, $p < 0.00001$). Finally, and most important in the present context, persons in a sad mood walked more slowly than those feeling normal ($F = 7.3$, $p = 0.0008$, Figure 1).

Discussion

Our results supported our hypothesis: A depressed mood was associated with slow walking. However, recent studies have repeatedly shown the influence of various other factors on walking speed, especially personality traits. Thus, the question of whether walking speed can be used as a simple and reliable measure to investigate nonverbal behaviour associated with affective disorders deserves further attention.

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An Alternative Explanation of Racism

By Frans Roes, Lauriergracht 127-2, 1016 RK Amsterdam, The Netherlands

Some evolutionists suggest an inclusive fitness, 'kin-selection' approach to explain racism. Since we share more genes with individuals of our own race than with those of other races, we supposedly increase our own inclusive fitness by favouring same-raced individuals over others. Therefore, in our evolutionary past, a gene causing us to favour people of our own race spread in the human population.

If I am not mistaken, several evolutionists are for various reasons not satisfied with this explanation. Furthermore, the explanation has generated remarkably few, if any, new and interesting hypotheses about racism. What other theories of racism are available? Do they perhaps provide additional hypotheses on the subject, and are these theories compatible with evolutionary theory? I would like to present a concise explanation of racism that is not based on the idea of kin selection, but on the logic of group formation (Roes, 1989).

To be sure, people of a given race often have friends of the same race. Likewise, generally speaking, rich people have rich friends, artists meet artists, popular children don't play with unpopular ones, truck drivers help other truck drivers, Catholics marry Catholics, the old stick together, etc. It should be clear that 'like prefers like' cannot always be explained by kin selection.

I want to point out that the following explanation (which is an application of Mancur Olson's theory of groups to the subject of racism) is quite compatible with evolutionary theory, for it assumes that individuals behave so as to maximize their personal gain, which is easily deduced from the assumption that we behave so as to maximize our reproductive success or inclusive fitness.

(1) Groups usually strive for homogeneity and for control of the number of their members. Within societies, coalitions of individuals, or groups, strive for goals. (Actually, groups don't strive for anything, but their active members and leaders do.) The economist Olson argues that groups never primarily aim at achieving more wealth or more well-being for the society as a whole but, rather, strive to redistribute the existing wealth of the society to benefit their own members. Groups compete with one another for a larger share of the societal pie, and a larger slice for one group usually means smaller slices for other groups--or, at least, it is often perceived that way by members of different groups.

Compare a group composed of a businessman, a housewife and a taxi driver with a group composed solely of taxi drivers. It seems obvious that there will be fewer conflicts of interest within the latter group about how the existing societal wealth should be redistributed, because the members of this taxi driver group have similar interests and needs. For that reason homogeneous groups are likely to be unanimous and thus more successful than heterogeneous groups, and groups therefore strive for uniform, homogeneous memberships. (I will continue to quickly jump to conclusions, but you will find extensive argumentations in Olson's impressive work).

(2) Furthermore, groups often strive to reduce or at least control the number of members of their own group. With a given slice of the societal pie, more members implies that each member will get less. Successful groups like ruling classes or castes probably always were quite concerned with controlling the numbers of their own members. One method frequently employed to meet this problem is unilateral descent, that is, only the offspring of one sex belong to the privileged group. Another method is endogamy: You are expected only to marry within the own group. It is interesting to note that the European nobility used a 'biological'-sounding justification for this last method: The noble 'blue blood' should not be mixed with other blood.

(3) Stable traits are more suitable than variable ones. Given that groups strive for

homogeneity (that is, similar traits in members are preferred), do some traits promise more success for a group than other traits do? Imagine, for the sake of argument, that the defining trait is 'long hair'. A problem with such a trait which can easily be varied is that once the group has become clearly successful, it will soon be invaded by lots of other people who got the clever idea of growing their hair. So stable traits are more suited than variable and fluctuating ones. Sex is a stable trait, and in every society groups of one sex prevent individuals of the other from occupying certain professions, exercising certain rights, etc. Race is a trait even more suited than sex for coalition formation because, combined with endogamy, the trait will be preserved for many generations. Given a stable distribution of races within a society, a nation-wide group or coalition based on race simply cannot grow too fast. So the stability of racial traits is a major reason why humans tend to organize themselves in racial interest groups. And, of course, interest groups are often antagonistic.

A racial trait such as skin colour seems a rather trivial thing for the foundation of groups and coalitions that may divide societies. But imagine that the group formation process, defined by race, somehow gets started (for instance because one population is conquered by another, as in South Africa), and one group is differentially successful. Then soon the racial trait will be associated with many other traits: different incomes, education, lifestyles, etc. These traits in turn may be used to justify differential treatment of individuals of different races. In other words, group formation based on race will become a self-reinforcing process. A racist attitude, which seems to be a virtually inevitable outcome of a group formation process based on race, also strengthens this process, because racism eliminates possibilities outside of one's own racial group, thus strengthening the grip of racial coalitions on their own members.

Unfortunately, the promotion of prejudices about race, ethnicity, culture, and intergroup differences in lifestyle will... make the coalition work better. The inculcation of these prejudices will increase the probability that the

members will follow the rule of endogamy and strengthen selective incentives by interacting socially only with their own group, of their own accord (Olson, 1982: 160).

So racism breeds further racism, and there may even be a retaliatory aspect: If a person of race A treats another of race B unfavourably because of race, retaliation is likely.

(4) Small numbers are more suited than larger ones. Olson argues that, other things being equal, small groups are more successful than larger groups. A major reason why this should be so is that in small groups it is easier to detect and punish 'free riders', that is, people who selfishly profit from what the group has achieved for its members, but who do not help in achieving these goals.

Applied to the subject of race, the prediction would be that racial minorities are generally better organized than racial majorities, and therefore tend to get a larger slice of the societal pie, which in turn may lead to hostile reactions from the majority. It is not difficult to point at minorities who do not fit this prediction. On the other hand, many cases may fit the prediction--this is for historians to judge. The powerful and wealthy Tutsi minority clashing with the Hutu majority in Rwanda seem to provide a recent example.

If Olson's theory of groups, applied to racism, is accepted as an alternative to kin selection theory with regard to explaining racism, it seems valuable to scrutinize historical, empirical evidence relevant to predictions of this theory, for instance about the relative organisational capacity of racial minorities. Some hypotheses (such as those regarding the relative stability of traits, or the numerical size of minorities) seem in principle also suited for experimental testing.

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SOCIETY NEWS

ISHE Website Directory

Astrid Juette has volunteered to compile an e-mail membership list for our internet homepage based in Vienna: <http://evolution.humb.univie.ac.at/ishe.html>. This will allow access to the e-mail address of any ISHE member.

In order to be listed, please provide the information requested on the form below and e-mail it to: astrid.juette@bigfoot.com. The list will be continuously updated, so there is no deadline for submission. Please provide this information directly to Astrid even if your e-mail address appears correctly in the green Membership Directory, since otherwise there is no way to know if your address is still correct. If your e-mail is not working, you may send the information by post to: Astrid Juette, Ludwig Boltzmann Institute for Urban Ethology, Inst. f. Human Biology, Althanstrasse 14, A-1090 Vienna, Austria.

Information Requested (please print clearly):

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e-mail address
Institute
Link to your institute/university: <http://.....>

Psychology Internet Resources

Submitted by Barbara Fuller

The Social Psychology Network (<http://www.wesleyan.edu/psych/psych260/2050prog.htm>) may be of interest to members. Its pages include:

Online Career Center (<http://www.wesleyan.edu/psyc/psyc260/career.htm>), with job postings from the American Psychological Association, American Psychological Society, and elsewhere; information on student financial aid and internships; advice on applying to graduate school, creating a c.v., taking the Graduate Record Examination; and resources for minority students.

Links to U.S. Psychology Ph.D. Programs (<http://www.wesleyan.edu/psyc/psyc260/ranking.htm>), which reports on 185 schools rank ordered by the National Research Council.

Psychology Organizations on the Web (<http://www.wesleyan.edu/psyc/psyc260/psyc.htm>). This page now includes an annotated list of links to national and international psychology associations, with direct links to obtain membership information.

Psychology Web Links by Area (<http://www.wesleyan.edu/psyc/psyc260/psylinks.htm>). This covers the following areas of psychology: clinical, social, cultural, developmental, personality, cognition and perception, neuroscience and psychophysiology, and research methods and statistics.

Web Tools for Researchers (<http://www.wesleyan.edu/psyc/psyc260/tools.htm>). This includes searchable databases (e.g., PsycCrawler, Mental Health Net), online reference information (e.g., dictionaries, measurement converters), software sites (e.g., statistical programs, psychology software, shareware), research and grant guides (e.g., National Science Foundation grant proposal guide, National Institute of Mental Health

guide), manuscript and grant submission information (e.g., author guidelines), and assistance searching the web.

The Social Psychology Network is maintained by Scott Plous, Dept. of Psychology, Wesleyan University, Middletown, CT 06459 USA.

Report on HBES Meeting in Tucson

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The Human Behavior and Evolution Society met 4-8 June 1997 in Tucson at the University of Arizona for its ninth conference. I was impressed by how much bigger, broader, more ambitious, and more sophisticated the meetings have become. I remember that 10-12 years ago, before HBES was formally founded, it was a group of 50 or so of us who met at one-day conferences in Ann Arbor, Michigan. Participants brought cookies and such, and socialized after the meetings at Randy Nesse's home. This year there were four full days of presentations with three concurrent sessions, as well as a banquet, barbecue, poster sessions, new investigator competition, and graduate student meeting. A. J. Figueredo, Mark Flinn, James E. King, and David C. Rowe planned an excellent program, and the organizing committee did a superb job putting it all together.

The diversity of research presentations was remarkable. There were sessions on the psychology of human mating, war and evolution, leadership, depression, criminality, sexual coercion, Darwinian medicine, cognition, and arts and language from an evolutionary perspective. Several papers helped to integrate behavior genetics, brain size, and individual differences. Tooby and Cosmides addressed "The computational theory of communication," S. Gangestad "The impact of good genes," Robert Boyd "The nature of culture," and David Buss "The coevolution of conflict between the sexes." Altogether there were 160 presentations, plus an "octavian discussion" on evolution and religion in which

BOOK REVIEWS

The American Father: Biocultural and Developmental Aspects

By Wade C. Mackey. Plenum Press, 233 Spring St., New York, NY 10013 USA, 1996, \$42.50(hdbk.).

Reviewed by Vern L. Bullough, University of Southern California. Mailing address: 17434 Mayall St., Northridge, CA 91325 USA.

This is a comprehensive look at fatherhood using anthropological and biological information, and empirical data from a generation-long cross-cultural study of over 50,000 adult-child groupings from 23 countries. After finding that men spend significant proportions of their time with their children when no women are present, Mackey argues that fathers are there because they want to be with their children. He wonders whether this is a biological given, and he examines the biological literature to see if "phylogeny created the dad."

He finds that adult male nurturing of the young is not widespread in the animal world. In many of the groups where it is common such as birds, it has little to do with human fathering. In canids, whose way of life is analogous to that of humans in some ways, he finds more examples, i.e., the wolf, fox, jackal, and hunting dogs. However, caregiving is virtually a female-only behavior among primates, with a few exceptions such as the Barbary apes/macques, baboons, gibbons, and to some extent the tamarins and marmosets.

As for humans, he reports a "reasonably predictable pattern" of paternal behavior, the key to which is men's desire to share food and other resources with their young, play with them, and teach them. For much of human history, this seemed to be enough, and there was little societal concern about men taking a more nurturing role. In fact

audience members were invited to participate. The keynote address by Frans deWaal was a very thought-provoking presentation on "Apes from Venus: bonobos and human social evolution."

There were lots of evolutionary psychologists, sociobiologists, and anthropologists in attendance, but also behavior geneticists, psychiatrists, political scientists, philosophers, specialists in esthetics, literature and the arts--even an occasional sociologist. From Napoleon Chagnon to Nancy Segal, it was a rich blend of scientists and educators on the cutting edge, many of them among the best in their fields. There were students too, including a couple of my own.

The highlight of the conference for me was John Alcock's delightful plenary "roast" entitled "Unpunctuated equilibrium: evolutionary stasis in the essays of Stephen J. Gould." While it was not possible for a one-hour talk to be as complex as J. P. Rushton's brilliant recent paper on Gould's "errors and omissions" [*Personality & Individual Differences*, 23(1)], Alcock's presentation was nonetheless a full-scale debunking of Gould's modus operandi and a rousing reply to his many criticisms of evolutionary psychology, most recently in the *New York Review of Books*. Alcock received a standing ovation--not only because of its content but because he presented it with the perfect timing of a stand-up comic. Frank Miele commented afterward that it highlighted the gulf between expert opinions of scientists actually working in various fields and the "experts" turned to by the educated public, many government agencies, and the media. And I agree with him that Alcock's address was so important that it should have been a headline story in the science section of major newspapers and broadcast media.

All in all, it was a wonderful HBES convention, perhaps the best ever.

there was not much discussion of the father role for much of the twentieth century. The concentration was on the mother, and it seemed that although males were necessary biologically and economically, the key to family rearing and nurturing was regarded to be the mother.

Mackey claims that three images dominated discussion of fatherhood in the behavioral sciences for much of the middle years of the twentieth century: those of the primatologist Harry Harlow, the psychoanalyst John Bowlby, and the anthropologist Margaret Mead. All emphasized the importance of the mother, and Mead especially argued that men had no natural urge to paternity and did not suffer from refusing paternity. In short, human fatherhood was a social invention.

As families have grown smaller and as women have been better able to control their pregnancy rates, research has changed to look at the father, as if in a deliberate attempt to change attitudes and commit the male to different kind of nurturing role. This trend began in the 1970's. Mackey says it was then that the concept of the father in the social sciences changed from his irrelevance to his underachievement. All kinds of social ills were found to be due to an absent or uncaring father. From one extreme we went to another.

Holding that centuries know more than social scientists who seemingly wend their way through each current fashion, Mackey concludes that men readily adopt the fatherhood role. This, however, should not be confused with the motherhood role, but is the traditional one of providing for their children, being protective of them, playing with them, and being reluctant to leave them. What each generation of fathers does is to incorporate the traditional with the fashionable. To tamper with the traditional in too violent a way, he argues, is to toss the baby out with the bath water.

He feels that the chief father "abrading machine" now at work is single-parent births and no-fault divorce. Somehow changes must be made in these areas because they reduce father-child bonding. Even in his pessimism, he believes that much of traditional fatherhood will survive since

there is probably a genetic factor involved. He contends that parental behavior would have been selected for because women would have chosen males who had such inclinations.

While I do not agree with much of Mackey's speculations about the future and feel that his cross-cultural data do not always ask the right questions, he has written an interesting and thought-provoking book that obviously involved massive research.

Reaching into Thought: The Minds of the Great Apes

By A. E. Russon, K. A. Bard & S. T. Parker (Eds.). University of Cambridge Press, The Pitt Building, Trumpington Street, Cambridge CB2 1RP, U. K., 1996, \$84.95 (hdbk.).

Reviewed by Barbara J. King, Dept. of Anthropology, College of William and Mary, Williamsburg, VA 23187-8795 USA.

"The characteristics of the great apes inject ambiguity into neat distinctions between 'human' and 'animal'..." With these striking words offered by Anne Russon and Kim Bard (p. 2), two of the editors of *Reaching into Thought*, a theme for the book is established. Great apes--chimpanzees, bonobos, gorillas and orangutans--are not only humans' closest living relatives in terms of molecules, anatomy, and basic behavior, but also with regard to cognition. Their sophisticated skills in areas as diverse as tool use, imitation, self-awareness, pretend play, numerical reasoning, mindreading, and teaching mediate between those of humans and other animals, throwing cherished ideas of human uniqueness into chaos.

Reaching into Thought contains 9 chapters in each of two sections (the scope of great ape intelligence and the organization of great ape intelligence), plus a lucid, useful introductory chapter by Russon and Bard. The chapters vary in the usual ways (e.g., quality of writing, ranging from the admirably clear to the densely jargon-filled) but also in how the authors link their data with the topic of great ape intelligence. Some present data and conclusions with minimal discussion while

others embed these in elaborate theoretical frameworks.

The data on great ape intelligence are still relatively limited, so the same data pop up repeatedly across chapters. It is interesting to track differences in interpretation, as of teaching by great apes. Parker, in her chapter on apprenticeship, says that "demonstration teaching" in the manual modality occurs in wild chimpanzees (p. 354). She asserts that "at least some chimpanzee mothers" can teach, and refers to data from Tai, Ivory Coast (provided by Christophe Boesch in his chapter and in earlier publications) on some mothers facilitating acquisition of tool-using skills by their infants. Adding some anecdotes about other apes, Parker concludes (p. 358) that teaching by demonstration arose in the common ancestor of all great apes (see her accompanying discussion of phylogenetic inertia).

But Josep Call and Michael Tomasello remind us that the Tai data on teaching are very scarce and open to alternative interpretation, and that home-raised apes have shown little evidence of teaching. The Call and Tomasello chapter is a useful "brake" on some of the more sweeping claims for great ape intelligence, for it reminds us that these claims are often based on apes reared with extensive contact with humans.

The chapters that I found most thought-provoking include those by Ellen Ingmanson, Russon, and Richard Byrne, all of whom recognize the need to complement controlled, laboratory studies of intelligence with innovative research on free-ranging subjects. Each is willing to look beyond conventional definitions of intelligence to do so. As Ingmanson put it, "if we are to understand what intelligence is and how it evolved, we must not restrict ourselves to narrowly conceived or narrowly interpreted definitions, but also examine other closely related behaviors that are indicative of similar levels of competency" (p. 190).

In her study of bonobos at Wamba, Zaire, Ingmanson found no tool use in food acquisition akin to termite fishing, ant dipping, and nut cracking by common chimpanzees. She did see other behaviors that may well be

cognitive equivalents to these. Her discussions of rain hats and branch dragging provide fascinating glimpses into the workings of bonobo intelligence, as do her data on the use of a stick as a communicative signal in play.

Russon appeals to researchers interested in imitation to complement laboratory studies with those of spontaneous behavior, as she has done in a population of ex-captive orangutans in Indonesian Borneo. Using these data, Russon builds a convincing picture of true imitation as an active process of abstraction and reconstruction, one which may be used repeatedly in a sometimes complex and lengthy learning process, often in conjunction with other processes. This differs considerably from the accepted view of imitation as "a rather passive and faithful echoing of an arbitrary demonstration achieved in a single, immediate attempt" (p. 156). This picture seems to apply to a captive orangutan whose imitation capacity is assessed in a chapter by H. Lyn Miles, R. W. Mitchell, and S. E. Harper: "Chantek's responses were usually not formulaic and well-trained reproductions," but rather showed sensitivity to the specific circumstances in which he found himself (p. 294).

In his chapter, Byrne notes that gorillas have often been portrayed as cognitively inferior to chimpanzees. He presents data to show that gorillas can imitate at the program or structural level, a feat of greater sophistication than mere copying of details. He also brings in data on gorilla social structure, noting that all gorilla groups at Karisoke, Rwanda now have more than one silverback male. This creates options for males (in terms of defensive tactics) and females (in terms of mating), and thus applies pressure for the evolution of cognitive skills. De Waal and Aureli also include social organization in their chapter on reconciliation in chimpanzees and macaques, as do Parker and Russon in the final, theoretical chapter. Nevertheless, the link between social organization and intelligence is not fully developed in the book.

In the final chapter, Parker and Russon present a comparative functional definition of cultures, expressly in order to forge links with anthropological and psychological studies. They provide an overview of different

levels of cultural adaptation in living primates, and thus make explicit what Ingmanson, Russon and Byrne try to do in their own chapters, i.e., find a way to understand (1) what nonhuman primates do and (2) how what they do is linked to the evolution of intelligence and culture as defined in terms that avoid anthropocentrism.

Innovative methodologies are to be found in the book as well, including Sarah Boysen's procedures for studying numerical skills in chimpanzees, Matsuzawa and Yamakoshi's use of an outdoor laboratory to conduct experiments on how tool using skills are acquired, and Gomez's use of eye contact to study intentional communication in gorillas. The remaining chapters are written by James Anderson, Elisabetta Visalberghi & Luca Limongelli; Kim Bard & Kathryn Gardner; Andrew Whitten; Jonas Langer; and Daniel Hart & Mary Pat Karmel. Each provides worthwhile pieces of the puzzle of great ape intelligence.

No edited volume can fully please every reader. Two editorial choices disappointed me. First, only one chapter (Ingmanson's) focuses primarily on bonobos, and many of the chapters do not even differentiate between chimpanzees and bonobos. As primatologists have known for at least a decade, studying these two species separately is warranted given the differences between them. Second, and more serious, the editors decided to regard "two critical factors in intelligence, the brain and language, as beyond [the] scope of the book" (p. 2). The decision about the brain is sensible, but the one about language is not: The topic kept cropping up in chapter after chapter, with reference to other recent volumes. Exciting new information about ape communication both in captivity (e.g., Tanner and Byrne, 1996) and in the wild (e.g., Savage-Rumbaugh et al., 1996) must be considered in parallel with other investigations into the great ape mind.

If this book is assigned in student seminars, care should be taken to include supplementary reading on communication and language. The book may be hard going for all but the most advanced undergraduates, but it is appropriate for graduate students.

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The Evolution of Communication

By Marc D. Hauser. The MIT Press, Cambridge, MA 02142, 1996, \$55.00 (hdbk).

Reviewed by Mark A. Krause, Department of Psychology, 307 Austin Peay Building, The University of Tennessee, Knoxville, TN 37996-0900.

The cause of widely different sounds being uttered under different emotions and sensations is a very obscure subject...It is not probable that any precise explanation of the cause or source of each particular sound, under different states of mind, will ever be given (Charles Darwin, 1872, pp. 85-86).

Research on animal communication has advanced considerably ever since (and largely because of) Darwin's work on the topic. His apparent skepticism that the study of nonhuman vocalizations could ever yield any causal explanations for their sources has proven unjustified by contributions such as Hauser's.

Marler (1965) was among the earliest workers in the field to systematically examine the design features, function, and meaning of animal communication. He analyzed animal vocal communication using definitions similar to those employed by linguists. Syntactical and pragmatic (semiotic) analyses of animal signals eventually came to be viewed as amenable to comparative study. Historically, this is where the "logical analysis" of animal communication began and, within it, an evolutionary perspective on the structure,

meaning, and function of animal signals. Surely Darwin would have been pleased.

This brings us to Hauser's lengthy and highly detailed exploration of human and nonhuman vocal and auditory communication. Hauser's thorough treatment of research on these modalities, and his coverage of a wide variety of taxa (mostly vertebrates), renders the book useful to professionals and students with research interests in communication. The book should be of interest to workers in the fields of neurobiology, comparative psychology, ethology, and behavioral ecology. One strength of the book lies in the abundance of research questions that Hauser poses following many of the topics he covers.

A synopsis of the book and a general overview of the field are provided in the first chapter. Following this is a very helpful historical account of the field. Conceptual issues relevant to the study of animal communication are discussed in the third chapter. The next four chapters cover the neurobiological, ontogenetic, adaptive, and psychological design features of communication among a broad range of taxa. In the final chapter, Hauser develops theoretical and methodological ideas and provides many suggestions for future research in animal communication.

Hauser mainly reviews ethological field studies. This is perhaps the best approach to understanding the evolution of communication. Tinbergen's four aims and methods (ontogeny, causation, adaptive value, and phylogeny) serve well as a framework from which human and animal communication are explored.

Animal communication systems differ in many fundamental ways. Hauser indicates, appropriately, that some domains of language are unique to humans. This fact does not preclude interspecific comparisons. Hauser appreciates both the similarities and differences that exist between species.

From a comparative perspective, the evolution of human language remains one of the most vexing problems to the study of animal communication. In his treatment of this topic,

Hauser contrasts the viewpoints of several prominent linguists (Lieberman, Chomsky, Pinker, Hockett, and Bickerton) and biologists (Marler and W. J. Smith). There remains a reluctance on the part of linguists to consider syntax in an evolutionary framework (but see Pinker & Bloom, 1990). This is perhaps a holdover from the Chomskyan school, wherein many of the communicative aspects of speech were separated from the syntactic structure of language.

The syntactic structure of nonhuman animal communication was within the purview of earlier ethologists and, to some degree, remains so. The structure of animal communication and the rules that govern its patterning and perception are now called design features. This suggests a retreat from early attempts to treat human language and nonhuman communication as comparable and possibly, homologous. None of this, however, undermines the ethological study of human language, which is the approach that Hauser takes. He discusses much of the recent neurobiological and morphological research on the production and perception of acoustic communication in both humans and nonhumans, and offers thoughtful insights into the evolution of human language.

Following the chapters covering the design features of communication, Hauser describes how information is conveyed, categorized, and manipulated. Studies dealing with intentionality and deception receive the greatest amount of attention in the last two chapters. The affective, motivational, and intentional components of communication are relevant to many contemporary ethologists.

The study of referential communication, an area that Hauser has researched extensively, is of primary interest to those studying intentionality. Consistent differences appear in the vocal calls of species ranging from domestic chickens to vervet monkeys, as evidenced by spectrographic analyses. Calls tend to be reliably elicited within specific contexts. Hauser accepts certain deviations from normal eliciting conditions as potential evidence of deception. Male domestic chickens, for example, withhold information about food when other males are present, but emit food

calls in the presence of hens (Evans & Marler, 1994), which may suggest functional deception. Intentionality, however, does not necessarily mediate this behavior.

Can nonhuman animals "mindfully manipulate information"? That is, do intentions or beliefs underlie any of their behaviors? These questions are both philosophical and empirical. The philosophical explanation of intentionality and belief is by no means unanimously agreed upon. Allen (1995) maintains that intentionality is useful to researchers in comparative cognition, despite the fact that philosophers have yet to agree on what it is and whether such a concept lends itself to empirical investigation. Many comparative psychologists and ethologists find the term useful for interpreting animal behavior, despite the lack of clarity that surrounds it. For those that accept the term, intentionality is viewed as a requisite for imitation, pedagogy, self-recognition, social attribution, and theory of mind.

In the last two chapters of the book, Hauser reviews much of the research on nonhumans that deal with these topics. At this point, he goes beyond vocal-auditory systems and discusses evidence for the attribution of knowledge in both humans and nonhumans. Intentionality and knowledge attribution are necessary characteristics for tactical deception. The evidence we have at hand, much of which is reviewed by Hauser, suggests that nonhumans can engage in tactical deception. The last two chapters of this book are greatly enriched by Hauser's willingness to accept the concept of intentionality. One measure of the value of a concept is the quantity and quality of research that stems from it. Cognitive ethologists have benefited greatly from this concept (see Bekoff & Allen, in press; Dennett, 1983; Ristau, 1991), and Hauser proposes further directions that can be taken in the study of "mindful manipulation."

The field of animal cognition has blossomed within the past few decades largely because researchers have begun tackling highly complex questions. *The Evolution of Communication* provides a thorough review of recent ventures into novel and productive

research areas. The book is a fine blend of traditional and cognitive ethology. For the most part, Hauser considers animal communication from each of Tinbergen's four perspectives, with the least amount of coverage devoted to phylogeny (i.e., the comparative method). This book would serve as a great graduate seminar reading, and as a useful reference for students considering careers in behavioral ecology or ethology, and to active researchers working in field or laboratory settings.

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The Stone Age Present: How Evolution Has Shaped Modern Life --From Sex, Violence, and Language to Emotions, Morals, and Communities

By William F Allman. Simon & Schuster, Rockefeller Center, 1230 Avenue of the Americas, New York, NY 10020, USA, 1994, \$23.00 (hdbk); \$12.00 (ppr).

Reviewed by Jukka-Pekka Takala, National Research Institute of Legal Policy, P.O. Box 1200, Fin-00101 Helsinki, Finland. Email: Jukka-Pekka.Takala@Helsinki.Fi

William Allman is a senior writer at *U.S. News and World Report*, where he covers anthropology, brain science, and human behavior. His earlier books include *Apprentices of Wonder*, which chronicles the recent development of intelligent, brain-style computers.

The Stone Age Present is a nice popular presentation of quite a range of ideas and findings in recent evolutionary psychological research. The book is probably most useful for people like myself who only recently have become seriously interested in evolutionary psychology and have not read widely in the area.

Allman covers a lot of ground in a relatively short space--more than do some other recent popular book-length essays on related subjects, such as Robert Wright's *The Moral Animal*, Stephen Pinker's *The Language Instinct*, Matt Ridley's *The Red Queen*, and David Buss' *The Evolution of Desire*. Allman includes, for instance, more discussion on the human origins than those other, somewhat more focused books do. Allman's references to scientific literature are also more sparse. It is somewhat chattier--and not only for containing quotations from interviews with persons such as Paul Bloom, Leda Cosmides, Margo Wilson, Randall White, Robert Axelrod, John Tooby. This means less precision on many points, but the chatty mode can also be quite economical in conveying a number of important insights without the usual buffering caveats.

For instance, there are good

pedagogical points about topics such as sexual selection, mediation in chimpanzees, the evolution of female breasts, the benefit of Tit for Tat, sex differences in reproductive strategies, and the Out-of-Africa hypothesis, or why we are basically neither just aggressive nor just nice. Allman describes key observations and experiments in a comprehensible manner, and tells the reader why they made a difference.

I enjoyed the clear summaries of some issues that I had read about at greater length elsewhere and had not always understood. For instance, I appreciated what seemed to be interview statements by Leda Cosmides on her and John Tooby's work with the Wason selection tasks. And while I knew about the cheater detection test, I had not known about the gender differences in a similar test that measures readiness to call a bluff.

I could make similar statements on many other topics Allman discusses. These include: the male/female differences in spatial abilities, incest avoidance mechanisms, differences between traditional sociobiology and evolutionary psychology, theories that attribute the growth of human intelligence to social life, autism as a condition where the ability to form a 'theory of mind' is lacking or defective, the nature of illnesses, emotions as commitment devices (Robert Frank), mate choice, chimpanzee warfare, and the origins of tool making.

For instance, I had not noticed Axelrod's work on the evolution of punishment, policing the social contract, or the theme of telling "us" from "them". This is something that has not been advertised as much as his work on the evolution of cooperation in simple societies of computer programs.

So I find Allman's book a good condensation of many important and interesting ideas. It refreshed in my mind many things I had read earlier elsewhere, and it led me to many new ideas and sources.

Having said this, I must add that I did not find all of his summaries as lucid or reliable as I had wished--the idea of 'mitochondrial Eve', for instance. You cannot find him state clearly the idea that 'Eve' would have been

the most recent person through whom the mDNA of all humans living today has passed. I sense that in warding off possible misunderstandings he fails to spell out clearly the correct understanding. He asserts that 'Eve' "is simply the only person whose descendants have had a daughter in every generation up to the present" (p. 191). Well, this is close, but not quite there. Eve was the last one of those persons who were the only females in their generation whose female descendants have had a daughter in every generation up to the present. Eve's mother (her mother's mother, etc.) was also the only one in her generation to give issue to an unbroken female line, but she wasn't the *last* woman with this quality. Also, at least two of Eve's daughters gave birth to uninterrupted daughter lines (as did their daughters), but none of them was the *only* such a woman in her generation.

Despite this and other occasional lapses, I found Allman's reporting quite reliable. At any rate, it is excellent as a concise tourist guide, as it were, to a terrain that must ultimately be observed at a closer distance.

How Humans Evolved

By Robert Boyd and Joan Silk. W. W. Norton & Company, 800 Keystone Industrial Park, Scranton, PA 18512 USA, 1997.

Reviewed by Adam Wetsman, 2019 San Ysidro Dr. Los Angeles, CA 90210 USA.

Finding appropriate reading material for introductory human evolution courses is quite challenging. Many texts marginalize information relating to humans; others focus solely on the subject without providing the requisite systematic examination of the underlying theoretical considerations and empirical research in various subdisciplines that make conclusions about our species possible. As has occurred many times in the past, a solution grew out of the challenge presented.

Arising as a practical response to this problem, *How Humans Evolved* has the potential to become an important resource for those teaching human evolution. The book began in the form of bound lecture notes the two

professors gave to students. The notes fulfilled the need for a solid theoretical framework, information about primates and other species, and a survey of our evolutionary past. Humans are examined against this backdrop.

Boyd and Silk thought about publishing their notes when others (Henry Harpending and Alan Rogers) began to use them for their classes. They then embarked on the arduous process of transforming the lecture notes into the finished version. The result is a text which incorporates all of the necessary elements for a thorough overview of human evolution. Make no mistake: *How Humans Evolved* is not merely a collection of lectures pasted together under one cover. After many years of intensive research and writing by these prominent evolutionary biologists, this textbook is a polished finished product with hundreds of color figures and photographs.

Initial examination reveals that accessibility was a major concern for Boyd and Silk. Important points are set in italics, denoted in the margins with a distinct icon. Student interest is enhanced by providing a short essay in each chapter describing a topic related to the general content being discussed. For example, the chapter devoted to an introduction of the primates recounts the story of how a previously unknown lemur species was discovered. In addition, the book is structured so that successive chapters build upon knowledge provided earlier in the book.

The book is divided into four parts. The first presents an overview of natural selection and includes information about Mendelian genetics, meiosis and mitosis, molecular genetics, protein synthesis, and population genetics. One of the four chapters in this part is devoted to the definition and origin of species and explanations of how phylogenies are reconstructed.

Primates are the focus of the second part, which contains five chapters. In addition to providing a comprehensive overview of the diversity and lifestyles of our closest relatives, this section uses examples from the literature on primates to teach some of the more advanced components of evolutionary theory. As opposed to merely providing a theoretical overview of sexual selection, for example, Boyd and Silk illustrate how the concept can explain patterns

of body and testes size dimorphism for primates with different social systems. A similar approach is used to show how reciprocity can evolve. This part of the book also devotes a chapter to the evolution of primate intelligence.

Part Three is devoted to the fossil record and comprises about one-third of the book. As is standard, several chapters are devoted to detailed descriptions of the hominid species, including both *Ardipithecus ramidus* and *Australopithecus anamensis*. A few specialty chapters are devoted to the evolution of primates and the origin of language. Boyd and Silk address difficult and unresolved issues in this part of the book. Examples include discussions of the hunting/scavenging debate, mitochondrial Eve, and the replacement vs. multi-regional hypotheses for the origins of modern humans.

One attribute that occurs throughout *How Humans Evolved* can be illustrated by describing how students are led through the processes by which paleoanthropologists make inferences from fossil discoveries. Consider the issue of how to interpret concentrations of Oldowan tools and associated animal bones. The authors explain why an immediate conclusion that early members of our genus were hunting game could be too hasty, since such accumulations could be the result of random mixing or other taphonomic processes, or of scavenging. Boyd and Silk then address these other possibilities. The effect of this approach is to instruct students in how to critically evaluate available data.

Once the authors have equipped students with information about underlying theoretical considerations, comparative data from related species, and insight into our evolutionary past, they tackle the issue of how such knowledge can be applied to the study of modern human behavior and morphology. With a wide range of topics available, Boyd and Silk could only provide an overview of research in the area. Although detailed descriptions are often offered, only a limited number of topics could be covered. These include human genetic diversity (along with a discussion of the race concept), maternal-fetal conflict, the evolution of senescence and menopause, mate preferences, adoption, and infanticide. There is also a good discussion of

Membership Renewals

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evolutionary psychology. An overview of Boyd's work on coevolution is included as well.

As is expected with textbooks that survey a single field of inquiry, those hoping to find detailed descriptions of one particular topic or another may not be completely satisfied. This becomes apparent in the fourth part of *How Humans Evolved*, which applies evolutionary theory to our species. Little space is devoted to human reproductive ecology, development, components of attractiveness, and other issues many people would deem important. However, this is more an outcome of textbook development than an oversight on the part of Boyd and Silk.

Overall, *How Humans Evolved* provides a thorough introduction to human evolution. Students and professors alike should find this text both accessible and informative. Norton has also provided a web site (www.wwnorton.com/college/anthro) with additional information on related topics. Students are given a password valid for six months of access when they purchase the textbook. A CD-ROM with even more multimedia information is also anticipated. A teacher's guide and color overheads are available as well. Coupled with these additional features, *How Humans Evolved* should prove a valuable resource for those teaching introductory classes in human evolution.

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Cerebral Codes: Thinking a Thought in the Mosaic of the Mind

By William H. Calvin. MIT Press, 55
 Hayward Street, Cambridge, MA 02142-1399
 USA, 1996, \$22.50 (hdbk.).

Reviewed by Dorothy Tennov, RD #2, Box 251,
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Cerebral Codes concerns how the brain might work at the currently unobservable region just below thought, the firing patterns of cortical neurons. The author is University of Washington theoretical neurophysiologist William H. Calvin. He maintains that this level of analysis "immediately subjacent to that of perception, creative thought, and planning" is the appropriate one for understanding higher intellectual functions.

The book is an ode to selection (what he calls the Darwin Machine), the creative process that is so common in nature (Dawkins, 1976) and represented (1) on a geologic time scale by speciation, (2) in days to weeks by the immune system, and (3) in milliseconds in the corticocortical neurons in the superficial layers of cerebral cortex by the mechanism responsible for thinking. Evidence from techniques that allow observation of living human brains suggests that memories are repetitive across many cells. Looking at the brain from above, Calvin envisions a patchwork of incessantly active interlocking hexagons, the boundaries of which are dynamic, "twinkling" with vibrancy. While the firing patterns of spatiotemporal representations last for a while, they must be prepared for transformation via a cerebral code into spatial representations for permanent (long term) storage with capacity for retrieval. Following his own advice that in science it is always better to give a specific example—even if it is only a possibility, not yet a well-established finding—Calvin's theory is replete with intriguing details regarding the implications of his model.

Two neuroscience events in 1991 enabled Calvin to conceive of the operation of neurons in cortex as a Darwinian process. First, synchrony was found in nervous tissue; second, standard-

length axons were observed in the very area of the brain in which the processes responsible for higher intellectual functions appeared to take place. In Calvin's conception, thoughts--combinations of sensations, memories, and imagined plans of action--take the form of "cerebral codes," the cloning of which produces the replications needed to start up the Darwin Machine. Standard-length axons in the outermost layers of the neocortex opened a door into geometry from which came the concept of hexagons cloning with variation in a "multifaceted" neural environment that encourages some variations over others and in which memory is the re-evoking of activity patterns, or cerebral codes.

The "sophisticated groping," as Piaget referred to it, is, for Calvin, an evolutionary contest within the brain. The most active cortical representations are conscious; unconscious processes are background noises that come to transitory awareness in dreaming. Plastic areas in the brain do not retain their innate attractors. The triangular arrays in hexagonal Hebbian cell assemblies, like the lights of fireflies, live together in synchrony before they fade. In the cortex, unlike in fireflies, when the number of copies of spatiotemporal patterns of neural firing reaches critical mass, the circuit trips and the message is conscious. Unsuccessful competitors among the cerebral codes linger in weakened form and may later re-emerge.

For Calvin, the Darwinian process is correctly seen as consisting of six essential parts, natural selection being just one of them. The others include the capacity for replication, variation, competition, and inheritance, such that each generation is derived from the "more successful" of the one before, a process that "looks Lamarckian enough to overlay even inborn wiring patterns" (p. 117). If so, this might be of significance for cultural evolution.

In the past, neuroanatomists studied the brain, psychologists studied behavior, and the two were as separate as any Cartesian dualist would posit. No one studied the mind except philosophers and early heretics such as William James. Today, however, the study of brain and of behavior are often integrated.

For example, Derek Bickerton (1994), to

whom Calvin devotes several pages, speaks of a "catastrophic event" when the machinery for syntax suddenly appeared in whole cloth, and language was upgraded from protolanguage to a far more powerful form. The same neuronal machinery, Calvin opines, that is needed for throwing, dancing, and fondness for music underlies all languages; it is the syntactical substrate which they have in common and to which linguists refer as the Universal Language. It is not known, of course, which of the sudden new capacities was the adaptation and which the ones that, given availability of the marvelous apparatus, were then developed. Perhaps language piggy-backed on capacities developed to increase ability to throw projectiles ("hand-axes") at prey.

The basic similarity of language structure worldwide means that the big change happened early in human prehistory, roughly 250,000 years ago, as *Homo erectus* gave way to *Homo sapiens*, a change associated with a brain size expansion which, interestingly enough, overshot current size--the Neanderthals appear to have had cranial capacities larger than that of *Homo sapiens sapiens*. The focus shifted to internal organization and differentiation. More overall space was not needed; the payoffs for intricate organization were greater than for unorganized size. Consider the compactness (to say nothing of the retrieval capacity) of a tree-structured taxonomy compared with sheer proliferation of unconnected units. The Neanderthals may have had a protolanguage, even one with a large vocabulary, but they were incapable of the infinite variety of thoughts that can be thought and images that can be imagined that came with the neural machinery upgrade that made *Homo sapiens, Homo sapiens*.

Creativity and ability to plan are the result of ability to process images off-line and to analyze using metaphors. We imagine actions and their probable consequences, and then those consequences and their probable consequences, and so forth. The procedure helps us select the best. This is intelligence; it is mental rehearsal, abstraction, and what-if thought freed from immediate circumstances. Off-line thinking is what we can do that members of other species cannot (Bickerton, 1995).

Calvin's foray into the kinds of neural processes that might produce aspects of brain activity associated with higher intellectual functions can be traced to Donald O. Hebb's (1949) theoretical formulations. Hebb maintained that psychology concerned underlying processes, not just overt acts. Memory requires some form of enduring change – in the chemistry of the cells, in attractors, in firing patterns.

Whatever modifications of hexagon theory may be required, whatever criticism it may receive in spelling out a conceivable process at the level of events in the material world, Calvin operates at the frontier that has separated science and philosophy, the point of split from "qualia" to traceable patterns of electrical and chemical activity in neocortex. This may bother the pious, but is irrelevant here. Understanding which muscles, nerves, bones and neurotransmitters may be involved in lifting the arm does not produce paralysis of the limb. Similarly, understanding the nervous system does not in itself affect the process, (although understanding the process might lead ultimately to culturally mediated improvements).

Calvin's theory covers much psychological ground--intelligence, creativity, memory, even consciousness. Above all, he bridges a gap many believe to be unbridgeable--the chasm between behavior and observable physiological events, between the world of self (and self-consciousness) and the world of what really, physically, observably, goes on inside the previously inscrutable brain.

The Darwin Machine is the answer to the Argument From Design which to many minds, including (in subtler guises) the majority of scientific minds, remains the major "reasonable" objection to evolution (Dennett, 1995). Calvin intones that where the Darwin Machine operates, complexity unfolds despite simple beginnings, the plain turns into the fancy, and human beings emerge in unbroken line from unicellular specks. In Calvin's words, a "milliseconds to minutes Darwinian ratchet forms the foundation, atop which our sophisticated mental life is built" (p. 5).

Calvin published a second book in 1996, *How Brains Think*. Aimed at a more general audience, it covers much of the same theoretical ground as *Cerebral Codes*, and will be reviewed later in the *Bulletin*. Although

the "twin" books parallel each other, *How Brains Think* expands on subjects not dealt with in *The Cerebral Code* (e.g., ice age evolution and animal intelligence). Written "for colleagues," the latter will be of greater interest and be better understood by those familiar with the basic vocabulary and findings of brain theorists.

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Evolution and Literary Theory

By Joseph Carroll, University of Missouri Press, 2910 LeMone Blvd., Columbia, MO 65201 USA, 1995, \$44.95 (hdbk.).

Reviewed by Gary Cox, FL-Russian, Southern Methodist University, Dallas TX 75275-0236 USA

Some evolutionary scientists will be surprised to learn that "literary theory" means not just theories about literature but also adherence to a particular set of doctrines, called "post-modernism" or "post-structuralism" or "deconstruction," proposed by thinkers such as Derrida, Foucault, and Jameson. Deconstruction, like the infamous SSSM (Standard Social Science Model), poses a major theoretical challenge to evolutionary science. We may be inclined to write off deconstruction since it severs so completely the link between signifier and signified that science is impossible. Yet it is a mistake to ignore deconstruction, as the coexistence of such a radically opposed epistemology in a single academic world threatens the wholeness of intellectual life.

Furthermore, we should not forget that evolutionary science has an epistemological

problem not unlike the Kantian question posed so radically, and so anti-scientifically, by the deconstructionists. If the human mind is an evolved organ, adapted to the needs of Pleistocene foragers, what gives us any confidence that its structures correspond to the objective reality modern intellectuals crave? It is important to remember that the semiotic critique makes an important, if much overstated, point: there is no perfect fit between language and the environment. Humans construe the givens of our environments in ways that partially constitute our world rather than simply describe it. We do this because it is adaptive to shape our cultures in accordance with perceived and unconscious utilities. Fortunately, both everyday life and science can get by with an approximate fit between signifier and signified; science does this by floating falsifiable hypotheses and testing them multiple times for explanatory efficacy. Nonetheless if we take to heart the epistemological critique of language made by the post-structuralists (stopping short of buying into its more radical forms, of course), we can more effectively create a middle ground in this debate.

As it is, the ongoing debate suffers greatly from polarization and radical stances. Carroll's book does nothing to cool down the rhetoric--some passages simply seethe with rage. Certainly it is true that for any neo-Darwinian working in the humanities, the dominance of post-structuralism is a continual thorn in the side, but at times Carroll seems almost pre-Cartesian in his faith in congruence between the mind and the world it tries to represent with rational language.

In addition, in his polemical fervor Carroll seems to be setting up a dichotomy between heterosexual Darwinians and homosexual deconstructionists. To be sure, "queer theory" has been a formative part of the post-structuralist agenda, and the Darwinian paradigm does work better in the analysis of heterosexual behavior. But it would be unfortunate if this polarity were to be pursued too far. One of the most striking puzzles about *Homo sapiens* (especially from a Darwinian perspective) is the prevalence of homosexual behavior. This is a major issue for evolutionary psychologists to take up, and we will not solve it by treating it as an aberration.

Another startling by-product of the book's polemical fervor is that several scholars

quite friendly to evolutionary science, to wit, Thomas Kuhn, Frederick Turner, and Alexander Argyros, are treated here as opponents, little better than Derrida or Foucault. This is unfortunate; if we are ever to bring harmony into the academic world on these issues, we

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must cultivate the middle, not outlaw it.

Carroll's book does do more than just attack post-modern literary theory; he presents a theory of his own that is quite cogent. His critical gurus are Hippolyte Taine, Northrop Frye and Meyer Abrams. Taine was a 19th century Romantic who talked a lot about nationality in literature, which of course discredits him in deconstructionist eyes. Frye and Abrams are two prominent critics of the generation just before semiotics became fashionable. Carroll's theory is based on a hierarchy of themes within a framework of issues important to Darwinian thought, and it sets up an elegant paradigm for literary analysis. The authors he concentrates on are George Eliot, Walter Pater, and Robert Browning, and he gives solid, common-sense readings of their work. Indeed, one could argue that Carroll's aim in this book is to make the literary world safe once again for common sense.

In sum, Carroll provides a systematic, thorough, and brilliant polemic with the "literary theoreticians," and gives us a book that evolutionary psychologists would do well to use as a primer on the topic. It is unlikely, however, that any deconstructionist will read past the first paragraph, since post-structuralist epistemology typically sweeps aside, with Gallic disdain, the kinds of premises that inform Carroll's stance. From the standpoint of us evolutionists, Carroll's book gives the satisfaction of watching a darned good fistfight, in which our side is winning, but if the aim of the book is to win converts away from deconstructionism, it is unlikely to be very successful.

ANNOUNCEMENTS

Reminder: ISHE Convention Dates

The Society will hold its next biennial meeting at Simon Fraser University in Vancouver, Canada 19-23 August 1998. Our President, Charles Crawford, is the organizer. Further information will follow.

Workshop on Measuring Behavior

The second international workshop on measuring behavior is scheduled for Groningen, The Netherlands, 18-21 August 1998. (These dates unfortunately conflict with those for the ISHE convention in Vancouver.) Measuring Behavior '98 aims at the integration of advanced behavioral research with physiological measurements. One goal is to promote the use of techniques developed in one discipline by investigators in other fields. For example, data analysis methods stemming from ethology are now being used by applied psychologists, and path analysis techniques originally designed by entomologists are equally useful for behavioral pharmacologists studying rodents. Moreover, recent developments in radiotelemetry, brain imaging, chip technology and biosensor techniques originally used by physiologists are now being used for simultaneous recording of physiological processes and behavior.

Measuring Behavior '96, the first international workshop on methods in behavioral research, was attended by 153 participants from 25 countries. A report on the meeting was published in *Trends in Neurosciences* (vol. 20, no. 5, pp. 187-189). The proceedings of the workshop are also available on the Web: <http://www.noldus.com/events/mb96/mb96.htm>. To receive the second announcement on the workshop, send a message to Measuring Behavior '98, Workshop Secretariat, Attn.: Rosan Nikkelen, P. O. Box 268, 6700 AG Wageningen, The Netherlands; tel. 31-(0)317-497677; fax 31-(0)317-424496; e-mail mb98@noldus.nl.

Beck Award Winner

The third annual Aaron T. Beck award was won by Edward H. Hagen, Department of Anthropology, University of California at Santa Barbara. His paper was entitled "Delusions: an evolutionary hypothesis," and was presented at the 1997 meeting of the Across-Species Comparisons and Psychiatry Association.

Membership Renewals

It is time to renew your membership for 1998 if you have not already done so. Membership is by calendar year, so dues are to be paid by the first of the year. If the date on your mailing label is earlier than 1998, it is time to renew your membership. For economic reasons, renewal notices are not usually sent. Those who do not renew their memberships will be removed from the membership list. Please report errors, changes of address, etc. to the Treasurer. Be sure to inform her if you move; the U.S. Post Office no longer returns undelivered *Bulletins* with the recipient's new address. Current dues and directions for payment are given on the last page. Please allow four weeks for recording changes of address or payment of dues.

Association for Politics and the Life Sciences Meeting

APLS will hold its first independent meeting 3-6 September 1998 in Boston. These are the same dates and location as the American Political Science Association annual meeting; in previous years, the two societies met jointly. The coincidence of the meetings in 1998 will allow political scientists to attend sessions of both. The APLS program will include these speakers: E. O. Wilson, George Annas, Richard Butler, Frans de Waal (tentatively), and James Q. Wilson. Additional information will follow. APLS publishes a quarterly journal, *Politics and the Life Sciences*, and a semi-annual newsletter. For information, contact Association for Politics and the Life Sciences, Lake Superior State University, 650 W. Easterday Ave., Sault Ste. Marie, MI 49783 USA, tel. 1-906-635-2757, fax 1-906-635-2111, e-mail apls@lakers.lssu.edu, World Wide Web <http://www.lssu.edu/apls>.

Evolution of Language Conference

A conference on the evolution of language will take place in London, 6-9 April 1998. Speakers

will include Derek Bickerton, Paul Bloom, Luigi Cavilli-Sforza, Robin Dunbar, Dean Falk, Philip Lieberman, Bjorn Lindblom, John Maynard-Smith, Frederick Newmeyer, Johanna Nichols, and Michael Studdert-Kennedy. Those interested in presenting a paper should submit a 500-word abstract by 1 October 1997 to Dr. Chris Knight, Department of Sociology, University of East London, Longbridge Road, Dagenham, Essex RM8 2AS, U.K., e-mail c.knight@uel.ac.uk.

Bulletin Submissions and Duplication

Anything that might be of interest to ISHE members is welcome: Society matters; articles; replies to articles; suggestions; announcements of meetings, journals or professional societies; etc. These sorts of submission should be sent to the editor. Book review inquiries should go to the appropriate book review editor. Submission should be in English, on paper and, if possible, also on diskette (MS Word 5.0 preferred). Shorter reviews are desirable (less than 1000 words). Please include complete references for all publications cited. For book reviews, please include publisher's mailing address and the price of hardback and paperback editions. There usually is not time to consult with reviewers about editorial changes, but most of these are minor.

Submissions are usually reviewed only by the editorial staff. However, some submissions are rejected. Political censorship is avoided, so as to foster free and creative exchange of (even outrageous) ideas among scholars. The fact that material appears in the *Bulletin* never implies the truth of those ideas, ISHE's endorsement of them, or support for any policy implications that may be inferred from them.

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Current Literature

September 1997

New Current Literature Editor: Johan van der Dennen; please submit items for publication to him (see Editorial Box). This is the last Current Literature list submitted by Bob Adams. The Society has benefited greatly from his diligence over the many years that he has prepared this excellent feature. Previously, Bob served as editor of the *Human Ethology Newsletter*, predecessor to the *Bulletin*. Thanks for a job well done, Bob!

If you are interested in reviewing one of the books that are listed in this section or some other appropriate title, please contact the new General Book Review Editor, Peter LaFreniere (see Editorial Box).

Archer, J. (1997). Why do people love their pets? *Evolution and Human Behavior*, 18, 237-260. (Univ. Cent. Lancashire, Dept. Psychol., Preston PR1 2HE, Lancs, England).

Baron-Cohen, S. (Ed.) (1997). *The Maladapted Mind*. Taylor & Francis, Rankine Road, Basingstoke, Hampshire RG24 8PR, England, \$44.95 (hdbk.). Needs Reviewer*.

Bendor, J., & Swistak, P. (1997). The evolutionary stability of cooperation. *American Political Science Review*, 91, 290-307. (Stanford Univ., Sch. Business, Stanford, CA 94305, USA).

Berry, D.S., & Landry, J.C. (1997). Facial maturity and daily social interaction. *Journal of Personality and Social Psychology*, 72, 570-580. (So. Methodist Univ., Dept. Psychol., Dallas, TX 75275, USA).

Bird, R.L.B., & Bird, D.W. (1997). Delayed reciprocity and tolerated theft: The behavioral ecology of food-sharing strategies. *Current Anthropology*, 38, 49-78. (Univ. Utah, Dept. Anthropol., Salt Lake City, UT, 84112, USA).

Blanchard, K.C. (1997). Human nature: Integrating nature and nurture. *Politics & the*

Life Sciences, 16, 135-138. (No. State Univ., Box 704, 1200 S. Jay St., Aberdeen, SD, 57401, USA).

Blum, K., & Noble, E. P. (Eds.) (1997). *Handbook of Psychiatric Genetics*. CRC Press, 2000 Corporate Blvd., Boca Raton, FL 33431 USA, \$119 (hdbk.).

Bradley, B.P., Mogg, K., Millar, N., Bonham-Carter, E. F., Jenkins, J., & Parr, M. (1997). Attentional biases for emotional faces. *Cognition & Emotion*, 11, 25-42. (Univ. Cambridge, Dept. Expt. Psychol., Downing St. Cambridge, CB2 3EB, England).

Bogartz, R.S., Shinsky, J.L., & Speaker, C.J. (1997). Interpreting infant looking: The event set x event set design. *Developmental Psychology*, 33, 408-422. (Univ. Massachusetts, Dept. Psychol., Tobin Hall, Amherst, MA, 01003, USA).

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Braza, F., Braza, P., Muñoz, J. M., & Carreras, M. R. (1997). The index of amplitude of behavior as a measuring instrument of social ability in preschool children. *Psicothema*, 9, 305-310 (see supra).

Buckle, L., Gallup, G.G., & Rodd, Z.A. (1996). Marriage as a reproductive contract: Patterns of marriage, divorce, and remarriage. *Ethology & Sociobiology*, 17, 363-378. (REPRINT: Gallup, G.G., SUNY Albany, Dept. Psychol., 1400 Washington Ave., Albany, NY, 12222, USA).

Butterworth, G., Verweij, E., & Hopkins, B. (1997). The development of prehension in infants: Halverson revisited. *British Journal of Developmental Psychology*, 15, 223-236. (Univ. Sussex, Div. Psychol., Brighton, BN1 9QU, E. Sussex, England).

Calafate, L. C. (1997). Para uma biologia do ensino. *O Professor*, no. 54, III Série, Março/Abril, pp. 71-77. (Universidade do Porto, Faculdade de Ciências, R. do Campo Alegre, 1191, 4100 Porto, Portugal).

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