

Human Ethology Bulletin

VOLUME 12, ISSUE 4

ISSN 0739-2036

DECEMBER 1997

© 1998 *The International Society for Human Ethology*

SOCIETY NEWS

Vancouver Convention Update

If you are an ISHE member, you should have recently received two copies of the brochure for our next biennial convention, to take place **19-23 August 1998** at Simon Fraser University, just east of Vancouver, Canada. If you are considering attending, be sure to **complete the Preliminary Registration Form** contained therein and submit it by **1 May 1998** at the latest. You will then receive the detailed Conference Registration and Accommodation brochure. To have your name added to the conference mailing list, contact: Conference Services, Halpern Centre, Simon Fraser University, 8888 University Drive, Burnaby, B.C. V5A 1S6, Canada, tel. 1-604-291-4910, fax 1-604-291-3420, email Conference_Services@sfu.ca.

The conference focus is "Integrating proximate and ultimate explanations in the study of mind and behavior." Plenary speakers arranged so far include David Haig, "Genetic Imprinting, Conflicts of Interest, and Development"; Doreen Kimura, "Biological Contributions to Sex Differences in Human Cognitive Abilities"; and Simon Baron-Cohen, "Evolution, Autism, and Theories of Mind." A Young Investigators Award will be presented (see below), and an event will commemorate the 25th anniversary of the awarding of the Nobel Prize in Medicine/Physiology to ethologists von Frisch, Tinbergen and Lorenz.

Proposals for symposia should include four copies of a 250-word description of the

symposium theme and of abstracts of four or five related papers.

Abstract format for all papers and posters (including symposium papers): Line 1: authors' names, last name first. Line 2: institutional address(es). Line 3: title of presentation in capital letters. Provide one camera-ready copy in a 3.5 X 4.5 inch (8.89 X 11.43 cm) rectangle, plus three additional copies. Type font should be 10 point Times. Provide text on Macintosh, Windows, or IBM disk with the name of the operating system and word processing program. Deadline for proposals and abstracts: **1 April 1998**.

The conference website has been connected to the ISHE website: <http://evolution.humb.univie.ac.at/ishe.html> or may be reached directly at <http://www.sfu.ca/cstudies/conf/humanwww/>. The URL has also been posted on the HBES website.

The conference organizer is our President, Charles Crawford: Dept. of Psychology, Simon Fraser University, Burnaby, B.C., Canada V5A 1S6, tel. 1-604-291-3660, fax 1-604-291-3427, e-mail crawford@sfu.ca.

Other information sources: **Vancouver tourism:** <http://www.city.vancouver.bc.ca/>; **Tourism British Columbia:** Parliament Buildings, Victoria, B.C. V8V 1X4, Canada, <http://www.gov.bc.ca/tourism/tourism.html>. Breathtaking, cosmopolitan Vancouver can be reached by air or by the Viarail train through the Canadian Rockies or by the Amtrak train from California.

Housing: participants will be housed in university townhouses accommodating four

persons in single rooms with kitchen, living room and two bathrooms. Cost per person is Can\$ 43.70 (US\$ 32.86) per night and includes Continental breakfast. Accommodation in hotels within driving distance is an option.

Registration fee is approximately Can\$ 350 (US\$ 265) and includes the abstract book, welcome reception the evening of the 19th, salmon barbeque (worth the price of admission by itself), and conference banquet. Participants will have to forage independently for lunches and the last dinner, the 22nd.

The **Young Investigators Award** competition is open to any graduate student whose degree will not have been awarded by 1 July 1998. Applicants are to submit three copies of a paper not to exceed five double-spaced pages, plus the usual abstract (marked with a "Y" in the upper right hand corner). The student will present the paper orally at the conference. Papers will be judged on substance and clarity. The winner(s) will receive a free ISHE membership renewal, free registration at the subsequent Biennial Congress, a book, and a certificate. Further details or amendments will follow as necessary.

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.

ISHE Book on Sale

Late in 1997 Plenum Press published the proceedings from the 1996 ISHE convention held in Vienna. *New Aspects of Human Ethology* is edited by Alain Schmitt, Klaus Atzwanger, Karl Grammer and Katrin Schäfer. The 239-page volume includes the 73 abstracts from the convention, author and subject indices, plus these chapters by featured speakers:

Irenäus Eibl-Eibesfeldt, Human Ethology: Origins and Prospects of a New Discipline

Glenn Weisfeld, Research on Emotions and Future Developments in Human Ethology

Peter K. Smith, Play Fighting and Real Fighting: Perspectives on Their Relationship

Karl Sigmund, Games Evolution Plays

R. I. M. Dunbar, Groups, Gossip, and the Evolution of Language

Karl Grammer, Valentina Filova, and Martin Fieder, The Communication Paradox and Possible Solutions: Towards a Radical Empiricism

Thomas J. Bouchard, Jr., Twin Studies of Behavior: New and Old Findings

C. Sue Carter, Hormonal Influences on Human Behavior

R. Robin Baker, Copulation, Masturbation, and Infidelity: State-of-the-Art.

ISHE has ordered 40 copies of the book, which we are selling for the usual purchase price of \$45, shipping included. To order a copy, please send payment, made out to ISHE, to Glenn Weisfeld (see Editorial Box for address). You may pay by check drawn on a US bank, VISA, Mastercard or Eurocard; please provide credit card number, expiration date, and your signature. If you pay by check drawn on a non-US bank, please add \$10. Please do not order the book directly from the publisher, at least until we sell the 40 copies. If the book is adopted as a course requirement, a bulk order will be sent on consignment and the extra books may be returned.

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

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.

Bulletin content may be reproduced without limit for scholarly (but not commercial) purposes. That is, no one may be charged for receiving the content, without first obtaining permission from the Editor or ISHE President. Sample copies of the *Bulletin* are available from the Editor. Send number of copies desired and the date required.

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):

Name.....

Link to your personal homepage: <http://>.....

e-mail address.....

Institute.....

Link to your institute/university: <http://>.....

An Interview of William Hamilton

By **Frans Roes**, Lauriergracht 127-II, 1016 RK Amsterdam, The Netherlands, e-mail froes@dds.nl

William Hamilton is widely acknowledged as one of the most important theoretical biologists of the 20th century. In 1964, at the age of 27, he published *The Genetical Evolution of Social Behaviour*, one of the most frequently cited papers ever in the *Journal of Theoretical Biology* ever. Last year Hamilton published his first book, *Narrow Roads of Gene Land*, vol. 1, a collection of the papers he wrote prior to 1981, each introduced by an autobiographical essay. The following interview took place at the University of Oxford, 13 December 1996.

Some of your ideas were foreshadowed by Sir Ronald Fisher's explanation, in the thirties, of the distastefulness of some insects. In what way?

Fisher saw there was a difficulty about the evolution of distastefulness in insects, and also in the further matter of the insects becoming brightly coloured in order to advertise their distastefulness. He realized that if the insect is actually eaten by the predator in the course of learning to avoid them, then whatever made that insect conspicuous to the predator is obviously disadvantageous. So he reasoned that the only way in which you could see that kind of selection getting started would be if, firstly, the insects were gregarious; secondly, the group was a group of siblings; and thirdly, having tasted one and found it awful, the predator would then leave the rest of the group alone. The genes of the one eaten would then be promoted. Fisher also realised that this was not such a strong form of selection, not as if it were the individual itself that had a form of protection. He made some remark about the selection going ahead at half the speed than it would have if it were direct selection. And that was one key early statement of the selection principle concerning the closeness of relatedness that I later came to develop.

You describe in part two of your 1964 article the post-reproductive behaviour of two kinds of moths. What was the general phenomenon being illustrated?

I noticed that someone had written about the post-reproductive spans of two kinds of moths, one kind being cryptic, and the other kind warningly coloured as in the case we have just discussed. The author had noticed that the cryptic insect tended to die very soon after it had laid its eggs, whereas the warningly coloured ones often have a long life after they had laid their eggs. Again this could be interpreted in terms of the kinship principle in a rather neat way. In the case of the cryptic one, if there are any relatives around in the neighbourhood at all, it is advantageous for the moth to give up its life as soon as it finished its own main business, laying its eggs. Because if it is around and the predator detects the moth and eats it, then that is a step in the predator learning to detect other moths, perhaps including those which have not yet laid their eggs. So by causing itself to die soon

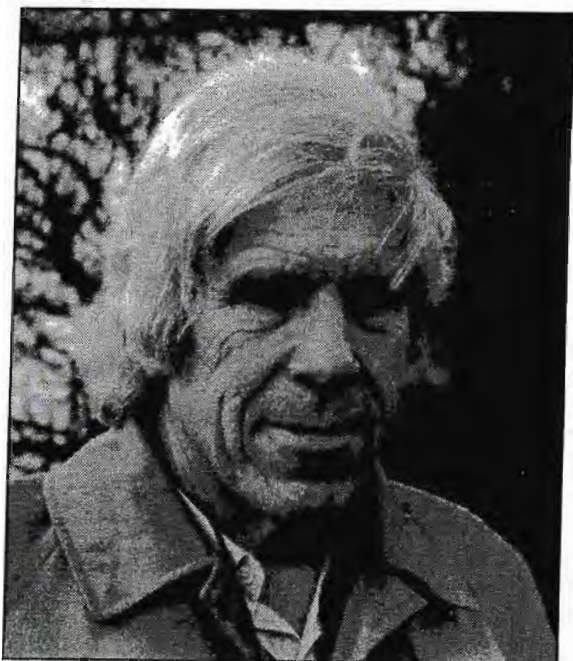
after it has laid its eggs, it is actually doing a service to its cousins which are in the neighbourhood. Quite the contrary holds for the warningly coloured one. Once it has laid its eggs, it is in a position freely to use its warning-colours to warn everyone it can. So it should continue to live and wait, actually expose itself to being tasted by the predator, because that would be a step in teaching the predator to avoid its relatives. It was gratifying that all this theory fitted very well with the findings.

In moths both sexes have wings, but in some other insects either the males or the females are wingless. Why?

Gene dispersal is a very crucial evolutionary phenomenon, because where you are, your descendants almost certainly will have to die out. So there has to be a continual search for other places to colonise. And therefore for a female to sacrifice wings without having some other way of dispersal for her offspring would be a deadly mistake sooner or later. In fact we find that in all the cases where females have become wingless, there is some other way in which they or their offspring are dispersed to other localities. Most commonly they have a young stage, a larva, which is very mobile. Either it may climb onto other insects or onto a twig and from there be dispersed by wind. Often such larvae have long hairs which enable them to balloon on the wind very satisfactorily. In some species the wingless female is carried by the winged male--in his arms almost literally. During this flight-time he is mating her, and finally he drops her off in a place suitable for egg laying.

As to the males becoming wingless, if the male can inseminate a female who is mobile herself, then he doesn't have to worry about wings too much, because his genes can be carried off by the female. This often happens in cases where wingless males mate their close relatives. So I think we can find some sort of a rationale for many particular cases; but as far as I know there is no very sweeping theory that explains why in some groups there is male winglessness, and in others female winglessness.

You went to Brazil in 1975 to study the fig-wasp, where the males don't have wings, and often also don't have a mouth.



I didn't actually go to Brazil to study them; I went to study life in rotting wood, but I ended up studying fig wasps because the rotting wood was dry and not in good condition. The fig is a little world in itself. In some species of fig wasps the males indeed have no mouth; these are entirely fighting and mating machines, a very strange kind of an animal with a very short life as an adult and mating as quickly as possible, and fighting lethally whenever rivals intrude and compete.

Before going to Brazil I had known there was something very special for my theorising about fig wasps. I knew how they participate in this incredible symbiotic pollination system in the fig trees. In adapting to living inside the fig fruit they developed various marvellous adaptations, including completely wingless males with very specialized habits, and with exactly the biased sex ratios which my theory predicted they should have.

Why should they have biased sex ratios?

Well, it is a case where the males are in a unique confining situation inside the fig. They hatch out as adults from the gall flowers, and the easiest--indeed the only--females to mate are the females who are also hatching

inside the same fig. So they do so. Theory says that if males mate with their sisters, and their sisters are capable of storing sperm, then you must expect the proportion of males to be cut down drastically. It is adaptive because a female mother who programs her eggs to become either males or females should do much better if she produces a lot of females and just enough males to fertilize them. In that way she would get more descendants. That bias is very nicely illustrated in what happens in fig wasps. Other people that followed and tested my reasoning further have shown that it is illustrated with an accuracy that I would never have dared myself to expect. So this became a really strong and well-upheld prediction out of evolutionary theory.

Why do males sometimes engage in lethal fighting with other males, while at other times they tend to bluff?

For some species of fig wasps there is not much point in bluffing inside the fig, because there is no time to 'live and fight another day' if they accept a bluff. Everything is over in a few hours, and if you don't fight now and try to win, then you won't be given another chance.

I think I saw bluffing with the giant Chilean stag beetle, where I did find that in all the tournaments that I held between males, inducing them to fight one another in the presence of a female, it always turned out to be the second largest one who was the overall victor. This suggests rather that those with the biggest 'tongs' were not actually as strong as they seemed to be. And they live in a situation where I can imagine that bluffing would pay off. Stag beetles are quite long-lived, and there are many flowers on the trees they could visit where females are arriving, and so it might be worthwhile to pretend that you are bigger than you are, in the hope that a male will accept that you are stronger and go away to other flowers. Then you could win the local contest; bluff would have paid.

You use a lot of mathematics in your work, and you write: "I had realized from experience that university people sometimes don't react well to common sense and in any case most of them listen to it harder if you first intimidate them with equations."

Equations seem to frighten a lot of

people; if you come at them with an display of mathematical strength then they often back off. With me you might call it a kind of bluff. A nice anecdote about people's fear of mathematics occurs to me. There was an IRA bomb discovered in this town, which had never actually been fired, and yet had not been found either for about a year. Can you guess where it was planted? The person put it behind the calculus books in one of the major bookshops of Oxford! I guess he choose calculus books because he reckoned that those would be the ones least often be pulled off the shelves. This perhaps illustrates the general fear of mathematics, but I guess another interpretation might be that, second to Brits in Northern Ireland, the bomber just hated maths!

Is there not a risk that someone may write an article filled with equations but without ideas, and it is accepted as science just because it looks so scientific?

That's exactly it. A lot of work does get by, by having an aura of mathematics about it. Whether it is serious and necessary or not, it certainly impresses people. You can find biologists who are very hot on this issue, like my old colleague Richard Alexander. He doesn't like mathematics in evolutionary theory; he says you can have all the same thoughts without it. So these biologists would call it bluff, and I think very largely they are right. If you have a simple idea, state it simply, and forget about the mathematics.

Nevertheless, you use mathematics...

I use it. Often I use mathematics because I needed to straighten out my own ideas. I have a somewhat illogical brain, and unless I put it through the mill of mathematics, I can continue to believe in the impossible for a long time. But eventually, either by mathematical argument or by computer simulation, I suddenly realise that something I thought followed in fact does not follow, and I abandon that and come to see the truth. Sometimes that math goes into the paper in order to convince other people.

And then there is DNA, chromosomes, genes, etc. This can be quite intimidating to social scientists. Do you need to know a lot about genetics and math to understand evolutionary theory?

I do think you do need to know the basics of genetics. I am not sure you need to know a tremendous amount about modern molecular genetics. I always found that good old standard Mendelism serves me quite well, and the modern ideas have not really changed the picture very much. I also think in the mathematical field you just have to know something about probability theory, to understand how genes work in evolutionary processes, and so fundamentals of probability and statistics are just about essential in understanding modern Darwinism.

A general question: Do living organisms behave as if they want to pass on their own genes, or do they behave as if each of their genes is trying to replicate itself, possibly at the expense of other genes of the same genome?

This is a very deep and difficult question, I think. One's impression is that there is a conflict between selfish genes, but largely it is being overridden by a kind of democracy that has arisen in the genome. It combines to suppress this intergene conflict and the outcome is that the organism acts largely as a whole.

You write that evolutionary ideas "turn out to have, or are perceived to have, the unfortunate property of being solvents of a vital societal glue.". What kind of glue is this?

The glue that I am thinking of is various myths that tend to hold societies together. When these myths are wrong, I think that they exist because they have helped people to be more cooperative than they would be if proceeding with a full understanding of evolutionary theory. This is the most unfortunate fact about teaching evolution. I also think that it is the threat that is dimly perceived by all religious people. They think that if people 'believe' evolution instead of believing, say, the gospels, they will no longer be able to celebrate simple honesty, or kindly and warm feelings toward others, as unequivocally 'good'. I think they exaggerate the danger, but they don't exaggerate a nothing. There is a danger of that kind.

How are evolutionists trying to deal with this problem?

They are trying to deal with it by showing that the implications of a fully rational and evolutionary theory of behaviour, and that includes human behaviour, is not such a nasty thing as it may seem at first. If you believe that we evolved out of animals--are animals--and have the same kinds of drives, it doesn't mean that we have to be selfish and inhumane. When you fully work out the consequences of the rules of kinship and of reciprocation, and ensure maintenance of the standards implied, you will see that the outcome is in fact quite a moderate kind of behaviour, avoiding evil and as good in holding the society together as are the religious myths. Indeed, under a rational theory we should be able to do better for human happiness by avoiding various naive errors.

You write that long ago there was a man who claimed that humans descended from bears, and not from apes. As his theory got rejected and the man got more and more isolated, he probably looked like an angry bear. Didn't this description for a long time fit sociobiologists? "The world doesn't understand us and doesn't like us?"

I guess it fits anyone who feels himself to be very isolated, so I guess and hope we have gone recently from being angry bears to being rather comfortable and accepted bears. I wish I could remember who it was that founded this ridiculous theory about bears. I am sure that it exists, but I have not managed to recall the book. Perhaps one of your readers can help to remind me.

Science News Stories of 1997

The weekly digest *Science News* (1-800-552-4412 for new subscriptions) publishes a year-end list of major developments in various scientific disciplines. Some highlights:

The world's oldest known hunting weapons, 4000,000-year-old wooden spears, were excavated in a German coal mine (151:134).

A new fossil analysis indicated that a largely upright stance evolved in a 9-million-to 7-

million-year-old ape, upsetting notions that only members of the human evolutionary family can claim this posture (152: 244).

A section of the X chromosome may contain a gene that influences social behavior and hence explain some sex differences therein (151: 365).

A severe form of grief increases the likelihood of developing a host of ailments (151: 301). In related studies, monkeys of low social status and people with few social ties proved more susceptible to infection with cold viruses (151: 381; 152: 11).

Even in the poorest neighborhoods, crime rates fall if residents share a sense of mutual trust, unity, and public duty (152: 101).

A dozen newly discovered genes on the Y chromosome are probably involved in male fertility or essential cellular duties (152: 297). Why oh why these genes wound up on the Y chromosome is an interesting evolutionary question.

Debate arouse over why menstruation evolved, with a new study suggesting that it is an energy-saving mechanism (151: 230). Seems doubtful that blood loss could save energy.

Studies of mutant mice showed that male fertility depends on estrogen, thereby suggesting how estrogen-like pollutants (occupying cellular receptor sites for estrogen) may lower sperm counts and trigger fertility problems in various species including humans (151: 212; 152: 344, 356).

BOOK REVIEWS

The Nature of Emotion: Fundamental Questions

Edited by Paul Ekman and Richard J. Davidson, Oxford University Press, 200 Madison Ave., New York, NY 10016, USA, 1994, \$55 (hdkb.), \$24.95 (ppr.).

Reviewed by Peter LaFreniere, Department of Psychology, University of Maine, Orono, ME 04469, e-mail Peterlaf@Maine.Maine.Edu.

The format of this edited volume by

two outstanding contributors to current research on emotion is both provocative and unique. The idea arose during the course of a graduate/postdoctoral seminar on emotion, and consisted of having 23 contemporary emotion scholars address 12 fundamental questions regarding the nature of emotion. After four to six scholars respond to each question, the two editors provide an afterword in which they attempt to summarize the different positions, noting divergences as well as common ground.

The volume begins with definitional issues: Are there basic emotions? How are emotions distinguished from moods and temperament? Other questions pertain to the relation between emotion and cognition, memory, or physiology. Central questions concerning development, emotion regulation, function, universality, and individual differences are covered, and finally questions about subjective experience and the existence of unconscious emotions are raised.

What a great idea for a book on emotion! Certainly the choice of questions was judicious and for the most part reflects an accurate appraisal of the field, though some important areas for developmental and ethological scholars were largely omitted. The selection of emotion scholars includes some of the best and brightest in the field (or really in the nearly separate fields of neuroscience, physiology, social constructivism, etc.).

However, my initial enthusiasm for this unique format waned as I began to suffer dizzy spells from too many opinions and too few data-driven advances in my knowledge base, except for the realization that everyone has something to say about emotion. This may well have been the essential point that the editors wished to make by inviting a diverse group of scholars to provide often divergent responses to a wide-ranging set of questions.

While the idea of a text that does not offer a single viewpoint is not unappealing, the notion that all we have to show for a century of research on emotion are unanswered questions is somewhat troubling for the future. It would appear that without some common ground and shared terminology it may become increasingly difficult to evaluate progress in the scientific study of emotion.

Besides the usual problems of edited

volumes, this book encounters some that are more particular to the breadth and inherent difficulties of the topic being investigated. Scholars from different disciplines may use the same terminology differently, different terminology for the same concepts, or simply reject or ignore the basic concepts common to another's discipline. As a result, the promise of insight and resolution to various debates is jeopardized.

It also may be time we ended thinking about emotion and started thinking about emotions: Is emotion a unitary concept? The title suggests by the use of the term "emotion" as a singular noun that the answer may be yes, and that we can, as scientists, seek to understand its true nature.

For some of the questions concerning emotion (i.e., are there basic emotions?) the assumption of unity may not be deeply problematic. But can we ask how emotion develops and what its function might be, or do we need to ask about the ontogeny and function of fear, for example, further differentiating the broad concept of fear into its many different manifestations? Stranger and separation anxiety may show different developmental patterns from fear of heights, failure, or things that go bump in the night.

Several of the contributors also found the assumption of unity problematic because it rendered the question too broad to allow for a meaningful response. For this reason I did not find the book to be useful for thinking about developmental issues, which it barely explores. This field may be parsed more judiciously by focusing on one aspect of development (e.g., the development of emotion regulation [Fox, 1994]), one cluster of emotions sharing common properties (e.g., the development of self-conscious emotions [Tangney & Fischer, 1995]), or one age group (e.g., Sroufe, 1995).

Another problem is that functional issues are largely confined to intrapersonal functions; social functions are barely mentioned, though the latter are dominant in ethological thinking about emotion, as Charlesworth (1982) pointed out for a previous generation of emotion scholars, and Fridlund (1997) recently reiterated.

In ethology the social function of facial

expressions has been dramatically reformulated since the classic explanation of ritualization leading to effective and unambiguous signals that promote the "welfare of the species" (Tinbergen, 1952). Though these new ideas have been widely circulating since the publication of Dawkins and Krebs' (1978) paper on social manipulation, they do not appear to have influenced this book, which only says that emotions influence the course of interpersonal transactions.

I recently used the book as part of a graduate seminar on emotion, liberally amended by the references listed below. It was useful in stimulating discussion of various issues, and does present the "big picture." Perhaps because of the sheer scope of the topic, however, this volume could not fully address the methodologically sensitive question of what we know, what we don't, and what may be insoluble at this point in the many specific areas of inquiry that constitute the field of emotion research. Graduate students and other readers interested in basic reference sources in a given area would do well to consult empirical studies, reviews of single emotions, or Lewis and Haviland (1993).

Students particularly enjoyed the epilogue entitled "Affective Science: A Research Agenda," in which Ekman and Davidson set forth their own ideas about what is needed to move the field forward as a whole. At a methodological level, this includes basic advice such as the need to move beyond reliance on questionnaires or self-reports and develop more observational methods and psychobiological assays.

Indeed! What ethologists would argue that we need more questionnaire studies of white, middle-class, American college sophomores? And how many ethologists dispute Darwin's notion that a small number of basic emotional expressions are species-typical universals with relatively old phylogenetic origins? If a modern-day Margaret Mead sails off to a tropical island to bring us reports that nobody there has ever smiled and no hint of anger was ever expressed, and returns without data or corroboration to mount an assault on the universality of these facial expressions, should we all seek federal funding to look into the issue? I doubt if Derek Freeman would be persuaded.

ISHE	Web	Page:
http://evolution.humb.univie.ac.at		

Some issues will not be resolved to everyone's satisfaction by more data, but I would much rather live with this fact than continue to research questions that have long since become tedious while ignoring more exciting but difficult questions. For those interested in the long-standing lack of consensus in emotion research and why that is likely to persist well into the next millennium, Ekman and Davidson's interdisciplinary discussion of fundamental questions provides a lot of the answers.

References

- Charlesworth, W.R. (1982). An ethological approach to research on facial expressions. In C.E. Izard (Ed.), *Measuring Emotions in Infants and Children*. Cambridge: Cambridge University Press.
- Dawkins, R., & Krebs, J.R. (1978). Animal signals: Information or manipulation? In Krebs, F.R., & Davies, N.B. (Eds.), *Behavioural Ecology: An evolutionary approach*. Sunderland, Mass: Sinauer.
- Fox, N.A. (1994). The development of emotion regulation: Biological and behavioral considerations. *Monographs of the Society for Research in Child Development*, 59 (2-3, Serial No. 240).
- Fridlund (1997). The new ethology of facial expressions. In Russell, J.A., & Fernandez-Dols, J.-M. *The Psychology of Facial Expression*. Cambridge: Cambridge University Press.
- Lewis, M. & Haviland, J.M. (Eds.) (1993). *Handbook of Emotions*. New York: Guilford Press.
- Sroufe, L.A. (1996). *Emotional Development: The organization of emotional life in the early years*. New York: Cambridge University Press.
- Tangney, J.P. & Fischer, K.W. (Eds.) (1995). *Self-conscious Emotions: The psychology of shame, guilt, embarrassment, and pride*. New York: Guilford Press.

*The Culture of Honor: The
Psychology of Violence in the
South*

By Richard E. Nisbett and Dov Cohen.
Westview Press, 550 Central Ave., Boulder, CO
80301, USA, 1996, \$59.95 (hdbk.), \$12.95 (ppr.).

Reviewed by W.C. McGrew, Anthropology and
Zoology, Miami University, Oxford, OH 45056,
USA.

At first glance, this book may seem to offer little of promise to a human ethologist--the words ethology, sociobiology, adaptation, gene, etc. are not in the text, and the reference list contains no Lorenz, Eibl-Eibesfeldt, Blurton Jones, Wilson, etc. It is part of a series called *New Directions in Social Psychology*. Yet this ethologist picked it up (thanks to the suggestion of Frank Salter) and could not put it down. It is a most impressive synthesis of behavioral science methods focused on a single hypothesis: that present-day white male violence in the American South can be explained by a cultural adaptation, the roots of which lie in ecological anthropology. As such, the book's self-proclaimed cultural psychology sits nicely beside cultural ethology (*sensu* Eibl-Eibesfeldt).

The hypothesis is that the primary settlers of the upland regions of the South, the Scotch-Irish immigrants from the Celtic fringe of the British Isles, brought with them the pastoralist (as opposed to agriculturalist) culture of honor. (As a Scot with family ties to Ulster, yet born in Arkansas, this reviewer cannot claim total objectivity about this.) Central to this herdsman's ethic is the overriding importance of reputation for strength and toughness. Why? Because domestic livestock are portable resources, subject to raiding and needing constant vigilance and defense. This requires masculine status and power, and shows cultural convergence with other pastoralist societies in marginal habitats, whether these be circum-Mediterranean or African savanna. Such a lifestyle is said to be compatible with simple horticulture, but not with sedentary, systematic farming, as practiced by the settlers of the American Northeast and Midwest.

To test these ideas in current manifestations of violence that originated

generations ago in defense of self, kin and property--when few of the founders' descendants still practice such traditional lifeways--is a real challenge. The authors, both social psychologists, marshal a variety of evidence, all explicitly, and often elegantly laid out to test specific hypotheses. Historical-ethnographic accounts confirm violence as the standard and appropriate frontier response to insult. Current archival data, e.g. from the Census, confirm that the South has the highest regional murder rate, but only amongst non-Hispanic whites, as both offenders and victims. This is especially so of rural areas and small cities. Most strikingly, murder rates are higher in dry, hilly areas (where the Scotch-Irish settled) than in the moist lowland plains (dominated by plantation agriculture, e.g. cotton and slavery).

Southerners' attitudes toward violence emerge from surveys in a variety of ways: corporal punishment of children, opposition to gun control, approval of US military undertaking--but all of these reflect only honor-related violence, not violence in general. Similarly, collective expressions of the culture of honor as shown in institutional responses, e.g. self-defense laws, National Guard expenditure, legislative votes on national defense--all are congruent. A "field experiment" indicates this neatly: Two sets of letters of application for employment were sent out nationwide; these differed by only one paragraph. In one, the applicant had committed an honor-bound felony in the other set, a non-honor-bound felony. Southern (and Western) employers were significantly more sympathetic to the honorable applicant than were Northern ones.

Most convincingly to the behaviorist, Nisbett and Cohen devised ingenious experimental settings comparing Northern and Southern students (at the University of Michigan) on a variety of behavioral (e.g. facial expression) and physiological (e.g. cortisol level) responses to insult. In all cases, Southern white males responded more assertively than their matched Northern controls. Thus, attitude carried over into action.

Given this strong effect in multiple aspects, what explains it? The authors tested three alternative possibilities: climate (hotter weather increases aggression), poverty (poorer people resort to violence), and slavery (history

of being the dominant class generalizes). All are convincingly found wanting, e.g. unlike white homicide, black homicide does not vary by region; within the South, the areas where slavery was common have the *lowest* homicide rates, not the highest. Thus, the culture of honor remains by default, as a residual explanation. What is *not* considered at all is any sort of biological variable: It may well be that the Celtic immigrants were too many and too varied to present a possibility for genetic drift, but this is never mentioned. Instead, the authors state clearly that the differences in homicide rates reflect cultural differences arising from economic and historic conditions.

The book is not without constraints: It barely mentions women, though they are likely to be the primary socializers of the men. Analogous tendencies in the West are sometimes invoked, but not pursued in many cases. Slavery as an historical legacy may not be central to a culture of honor, but the authors do relate it to other aspects of Southern violence, e.g. domestic abuse. However, none of these related factors detracts from a fascinating and readable set of research studies that should be noted by human ethologists.

Evolutionary Social Psychology

Edited by Jeffrey A. Simpson and Douglas T. Kenrick. Lawrence Erlbaum Associates, Mahwah, NJ 07430, USA, 1997, \$39.95 (ppr.), \$79.95 (hdbk.).

Reviewed by David P. Schmitt, Department of Psychology, Bradley University, Peoria, IL 61625, USA.

The field of social psychology is, as the editors of this volume claim, a fractured discipline. A quick glance at any leading textbook in the field (e.g., Baron & Byrne, 1994) reveals that the traditional topics in social psychology--social cognition, romantic attraction, and group dynamics--are typically treated discretely, without any attempt at substantive integration. This fact could arguably be seen as a necessary consequence of the trend toward scientific specialization. More likely, though, the lack of coherence in the field of social psychology is a result of middle-level theories proliferating without

explicit meta-theoretical anchoring. Social psychologists routinely stop asking the why questions once they find support for their own pet "theory-of-the-proximate."

This book is a straightforward attempt at demonstrating how evolution by natural selection can serve as a meta-theory or paradigm for synthesizing the field of social psychology, providing much-needed integration across theories and empirical findings in social cognition, romantic attraction, and group dynamics. Its fourteen chapters are divided into seven sections, which really reflect the three traditional topics in social psychology. Most of the contributors advance a middle-level theory of either cognition, attraction, or groups, and attempt to anchor their theory within the meta-theory of evolution by natural selection. In the process, this book presents an impressive series of case studies for why the rest of psychology should follow suit.

The first chapter is an introduction by the editors in which a reasoned argument is made for why social psychologists should use an evolutionary psychological meta-theory. It reads like a briefer and more digestible version of the introduction to *The Adapted Mind* (Barkow, Cosmides & Tooby, 1992), and as such would be a fine initiation for graduate students in all fields of evolution and human behavior. Specifically, it outlines several misconceptions about evolutionary psychology and describes why traditional social psychologists should consider an evolutionary perspective in their work.

The chapters on social cognition and person perception include Krebs and Denton's evolutionary explanations for many of the traditional cognitive biases studied by social psychologists, ranging from social "out-group" categorizations to adaptive self-attributions. Springer and Berry critically discuss the possibility of ecological models of social perception, and provide some insightful suggestions for future work in the area. Shackelford provides an account of the specificity of perceptions of betrayal, detailing a persuasive picture of at least three specific psychological mechanisms involving cheater detection. As a whole, the main addition that evolutionary thinking appears to make to the psychology of social cognition is to provide

explicit predictions concerning the content of otherwise general social psychological processes. The preceding chapters provide concrete examples of how successfully this can be done.

The chapters on romantic attraction include two on the process of attraction and three that focus on the ontogeny of mate attraction strategies. Graziano and his colleagues highlight a model of women's feelings of romantic attraction toward men based on the interaction of male dominance and agreeableness. Cunningham and his colleagues, on the other hand, offer a model of romantic attraction emphasizing neoteny, expressivity, and grooming. A rather intriguing advance made here is what Cunningham calls the Multiple Fitness Model, which empirically integrates specific adaptive tradeoffs made among attractive attributes.

Gangestad and Thornhill provide an account of the role that fluctuating asymmetry has played in the sexual selection of our species. Their rather persuasive presentation of empirical evidence may eventually be viewed as a landmark contribution to the study of romantic attraction and individual differences. Miller and Fishkin focus on the presumed normative nature of monogamy in human mating systems, arguing that short-term sexual strategies primarily result from psychopathological development and poor adult attachment styles. Zeifman and Hazan work to reintegrate the social psychology of attachment within an evolutionary meta-theoretical perspective. Once again, the main message appears to be that evolutionary theory can provide paradigmatic unity for the field of romantic attraction, and that evolutionary psychology theories can provide the predictive content for otherwise vacuous social psychological theories.

The four chapters on group dynamics and relationships include several which argue for conceptualizing the basic structure of relationships from an evolutionary perspective. Daly, Salmon, and Wilson call for placing kinship at the center of this reconfiguration of research effort in social psychology, presenting several behavioral universals that fall within inclusive fitness theory. Haslam, in contrast, suggests that there exist four distinct types of group

relationships, each with its own evolutionary functions: Coalitions provide a sharing function, social hierarchies provide an authoritative function, friendships provide a reciprocating function, and social marketplaces an economic function.

The other two chapters on groups argue that relationships, as opposed to genes and individuals, have been targets of selective pressure and hence have affected the design of the human mind. Wilson presents his theories on group selectionism as precisely as he has ever done, providing case study evidence of group selection in human decision-making. In contrast, Caporael and Baron suggest that four key relationships (and their respective group sizes) have fundamentally affected the design of the mind: Dyads (2), teams (5), demes (30), and macrodemes (300). As such, they argue that social psychologists should focus on complex dynamic systems within an evolving social framework.

The capstone chapter by Buss suggests that social psychology and evolutionary psychology fit nicely together because social cognition, romantic attraction, and group dynamics--the core of social psychology--have been the major selective forces on human evolution. He concludes that the future for evolutionary social psychology is very bright. I would agree with this assessment with three main reservations. First, the bright future of evolutionary social psychology depends upon making the links between evolution as a meta-theory and the middle-level theories more direct. Second, the precise nature of psychological mechanisms needs to be made more explicit. Relatedly, the criteria for identifying social psychological phenomena as "adaptations" needs to be more rigorous.

All of the contributors to this edited volume advance a middle-level theory of either social cognition, romantic attraction, or group dynamics, and attempt to anchor their theory within the meta-theory of evolution by natural selection. In so doing, this book presents a compelling argument for the rest of the subdisciplines of psychology--clinical, cognitive, developmental, and personality--to follow suit. Encouragingly, most of them already are.

References

Barkow, J.H., Cosmides, L., & Tooby, J. (1992). *The Adapted Mind: Evolutionary psychology and the generation of culture*. New York: Oxford University Press.

Baron, R.A., & Byrne, D. (1994). *Social psychology: Understanding human interaction*. Boston, MA: Allyn and Bacon.

The Emotional Brain: The Mysterious Underpinnings of Emotional Life

By Joseph LeDoux. Simon & Schuster, 1230 Avenue of the Americas, New York, NY 10020 USA, 1996, \$25 (hdbk.).

Reviewed by Glenn Weisfeld.

The Emotional Brain is instructive in several ways. First and foremost, it presents some truly revolutionary data on the neural basis of emotion. Second, it shows the value of a naturalistic perspective for understanding evolved mechanisms of behavior. Third, it demonstrates the reciprocal importance to ethologists of knowing how the brain is designed. Lastly, it illustrates that a fairly technical book on the brain can achieve a wide readership.

Emotion in Comparative Perspective

LeDoux, who studied under Michael Gazzaniga, takes a phylogenetic, adaptationist view of emotion. He notes that emotions, or motives, evolved to serve particular functions. As such, emotions are ancient, since animals in general have similar adaptive problems to address.

Furthermore, neural mechanisms to fulfill these functions must have evolved separately: "[B]ecause different kinds of problems of survival have different trigger stimuli and require different kinds of responses to deal with them, different neural systems are devoted to them" (p. 127). LeDoux proceeds to argue that "starting with universal behavioral functions is a better way of producing a list of

basic emotions than the more standard ways-- facial expressions, emotion words in different languages, or conscious introspections" (p. 126).

A related point is that emotions are ancient; therefore, neocortical--or what he calls conscious--control over them is generally weak. To the contrary, "emotions can flood consciousness" (p. 19). Moreover, "[c]onsciousness and its sidekick, natural language, are the new kids on the block-- unconscious processing is the rule rather than the exception throughout evolution" (p. 71).

LeDoux argues that cognitive science typically underrepresents emotion, offering instead models of "cold, lifeless creatures devoid of any desires, fears, sorrows, pains, or pleasures" (p. 25). This is a common criticism of cybernetic, information processing, or modular models of the brain, but LeDoux adds a phylogenetic justification, and also reminds us that emotion, unlike cognition, is directly related to the body. In addition, he observes that the claim that emotions should not be studied because they are subjective can be countered by noting that they are no more subjective than "the experience of the redness of an apple or the memory of eating one" (p. 37).

Alas, these truisms have been ignored by most contemporary psychologists studying emotion. Because of the prevalence of cognitive reductionism, LeDoux concludes, "the psychology of emotion, to this day, is mostly about the role of cognition in emotion" (p. 49). LeDoux blames over-reliance on Schachter & Singer (1962) and Lazarus (1984) for this state of affairs.

He champions Zajonc (1980, 1984), who demonstrated that mere exposure to a stimulus is enough to create a preference for it, in the absence of conscious awareness; therefore, emotion can occur independently of cognition. Because of this principle, LeDoux says, we cannot rely primarily on introspectively accessible aspects of the mind to understand emotion. In brief, some appraisals are unconscious, so we ought not to focus on "mapping emotion words onto emotion experiences" (p. 66).

All of this is preamble to his assertion that we must delve into the subcortical black

box, the mechanisms of emotion. LeDoux takes a chapter to update our understanding of the role of the limbic system in emotion. Obviously, some limbic structures, such as the hippocampus and anterior thalamus, do not function directly in emotion. However, he confirms Bard's (1929) idea about the central role of the hypothalamus in emotion.

LeDoux's Basic Model of Conditioned Fears

LeDoux chose fear as the basic emotion he wished to study in detail. He notes that humans and other vertebrates all respond to dangerous stimuli by first orienting to the threat and then taking action as appropriate, which sometimes includes emotional displays such as hair erection in mammals. The autonomic adjustments accompanying fear are also widespread.

LeDoux and others succeeded in tracing the pathway of conditioned fear responses in rats. The animal is conditioned to fear a sound. The stimulus is received by the auditory system, which signals the medial geniculate nucleus of the thalamus, which communicates with the amygdala: first the lateral nucleus and then the central nucleus. The central nucleus stimulates the central grey (a limbic structure) to cause freezing, the lateral hypothalamus to raise the blood pressure, the paraventricular nucleus of the hypothalamus to release stress hormones, and the reticulopontis caudalis to exhibit startle. Thus the panoply of facets of fear is mediated by the amygdala.

This thalamico-amygdalar model of fear conditioning is very general. It seems to apply to fear conditioning by the visual system too (via the lateral geniculate nucleus of the thalamus). The neural pathways described by LeDoux operate as well in lizards and other vertebrates, including humans. A patient with damage restricted to the amygdala was refractory to fear conditioning, and also had difficulty recognizing the facial expression of fear.

Involvement of the Cortex

At this basic level of responding, the cortex is bypassed completely. However, if the animal is conditioned to fear only one of two similar sound stimuli, the auditory cortex is

needed to discriminate between the two. Cortically lesioned animals respond to both stimuli with fear--erring on the side of caution. In intact animals, the auditory information goes to the thalamus, then the auditory cortex and then the amygdala--a longer route than the direct thalamico-amygdalar one. The latter pathway is faster but less precise.

An experimental animal that is conditioned to fear a sound may also show fear of the laboratory cage where it has been shocked. An animal with hippocampal lesions does not fear the experimental context, however, even though it does fear the sound. That is because the hippocampus stores multimodal sensory information received from the neocortex. Input from different sensory systems is pooled in the transitional cortex (surrounding the hippocampus) and then reaches the hippocampus where it is stored as a multimodal context or event. Thus, cells in a particular region of the hippocampus become active when the rat moves to a certain part of its cage. If and only if the hippocampus is intact, the appropriate context elicits conditioned fear via the amygdala.

Thus, sensory stimuli are channeled to the amygdala by the direct thalamic route, and indirectly via the neocortex and hippocampus. LeDoux refers to the amygdalar system as implicit, or unconscious, memory, and to the neocortico-hippocampal system as explicit, or conscious. The two systems operate in parallel but interactively in responding to fear-arousing stimuli. The explicit system is notoriously forgetful, so that people often cannot recall details of a traumatic situation. Nevertheless, the amygdala usually remains sensitive to all of these fearful stimuli, and mediates fear whenever they are presented.

Thus, emotion is more important than cognition, consistent with a phylogenetic perspective. Accordingly, the connections from the amygdala to the neocortex are much more extensive than those in the reverse direction. The amygdala receives input from only the highest-order processing within each cortical sensory system, but sends output to all stages of cortical processing within that system. The amygdala also sends projections to the hippocampus and prefrontal cortex, and so can influence ongoing perceptions, mental imagery, attention, short-term memory, long-term

memory, and higher-order thought processes. "This may explain why it is so easy for emotional information to invade our conscious thoughts, but so hard for us to gain conscious control over our emotions" (p. 265).

Nevertheless, the neocortex can modify subcortical fear processes. Extinction of a conditioned emotional response is mediated by the medial prefrontal cortex, which projects to the amygdala. A rat with a medial prefrontal lesion persists in showing fear long after the stimulus has stopped being paired with harm. Analogously, lesions of the lateral prefrontal cortex cause perseveration in cognitive tasks, such as continuing to use a problem-solving principle after it has been changed.

Although a conditioned emotional response may be extinguished in an animal with an intact medial prefrontal cortex, emotional sensitivity to the stimulus remains in the extinction-resistant amygdala. This may explain the Pavlovian phenomenon of spontaneous recovery after extinction of a response. It may also account for the persistence of emotional responsiveness after desensitization (extinction) therapy for phobia. The avoidance response may be extinguished but the emotional reaction mediated by the amygdala often remains.

The amygdala seems to resist extinction through establishment, via conditioning, of cell assemblies that, even if some neural connections are extinguished, remain to reverberate. In adaptationist terms, we might say that the impulse of the organism is to remember dangerous stimuli. Taking this notion back in time, LeDoux and colleagues found that certain neurons in the rat amygdala are highly sensitive to species-specific warning cries; likewise, neurons in the monkey amygdala respond briskly to monkey faces. LeDoux says that the amygdala "may be evolutionarily prepared to respond" to these stimuli and learn about them (p. 254). These rat amygdala neurons are innervated via the fast track from the auditory nerve to the thalamus.

Analysis of Pathological Fears

This same fast and indiscriminate pathway to the amygdala causes fear responses readily to generalize to neutral stimuli.

Therefore it may be involved in post-traumatic stress disorder. These patients develop fears of, say, a slamming door that only remotely resembles the original traumatic stimulus, say a gunshot.

LeDoux's model may help explain other pathological and developmental phenomena. In Alzheimer's, the hippocampus is stricken first, causing forgetfulness as the first symptom. Infantile amnesia, the inability to remember experiences before about age three, is explained by the late maturation of the hippocampus. However, infantile traumatic events can be remembered unconsciously because the amygdala matures earlier. The enhanced memory that occurs during emotional arousal seems to be due to the stimulating effect of adrenalin on the hippocampal and amygdalar systems. On the other hand, prolonged exposure to corticosteroids can damage the cells of the hippocampus and impair memory. Therefore, even a single highly traumatic event might cause great sensitivity to the conditioned stimuli but loss of conscious memory of the original incident.

Another pathological fear condition, panic attack, may arise originally from hyperventilation, which induces air hunger—certainly a most threatening emotion. The persistence of the condition may result from conditioning of a fear response to various internal and mnemonic stimuli.

James-Lange vs. Cannon-Bard Controversy

LeDoux next addresses the James-Lange claim that affect arises from feedback from viscera and striated muscle that are activated in an emotional experience. Like many other commentators, he dismisses as unimportant the feedback from striated muscle (for example, in our running from danger). He acknowledges that, as Cannon (1929) showed, visceral feedback is too slow to elicit timely affect even if this feedback is sufficiently specific to particular emotions. He concedes that, despite an early report to the contrary, spinally transected patients are not deficient in emotional feeling.

But he argues that the vagus nerves are still intact and could provide feedback. This seems a weak rejoinder; it does not address the problem of the slowness of visceral feedback.

Editorial Staff

Editor

Glenn Weisfeld
 Dept. of Psychology
 Wayne State University
 Detroit, MI 48202 USA
 tel. 1-313-577-2835, -2801, -8596
 fax 1-313-577-7636; e-mail:
 weisfeld@sun.science.wayne.edu

Current Literature Editor

Johan van der Dennen
 Center for Peace & Conflict Studies
 Oude Kyrk in't Jatstraat 5
 9772 EA Groningen, The Netherlands
 tel. 31-50-635649
 fax 31-50-635635; e-mail:
 j.m.g.van.der.dennen@rechten.rug.nl

Outgoing Chief Book Review Editor

Linda Mealey
 Dept. of Psychology
 Queensland University
 Brisbane 4072, Australia
 fax 61-7-3365-4466
 e-mail: lmealey@psy.uq.edu.au.

New Chief Book Review Editor

Peter LaFrenière
 Little Hall
 Dept. of Psychology
 University of Maine
 Orono, ME 04469 USA
 tel. 1-207-581-2030
 fax 1-207-581-6128
 e-mail: peterlaf@maine.maine.edu

British Book Review Editor

A. Stuart Laws
 Department of Psychology
 The University, Newcastle upon Tyne
 NE1 7RU, England
 tel. 44-191-222-6000
 fax 44-191-261-1182

German Book Review Editor

Karl Grammer (see Officers' Box)

Spanish & Portuguese Book Review Editor

Eduardo Gudynas
 c/o ASMER Regional Office
 Casilla Correo 13125
 Montevideo, Uruguay

In addition, wouldn't loss of visceral feedback from the sympathetic division alter the patient's emotional life at all? Paraplegics and quadriplegics generally report no qualitative change in their affective lives, apart from some depression. Their affect is appropriate; they are not afraid when they should be angry, etc. The same is true of the behavior of spinally transected experimental animals.

LeDoux also relies on the facial feedback hypothesis, that feedback from facial expression causes affect. He claims that this feedback would be rapid enough to account for the quick onset of affect. However, evidence for the facial feedback hypothesis is weak (Buck, 1988). Then too, facial nerve paralysis or inhibition, as in Bell's palsy or Parkinson's, does not change affect. Another problem is that facial expressions are rudimentary at best in nonprimate mammals, which certainly appear to possess affect. Like our own brain, their brains contain pleasure and pain centers, mostly in the limbic system.

Moreover, the James-Lange formulation makes questionable functional sense. Why should the brain signal the body in order for the body to inform the brain about what it has just done? This would be particularly impractical when speed was crucial, as in confrontations with danger. Furthermore, what would the function of affect be if all of the reactions to the dangerous stimulus had already occurred? In addition, if facial feedback were truly effective, we would be tempted simply to smile in the face of danger to dissipate our fear--surely a maladaptive capacity. When LeDoux says "Putting on a happy face may not be such a bad idea when you are feeling blue" (p. 295), he is not thinking adaptively.

It is probably true that mental associations develop between affects and resulting emotional changes in the body, so that classical conditioning occurs that results in elicitation of affect in response to these adjustments. This might explain any mood-altering effects of deliberate facial grimacing, which may have modest therapeutic benefits in cases of inappropriate affect. But this cannot

be the basic system—it would be too slow, weak, nonspecific, and functionally dubious.

It seems more likely that affect, registered in the amygdala, directs the various behavioral and physiological manifestations of fear. This is essentially what the competing Cannon-Bard theory claims. Indeed, LeDoux himself asserts that the amygdala, which organizes the response to danger (including visceral changes, emotional expressions, and overt behavior), mediates the affect of fear. Electrical stimulation of this structure in conscious humans or spontaneous activation in epileptics commonly results in reports of fear or foreboding. On the other hand, specific affects are not elicited by electrical stimulation of the facial nerves, injections of adrenalin, or passive movement of the limbs. Furthermore, the amygdala does not receive direct input from the viscera, face, or skeletal muscles.

The Problem of Consciousness

Another difficulty is LeDoux's claim that "[y]ou *can't* have a conscious emotional feeling of being afraid without aspects of the emotional experience being represented in working memory" (p. 296), a vague capacity that he locates in the prefrontal cortex. He asserts that stimulation of working memory by the amygdala is what is crucial. He also says that "you probably *can* have an emotional feeling without the direct projections to the cortex from the amygdala" (p. 298). So which is it? Is affect as mediated by the amygdala not conscious; does consciousness have to be neocortical?

This emphasis on the neocortex and particularly the prefrontal cortex smacks of anthropocentrism—exalting our species over others. Recall that this latter structure is absent or very rudimentary in most mammals—do these species lack working memory? How did they manage to escape extinction without it? Are they incapable of "conscious emotional experience"? If so, what was the crucial selection pressure for conscious emotional experience or working memory in primates? Have we abandoned the notion of some species being "higher" than others, only to resurrect it in the form of "higher cognitive processes"?

LeDoux's own research on the amygdala provides an antidote to such scala

naturae thinking: He showed that both the fast (subcortical) and the slow (cortical) pathway from the auditory centers (like fast and slow pain fibers) have their strengths and weaknesses; both are adaptive.

How crucial is the "problem of consciousness" to solve anyway? As Marian Dawkins (1993) points out, virtually every adaptive benefit that consciousness is supposed to confer could theoretically be provided by unconscious mechanisms of behavior. Consciousness, like affect, may be some irreducible "something" that defies explanation in other terms. Since we can hardly define consciousness, how can we hope to explain it? Consciousness may simply be a byproduct of certain neural arrangements found in, perhaps, the neocortex and limbic system but not in the cerebellum. If so, then it probably exists in all animals possessing the crucial neural structures.

Weaknesses in Applying Ethology

LeDoux concludes with some rather disappointing speculations about the direction of human brain evolution. In speculating at all about this, he may not appreciate the slowness of natural selection. He suggests that, since connections from the cortex to the amygdala are far richer in primates than in other mammals, we may come to exercise greater control over our emotions. This speculation has some other serious problems. The amygdala, like the neocortex, expanded in primate and hominid evolution, so the limbic system does not seem to be on its way out.

Moreover, what does "control over our emotions" mean? What is behavior other than a succession of attempts to fulfill our adaptive emotional tendencies? Why would such control be a good thing, since the amygdala's influence on the cortex is still far greater than the reverse? What is the neocortex going to be doing, if not helping to execute adaptive behaviors in response to the promptings of our imperious emotions? Cannot many or most examples of neocortical control over the limbic system be interpreted as ascendancy of the emotion of pride (in our "self-control," say) over domination by fear or anger and their (generally adaptive) impulsiveness? LeDoux began the book by emphasizing the functional importance of emotions; he ends it by

Officers of the Society

President

Charles B. Crawford
 Department of Psychology
 Simon Fraser University
 Burnaby, B. C. V5A 1S6 Canada
 tel. 1-604-291-3660
 fax 1-604-291-3427
 e-mail: internet usercbc2@cc.sfu.ca

Vice-President/ President-Elect

Linda Mealey
 Dept. of Psychology
 Queensland University
 Brisbane 4072, Australia
 fax 61-7-3365-4466
 e-mail: lmealey@psy.uq.edu.au.

Vice-President for Information

Glenn Weisfeld
 (see Editorial Box)

Secretary

Karl Grammer
 Ludwig Boltzmann Institute for
 Urban Ethology/Human Biology
 Althanstrasse 14
 A-1090 Vienna, Austria
 tel. 43-1-31-336-1253
 fax 43-1-31-336-788; e-mail:
<http://evolution.humb.univie.ac.at>

Treasurer

Barbara F. Fuller
 School of Nursing
 University of Colorado
 4200 E. Ninth Ave.
 Denver, CO 80262 USA
 tel. 1-303-315-8929
 fax 1-303-315-5666
 e-mail: barbara.fuller@uchsc.edu

Membership Chair

Nancy L. Segal
 Department of Psychology
 California State University
 Fullerton, CA 92834 USA
 tel. 1-714-773-2142
 fax 1-714-449-7134
 e-mail: nsegal@fullerton.edu.

minimizing their utility.

Overall, I found this book to provide a wealth of information about the mechanisms of a basic emotion, fear. Anyone seriously interested in emotion needs to read this book. It is clear and well organized, and the diagrams are very helpful. For the first time (with the possible exception of the hunger and thirst motives) we have a fairly complete neurophysiological picture of a basic behavior. LeDoux's reliance on a comparative, evolutionary approach is refreshing, and seems to have been largely responsible for the thrust of his research. Because of his proximate and ultimate causal perspective, LeDoux's understanding of emotion is much more sophisticated than that of mainstream psychologists. By implication he also reminds evolutionary psychologists that emotional "modules" have a phylogenetic history; they are only subroutines, if you wish, of general emotional systems such as mate seeking.

However, just as I think we human ethologists could benefit from knowing more about the brain, perhaps LeDoux could learn more about ethology. For example, he refers to "slimy reptiles" (p. 107) whereas it is amphibians that have moist skin, and he labels a drawing of a mandrill as a chimpanzee (p. 111). He categorizes animal responses to fear as withdrawal, freezing, defensive fighting, and submission, omitting death feigning and seeking protection from others. On p. 163 he refers to the appendix as vestigial, whereas this ancient digestive structure was refashioned by evolution for service to the immune system, being filled with lymphatic tissue. On p. 290 he distinguishes between a novel stimulus and an emotional one, not recognizing that novelty generally elicits the emotion of interest, or curiosity.

Most egregiously, however, he labels a section of the book "Beyond Evolution," perhaps succumbing to the temptation not to appear a zealot for Darwinism or, even worse, thinking there is something else that shapes our ends.

References

Bard, P. (1929). The central representation of

the sympathetic system: As indicated by certain physiological observations. *Archives of Neurology & Psychiatry*, 22, 230-246.

Buck, R. (1988). *Human Motivation and Emotion*. New York: Wiley.

Dawkins, M. S. (1993). *Through Our Eyes Only? The search for animal consciousness*. New York: Freeman.

Lazarus, R. S. (1984). On the primacy of cognition. *American Psychologist*, 39, 124-129.

Schacher, S., & Singer, J. E. (1962). Cognitive, social, and physiological determinants of emotional state. *Psychological Review*, 69, 379-399.

Zajonc, R. (1980). Feeling and thinking: preferences need no inferences. *American Psychologist*, 35, 151-175.

Zajonc, R. B. (1984). On the primacy of affect. *American Psychologist*, 39, 117-123.

This review was ably critiqued by Russell Gardner, Jr., editor of the *Across-Species Comparison and Psychiatry Newsletter*. Responsibility for its content remains with the reviewer.

ANNOUNCEMENTS

ESS Convention

The 21st annual meeting of the European Sociobiological Society will be conducted at the Russian State University for the Humanities, Moscow. It is tentatively scheduled for the third week of June 1998. The focus will be on evolutionary factors underlying rituals and group identity in animals and humans. Papers will be welcomed addressing evolutionary aspects of group identity and the origins of rituals and ceremonies in animal and human societies. Abstracts (due 10 May) and registration forms should be sent to Prof. Marina Butovskaya, Institute of Cultural Anthropology, Russian State University for the Humanities, Miusskaya Pl. 6, Moscow 125267, Russia, fax (7-095) 250-5109, e-mail Marina@carabus.msk.ru.

ESS Website

The European Sociobiological Society now has an operating website on the internet. The URL is <http://jurix.rechten.rug.nl/rth/ess/ess.htm>.

XIII World Meeting of ISRA

A meeting of the International Society for Research on Aggression will take place 12-17 July 1998. ISRA marks its 25th anniversary with this biennial convention. The Society has 300 members in 34 countries. The meeting will be held at Ramapo College, in Mahwah, New Jersey, 20 miles from New York City. Program chairs are MaryAnn and Ron Baenninger; Ron edits the Society journal, *Aggressive Behavior*. Deadline for paper and poster submissions is 1 February. For details on submission procedures contact MaryAnn Baenninger, Dept. of Psychology, The College of New Jersey, P.O. Box 7718, Ewing, NJ 08628-0718; e-mail baenning@tcnj.edu. Conference organizer is Roger N. Johnson, School of Theoretical & Applied Science, Ramapo College, Mahwah, NJ 07430, tel. 1-201-529-7755, fax 1-201-934-9380, e-mail Rjohnson@ramapo.edu. Conference website: <http://www.ski-town.com/isra>.

Squaw Valley Conference

The 1998 Squaw Valley (Calif.) conference will examine recent developments in neurobiology. Participants will attempt to relate the findings of neurobiology to legal concerns including the sense of justice, root causes of aggressive behavior, the sense of entitlement, altruistic behavior, and deference to authority. Dates are 17-21 June 1998. For information contact Prof. Lawrence A. Frolik, University of Pittsburgh Law School, Pittsburgh, PA 15260, USA, tel. 1-4120648-1363, e-mail frolik@law.pitt.edu.

Erratum

In the September 1997 *Bulletin*, Dorothy Tennov reviewed William Calvin's book whose correct title is *The Cerebral Code*, not "codes." We regret the error.

Delwart Foundation Award

The Jean-Marie Delwart Foundation will award a \$10,000 prize in 1998 for an original work or series of works, individual or collective, conducted jointly in the perspectives of ethology and cultural anthropology. Candidates can submit their own application or be nominated by a scholar working in these fields. Applications, in French or English, should be submitted by 15 June 1998 to: Fondation Jean-Marie Delwart, Château de Pellenberg, B-3212 Pellenberg, Belgium. Applications should be accompanied by a cover letter and curriculum vitae with a complete list of publications, in duplicate. The jury comprises members of the scientific committee of the Foundation and members of the Académie Royale des Sciences de Belgique. The prize will be awarded in December 1998.

CURRENT LITERATURE

December 1997

Compiled by Johan van der Dennen

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).

Allred, K.G. et al. (1997). The influence of anger and compassion on negotiation performance. *Organizational Behavior & Human Decision Processes*, 70, 175-188 (Columbia Univ., Teachers Coll. Program, Social-Org. Psychol., Box 6, New York, NY 10027, USA)

Archer, J. (1996). Evolutionary social psychology. In M. Hewstone, W. Stroebe, & G. Stephenson (Eds.), *Introduction to Social Psychology: A European perspective*. Blackwell Publishers, 238 Main St., Cambridge, MA 02142, USA, \$31.95 (ppr.).

Asthana, H.S. & Mandal, M.K. (1997). Hemiregional variations in facial expression of emotions. *British Journal of Psychology*, 88, 519-525 (Banaras Hindu Univ., Dept. Psychol., Varanasi 221005, Uttar Pradesh, India)

Aureli, F. (1997). Post-conflict anxiety in nonhuman primates: the mediating role of emotion in conflict resolution. *Aggressive Behavior*, 23, 315-328 (Yerkes Regional Primate Res. Ctr., Emory Univ., Atlanta, GA 30322, USA)

Baron-Cohen, S., Wheelwright, S. & Jolliffe, T. (1997). Is there a 'language of the eyes'? Evidence from normal adults, and adults with autism or Asperger Syndrome. *Visual Cognition*, 4, 3, 311-331 (Univ. Cambridge, Dept. Expt. Psychol., Downing St., Cambridge CB2 3EB, England)

Berezkei, T. & Dunbar, R.I.M. (1997). Female-biased reproductive strategies in a Hungarian Gypsy population. *Proceedings of Royal Society: Biological Sciences*, 264, 17-22. (Inst. Behavioral Sciences, Medical Univ. School of Pecs, Szigeti u. 12, Pecs, 7624, Hungary)

Berezkei, T., Voros, S., Gal, A. & Bernath, L. (1997). Resources, attractiveness, family commitment: Reproductive decisions in human mate choice. *Ethology*, 103, 681-699 (Janus Pannonius Univ., Dept. Psychol., Ifjusag u. 6, Pecs, 7624, Hungary)

Berman, M.E. (1997). Biopsychosocial approaches to understanding human aggression: The first 30 years. *Clinical Psychology Review*, 17, 585-588 (Univ. Southern Mississippi, Dept. Psychol., POB 5052, Hattiesburg, MS 39406, USA)

Berman, M.E., Tracy, J.I. & Coccaro, E.F. (1997). The serotonin hypothesis of aggression revisited. *Clinical Psychology Review*, 17, 651 (see supra)

Bettencourt, B.A. & Kernahan, C. (1997). A meta-analysis of aggression in the presence of violent cues: Effects of gender differences and aversive provocation. *Aggressive Behavior*, 23, 447-456 (Univ. Missouri, Dept. Psychol., 104A McAlester, Columbia, MO 65211, USA)

Botha, R.P. (1997). Neo-Darwinian account of the evolution of language: 1. Questions about their explanatory focus. *Language & Communication*, 17, 249-268 (Univ. Stellenbosch, Dept. Gen. Linguist., ZA-7600 Stellenbosch, South Africa)

Brannigan, A. (1997) Self control, social control and evolutionary psychology: Towards an integrated perspective on crime. *Canadian Journal of Criminology*, 39, 403-432 (Univ. Calgary, Calgary AB, Canada).

Brannigan, G.G., Allgeier, E.R., & Allgeier, A.R. (Eds.) (1998), *The Sex Scientists*. Addison Wesley, 5851 Guion Rd., Indianapolis, IN 46254 USA, (ppr.).

Braza, P., & Braza, F. (1996). ¿Es ventajosa la segregación sexual en los grupos de pares durante la infancia? (Is sexual segregation in peer groups advantageous during childhood?) *Revista Mexicana de Psicología*, 13, 147-158. (Departamento de Psicología Evolutiva y de la Educación, Universidad de Cádiz, Campus Rio San Pedro, 11510, Puerto Real, Cádiz, Spain)

Brennan, P.A. & Raine, A. (1997). Biosocial bases of antisocial behavior: Psychophysiological, neurological, and cognitive factors. *Clinical Psychology Review*, 17, 589-604 (Emory Univ., Dept. Psychol., Atlanta, GA 30322, USA)

Browne, K. R. (1997). An evolutionary perspective on sexual harassment: seeking roots in biology rather than ideology. *Journal of Contemporary Legal Issues*, 8, 5-78. (Wayne State Univ. Law School, Detroit, MI 48202, USA)

Buss, D.M. (1997). Sex differences in jealousy: Evolution, physiology and psychology. In M. Hewstone, A.S.R. Manstead & W. Stroebe (Eds.), *The Blackwell Reader in Social Psychology*. Blackwell Publishers, 238 Main St., Cambridge, MA 02142, USA, \$64.95 (hdbk.), \$29.95 (ppr.).

Buss, D.M. & Shackelford, T.K. (1997). Human aggression in evolutionary psychological perspective. *Clinical Psychology Review*. (Univ. Texas, Dept. Psychol., Austin, TX 78712, USA)

Capaldi, D.M., Chamberlain, P. & Patterson, G.R. (1997). Ineffective discipline and conduct problems in males: Association, late adolescent outcomes, and prevention. *Aggression and Violent Behavior*, 2, 343-354 (Oregon Social Learning Ctr., 207 E 5th Ave., Suite 202, Eugene, OR 97401, USA)

Caporeal, L.R., Likazewski, M.P., & Culbertson, G.H. (1997). Secondary Baby Talk: Judgements by institutionalized elderly and their caretakers. In M. Hewstone, A.S.R. Manstead & W. Stroebe (Eds.), *The Blackwell Reader in Social Psychology*. 238 Main St., Cambridge, MA 02142, USA, \$64.95 (hdbk.), \$29.95 (ppr.).

Caron, A.J., Caron, R., Roberts, J & Brooks, R. (1997). Infant sensitivity to deviations in dynamic facial-vocal displays: The role of eye regard. *Developmental Psychology*, 33, 802-813 (Boston Univ., Dept. Psychol., 64 Cummington St., Boston, MA 02215, USA)

Cegala, D.J. (1997). A study of doctors' and patients' communication during a primary care consultation: Implications for communication training. *Journal of Health Communication*, 2, 169-196 (Ohio State Univ., Dept. Commun., 3016 Derby Hall, Columbus, OH 43210, USA)

Chermack, S.T. & Giancola, T.R. (1997). The relation between alcohol and aggression: An integrated biopsychosocial conceptualization. *Clinical Psychology Review*, 17, 621-650 (John Dingell VA Med. Ctr., Psychiat. Serv. 11A, 4646 John R St., Detroit, MI 48201, USA)

Corballis, M.C. (1997). The genetics and evolution of handedness. *Psychological Review*, 104, 714-727 (Univ. Auckland, Dept. Psychol., Private bag 92019, Auckland 1, New Zealand)

Cullen, F.T. et al. (1997). Crime and the Bell Curve: Lessons from intelligent criminology. *Crime & Delinquency*, 43, 387-411 (Univ. Cincinnati, Cincinnati, OH 45221, USA)

Derry, J.F. & Elliott, C.J.H. (1997). Automated 3-D tracking of video-captured movement using the example of an aquatic mollusk. *Behavior Research Methods, Instruments & Computers*, 29, 353-357 (Univ. York, Dept. Biol., POB 373, York YO1 5YW, N. Yorkshire, England)

- Devlin, B., Fienberg, S.E., Resnick, D.P. & Roeder, K. (Eds.) (1997). *Intelligence, Genes, and Success: Scientists Respond to the Bell Curve*. Springer Verlag, P.O.Box 2485, Secaucus, NJ 07094, USA.
- De Waal, F.B.M. (1997). Food-transfers through mesh in brown capuchins. *Journal of Comparative Psychology*, 111: 1-9 (Emory Univ., Dept. Psychol., Atlanta, GA 30322, USA)
- (1997). The chimpanzee's service economy: Food for grooming. *Evolution & Human Behavior*. 18: 1-12 (see supra)
- Dougherty, D. & Rauch, S.L. (1997). Neuroimaging and neurobiological models of depression. *Harvard Research in Psychiatry*, 5, 138-158 (Massachusetts General Hospital, Dept. Psychiat., ACC 812, Fruit St., Boston, MA 02114, USA)
- Dretske, F. (1997). *Naturalizing the Mind*. MIT Press, 5 Cambridge Center, Cambridge, MA 02142 USA, \$12.50 (ppr.).
- Dunn, J. & Herrera, C. (1997). Conflict resolution with friends, siblings, and mothers: A developmental perspective. *Aggressive Behavior*, 23, 343-358 (Inst. Psychiatry, Social Psychiat. Res. Ctr., De Crespigny Park, London SE5 8AF, England)
- Dunn, S.E., Lochman, J.E. & Colder, C.R. (1997). Social problem-solving skills in boys with conduct and oppositional defiant disorders. *Aggressive Behavior*, 23, 457-469 (Children's Psychiat. Inst., John Umstead Hosp., 12th St., Butler, NC 27509, USA)
- Dwyer, P.D. & Minnegal, M. (1997). Sago games: Cooperation and change among sago producers of Papua New Guinea. *Evolution and Human Behavior*, 18, 89-108 (Univ. Queensland, Dept. Zool., Brisbane, Queensland, Australia 407)
- Eisenberg, N. et al. (1997). Contemporaneous and longitudinal prediction of children's social functioning from regulation and emotionality. *Child Development*, 68, 642-664 (Arizona State Univ., Dept. Psychol., Tempe, AZ 85287, USA)
- Ekman, P., & Friesen, W. V. (1997). Constants across cultures in the face and emotion. In M. Hewstone, A.S.R. Manstead & W. Stroebe (Eds.) *The Blackwell Reader in Social Psychology*. 238 Main St., Cambridge, MA 02142, USA, \$64.95 (hdbk.), \$29.95 (ppr.).
- Ekman, P., & Rosenberg, E. (Eds.) (1997). *What the Face Reveals: Basic and applied studies of spontaneous expression using the Facial Action coding System (FACS)*. Oxford Univ. Press, 198 Madison Ave., New York, NY 10016, USA, \$65 (hdbk.), \$39.95 (ppr.). **Needs Reviewer.**
- Fabrega, H. (1997). Earliest phases in the evolution of sickness and healing. *Medical Anthropology Quarterly*, 11, 26-55 (Univ. Pittsburgh, School Med., Western Psychiat. Inst. & Clin., O'Hara St., Pittsburgh, PA 15123, USA)
- Fahrenberg, J. et al. (1997). Assessment of posture and motion by multichannel piezoresistive accelerometer recordings. *Psychophysiology*, 34., 607-612 (Univ. Freiburg, Forschung Grp. Psychophysiol., Belfortstr. 20, D-79085 Freiburg, Germany)
- Falmagne, J.C. & Doignon, J.P. (1997). Stochastic evolution of rationality. *Theory and Decision*, 43, 107-138 (Univ. Calif. Irvine, Sch. Social Sci., Irvine, CA 92717, USA)
- Farber, P.L. (1994). *The Temptations of Evolutionary Ethics*. Univ. of California Press, 2120 Berkeley Way, Berkeley, CA 94720, USA, \$35 (hdbk.). **Needs Reviewer.**
- Fedigan, L.M. & Strum, S.C. (1997). Changing images of primate societies. *Current Anthropology*, 38, 677-680 (Univ. Alberta, Dept. Anthropol., Edmonton, AB, T6G 2H4, Canada)
- Fernandez-Dols, J.M. et al. (1997). Are spontaneous expressions and emotions linked? An experimental test of coherence. *Journal of Nonverbal Behavior*, 21, 163-178 (Univ. Autonoma Madrid, Fac. Psicol., E-28049, Madrid, Spain)
- Feyereisen, P. & Van der Linden, P. (1997). Immediate memory for different kinds of gestures in younger and older adults. *Cahiers de Psychologie Cognitive*, 16, 519 (Univ. Catholique Louvain, Dept. Exp. Psychol., Pl. Cardinal Mercier 10, B-1348 Louvain, Belgium)

- Friman, P.C. et al. (1997). Decreasing disruptive behavior by adolescent boys in residential care by increasing their positive to negative interactional ratios. *Behavior Modification*, 21, 470-486 (Father Flanagans Boys Home, Clin. Serv. & Res. Youthcare Bldg., Boystown, NE 68010, USA)
- Fouts, R. (1997). *What Chimpanzees Have Taught Me about Who We Are*. Morrow, 1350 Ave. of the Americas, New York, NY 10019, USA, \$25 (hdbk.). **Needs Reviewer.**
- Gadagkar, R. (1998). *Survival Strategies: Cooperation and conflict in animal societies*. Harvard Univ. Press, 79 Garden St., Cambridge, MA 02138, USA, \$22 (hdbk.).
- Gasteiger-Klicpera, B. & Klicpera, C. (1997). Aggressive behavior and social position in the class. *Zeitschrift fuer Kinder- und Jugendpsychiatrie und Psychotherapie*, 25, 139-150 (Univ. Vienna, Inst. Psychol., Abt. Angew. & Klin. Psychol., Neutorgasse 13, A-1010 Vienna, Austria)
- Gjone, H. & Stevenson, J. (1997). A longitudinal twin study of temperament and behavior problems: Common genetic or environmental influences? *Journal of the American Academy of Child and Adolescent Psychiatry*, 36, 1448-1456 (Univ. Oslo, Natl. Ctr. Child & Adolescent Psychiat., Box 26, Vinderen, N-3019 Oslo, Norway)
- Grady, M. F., & McGuire, M.T. (1997). A theory of the origin of natural law. *Journal of Contemporary Legal Issues*, 8, 87-130. (Reprint: MTM, Neuropsychiatric Institute, UCLA, 760 Westwood Plaza, Los Angeles, CA 90024, USA)
- Grimes, T., Vernberg, E., & Cathers, T. (1997). Emotionally disturbed children's reactions to violent media segments. *Journal of Health Communication*, 2, 157-168. (Kansas State Univ., School of Journalism & Mass Commun., ECC Bob Dole Hall, Manhattan, KS 66506, USA)
- Hahn, J. & Blass, T. (1997). Dating partner preferences: A function of similarity of love styles. *Journal of Social Behavior & Personality*, 12, 595-610 (Johns Hopkins Univ., Dept. Psychiat., Sch. Med., 600 N Wolfe St., Meyer 4-181, Baltimore, MD 21287, USA)
- Harrigan, J.A. & Taing, K.T. (1997). Fooled by a smile: Detecting anxiety in others. *Journal of Nonverbal Behavior*, 21, 202-222 (Calif. State Univ. Fullerton, Dept. Psychol., Fullerton, CA 92634, USA)
- Hauser, M.D. (1997). *The Evolution of Communication*. MIT Press, 5 Cambridge Center, Cambridge, MA 02142, USA, \$35 (ppr.).
- Hill, P. & Martin, R.B. (1997). Empathic weeping, social communication, and cognitive dissonance. *Journal of Social & Clinical Psychology*, 16, 299-322 (Elgin Mental Health Ctr., 750 S State St., Elgin, IL 60123, USA)
- Howe, N., Bukovski, W.M., & Aguan-Assee, J. (1997). The dynamics of reciprocal sibling interaction: Are context and maternal behaviour important? *Canadian Journal of Behavioural Science*, 29, 92-100 (Concordia Univ., Dept. Educ., 1455 Maisonneuve W., Montréal, PQ, H3G 1M8, Canada)
- Hur, Y.M. & Bouchard, T.J. (1997) The genetic correlation between impulsivity and sensation seeking traits. *Behavior Genetics*, 27, 455-465 (Univ. Minnesota, Dept. Psychol., 75 E. River Rd., N218 Elliott Hall, Minneapolis, MN 55455, USA)
- Immerman, R.S & Mackey, W.C. (1997). Establishing a link between cultural evolution and sexually transmitted diseases *Genetic, Social, and General Psychology Monographs*, 123, 441-459 (2682 Green Road, Shaker Heights, OH 44122, USA)
- Inoue, S., Tanaka, S., Shimodera, S. & Mino, Y. (1997). Expressed emotion and social function. *Psychiatric Research*, 72, 33-40 (Kochi Med. Sch., Dept. Neuropsychiat., Nanko Ku, Oko Cho, Kochi 783, Japan)
- Inoue-Nakamura, N. (1997). Mirror self-recognition in nonhuman primates: A phylogenetic approach. *Japanese Psychological Research*, 39, 266 (Kwansei Gakuin Univ., Fac. Letters, Dept. Psychol., Nishinomiya, Hyogog 662, Japan)
- Jameson, P.A., Gelfand, D.M., Kulcsar, E. & Teti, D.M. (1997). Mother-toddler interaction patterns associated with maternal depression. *Development and Psychopathology*, 9, 537-550 (Univ. Utah, Coll. Soc. & Behav. Sci., 205 OSH, Salt Lake City, UT 84112, USA)

- Johnson, B.R. & Becker, J.V. (1997). Sexual wickedness. *Psychiatric Annals*, 27, 634-637 (Univ. Arizona, Dept. Psychol., Tucson, AZ 85721, USA)
- Jones, O.D. (1997). Evolutionary analysis in law: An introduction and application to child abuse. *North Carolina Law Review*, 75, 1117-1242 (Arizona State Univ., College of Law, Tempe, AZ 85287-7906, USA)
- (1997). Law and biology: toward an integrated model of human behavior. *Journal of Contemporary Legal Issues*, 8, 167-208. (see supra)
- Joseph, R. (1996). *Neuropsychiatry, Neuropsychology, and Clinical Neuroscience: Emotion, evolution, cognition, language, memory, brain damage, and abnormal behavior*. Williams & Wilkins, 351 W. Camden St., Baltimore, MD 21201, USA.
- Kalverboer, A.F. (Ed.) (1990). *Developmental Biopsychology: Experimental and observational studies*. Univ. of Michigan Press, Ann Arbor, MI 48109, USA.
- Kappas, A. (1997). The fascination with faces: Are they windows to our soul? *Journal of Nonverbal Behavior*, 21, 157-162 (Univ. Laval, Ecole Pyschl., Pavillon FA Savard, Quebec City, PQ G1K 7P4, Canada)
- Keltner, D. & Bonanno, G.A. (1997). A study of laughter and dissociation: Distinct correlates of laughter and smiling during bereavement. *Journal of Personality & Social Psychology*, 73, 687-702 (Univ. California, Dept. Psychol., 3210 Tolman Hall, Berkeley, CA 94720-1650, USA)
- Keltner, D. & Potegal, M. (1997). Appeasement and reconciliation: Introduction to an Aggressive Behavior special issue. *Aggressive Behavior*, 23, 309-314 (see supra)
- Keltner, D., Young, R.C. & Buswell, B.N. (1997). Appeasement in human emotion, social practice, and personality. *Aggressive Behavior*, 23, 359-374 (see supra)
- Knight, B. & Johnston, A. (1997). The role of movement in face recognition. *VisualCognition*, 4, 265-274 (Univ. London, Univ. Coll. Dept. Psychol., Gower St., London WC1E 6BT, England)
- Krishnan, S.B., Hilbert, J.C., Van Leeuwen, D. & Kolia, R. (1997). Documenting domestic violence among ethnically diverse populations: Results from a preliminary study. *Family & Community Health*, 20, 32-48 (New Mexico State Univ., Dept. Health Sci., Las Cruces, NM 88003, USA)
- Langdon, J.H. (1997). Umbrella hypotheses and parsimony in human evolution: A critique of the Aquatic Ape Hypothesis. *Journal of Human Evolution*, 33, 479-494 (Univ. Indianapolis, Dept. Biol., 1400 E Hanna Ave., Indianapolis, IN 46227, USA)
- Levine, S. (1997). The development of wickedness: From whence does evil stem? *Psychiatric Annals*, 27, 617-623 (Childrens Hosp., 3030 Childrens Way, Suite 111, San Diego, CA 92123, USA)
- Lichtenstein, P. & Pedersen, N.L. (1997). Does genetic variance for cognitive abilities account for genetic variance in educational achievement and occupational status? A study of twins reared apart and twins reared together. *Social Biology*, 44, 77-90 (Karolinska Inst., Div. Genet. Epidemiol., S-17177 Stockholm, Sweden)
- Lindahl, L.B. & Heimann, M. (1997). Social proximity in early mother-infant interactions: Implications for gender differences? *Early Development & Parenting*, 6, 83-88 (Gothenburg Univ., Dept. Psychol., Haraldsgatan 1, 41314 Gothenburg, Sweden)
- MacDonald, K. B. (1997). The coherence of individual development: An evolutionary perspective on children's internalization of parental values. In J. Grusec & L. Kuczynski (Eds.), *Parenting and Children's Internalization of Values: A Handbook of Contemporary Theory* (pp. 362-397). New York: Wiley (Calif. State Univ., Dept. Psychol., Long Beach, CA 90840-0901, USA)
- MacDonald, K. B. (1997). Life history theory and human reproductive behavior: Environmental/contextual influences and heritable variation. *Human Nature*, 8, 327-359 (see supra)
- Maestriperi, D. (1997). The evolution of communication. *Language & Communication*, 17, 269 (Emory Univ., Yerkes Reg. Primate Ctr., 2400 Taylor Lane, Lawrenceville, GA 30243, USA)

- Martin, M.M. & Anderson, C.M. (1997). Aggressive communication traits: How similar are young adults and their parents in argumentativeness, assertiveness, and verbal aggressiveness? *Western Journal of Communication*, 61, 299-313 (W. Virginia Univ., Dept. Commun. Studies, Morgantown, WV 26506, USA)
- Matheson, D.H. (1997). The painful truth: Interpretation of facial expressions of pain in older adults. *Journal of Nonverbal Behavior*, 21, 223 (Univ. Victoria, Dept. Psychol., POB 3050, Victoria, BC, V8W 3P5, Canada)
- McCartney, K., Scarr, S., Rocheleau, A., Phillips, D., & Abbott-Shim, M. (1997). Teacher-child interaction and child-care auspices as predictors of social outcomes in infants, toddlers, and preschoolers. *Merrill-Palmer Quarterly*, 43, 426-450 (Univ. New Hampshire, Dept. Psychol., Durham, NH 03824, USA)
- McClenon, J. (1997). Shamanic healing, human evolution, and the origin of religion. *Journal Scientific Study of Religion*, 36, 345-354 (Elizabeth City State Univ., Dept. Soc. Sci., Elizabeth City, NC 27909, USA)
- McGivern, R.F. et al. (1997). Sex differences in visual recognition memory: Support for a sex-related difference in attention in adults and children. *Brain & Cognition*, 34, 323-336 (6363 Alvarado Court, Suite 200-H, San Diego, CA 92120, USA)
- Mehlman, P.T. et al. (1997). CSF 5-HIAA, testosterone, and sociosexual behaviors in free-ranging male rhesus macaques in the mating season. *Psychiatric Research*, 72, 89-102 (Labs Virginia Inc., POB 557, Yemassee, SC 29945, USA)
- Mehrabian, A. & Blum, J.S. (1997). Physical appearance, attractiveness, and the mediating role of emotions. *Current Psychology*, 16, 20-33 (Univ. Calif. LA, Los Angeles, CA 90024, USA)
- Meloy, J.R. (1997). The psychology of wickedness: Psychopathy and sadism. *Psychiatric Annals*, 27, 630-633 (964 5th Ave, Suite 409, San Diego, CA 92101, USA)
- Merten, J. (1997). Facial-affective behavior, mutual gaze, and emotional experience in dyadic interactions. *Journal of Nonverbal Behavior*, 21, 179-202 (Univ. Saarland, FR Psychol., D-66123, Saarbruecken, Germany)
- Miller, J.L. (1997). Societal neglect and violence towards children: What do these phenomena tell us about ourselves? *Smith College Studies in Social Work*, 67,, 197-212 (Smith College, School Social Work, Northampton, MA 01063, USA)
- Mock, D., & Parker, G. (1997). *The Evolution of Sibling Rivalry*. Oxford Univ. Press, 198 Madison Ave., New York, NY 10016, USA, \$120 (hdbk.), \$49.95 (ppr.). Needs Reviewer.
- Moore, G.A., Cohn, J.F. & Campbell, S.B. (1997). Mothers' affective behavior with infant siblings: Stability and change. *Developmental Psychology*, 33, 856-860 (Univ. Pittsburgh, Dept. Psychol., 4015 O'Hara St., Pittsburgh, PA 15260, USA)
- Myowa, M. (1997). Spatial cognition in the first six months of infancy: An analysis of the development of fixation, prereaching movement and vocalization. *Japanese Journal of Educational Psychology*, 45, 346-354 (Kyoto Univ., Fac. Educ., Kyoto, Japan)
- Nicholsön, N. (1997). Evolutionary psychology: Toward a new view of human nature and organizational society. *Human Relations*, 50, 1053-1978 (London Business School, Sussex Pl., Regents Pk, London NW1 4SA, England)
- Ohayon, M.M., Caulet, M., & Priest, R.G. (1997). Violent behavior during sleep. *Journal of Clinical Psychiatry*, 18, 359-360 (Ctr. Rech. Philippe Pinel Montréal, 10905 Blvd Henri Bourassa Est, Montréal, PQ H1C 1H1, Canada)
- Perlman, M. & Ross, H.S. (1997). The benefits of parent intervention in children's disputes: An examination of concurrent changes in children's fighting styles. *Child Development*, 68, 690-700 (Univ. Waterloo, Dept. Psychol., Waterloo, ONT, N2L 3G1, Canada)
- Pinker, S. (1997). *How the Mind Works*. W.W. Norton, 800 Keystone Industrial Pk., Scranton, PA 18512, USA, \$29.95 (hdbk.).

- Piotrowski, C. (1997). Rules of everyday family life: The development of social rules in mother-child and sibling relationships. *International Journal of Behavioral Development*, 21, 571-598 (Univ. Manitoba, Dept. Family Studies, Winnipeg, MB, B3T 2N2, Canada)
- Potegal, M. & Davidson, R.J. (1997). Young children's post tantrum affiliation with their parents. *Aggressive Behavior*, 23, 329-342 (Univ. Minnesota Med. School, Div. Gen. Pediatrics, Box 721, Delaware St., S.E. Minneapolis, MN 55455-0392, USA)
- Raine, A., Venables, P.H. & Mednick, S.H. (1997). Low resting heart rate at age 3 predisposes to aggression at age 11 years: Evidence from the Mauritius Child Health Project. *Journal of the American Academy of Child and Adolescent Psychiatry*, 36, 1457-1464 (Univ. SO Calif., Dept Psychol., SGM Bldg, Los Angeles, CA 90089, USA)
- Rempel, M.W. & Fisher, R.J. (1997). Perceived threat, cohesion, and group problem solving in intergroup conflict. *International Journal of Conflict Management*, 8, 216-234 (Univ. Saskatchewan, Dept. Psychol., 9 Campus Drive, Saskatoon, SK S7N 5A5, Canada)
- Renfrew, J. W. (1997). *Aggression and its Causes: A biopsychosocial approach*. Oxford Univ. Press, 198 Madison Ave., New York, NY 10016, USA.
- Riemann, R., Angleiter, A & Strelau, J. (1997). Genetic and environmental influences on personality: A study of twins reared together using the self- and peer-report NEO-FFI scales. *Journal of Personality*, 65, 449-476 (Univ. Bielefeld, Dept. Psychol., Postfach 100131, D-33501, Bielefeld, Germany)
- Rosenthal, S.L. et al. (1997). Heterosexual romantic relationships and sexual behaviors of young adolescent girls. *Journal of Adolescent Health*, 21, 238-243 (Children's Hosp., Med. Ctr., Div. Adolescent Med., 3333 Burner Ave, Cincinnati, OH 45229, USA)
- Rushton, J.P. (1996). Race, intelligence, and the brain: The errors and omissions of the 'revised' edition of S.J. Gould's *The Mismeasure of Man*. *Personality and Individual Differences*, 23, 169-180 (Univ. Western Ontario, Dept. Psychol., London, ONT, N6A 5C2, Canada)
- Sample, E.B. & Moore, D. (1997). Alcohol use, ethnicity, and disability: A comparison of African-American and Caucasian groups. *Social Behavior & Personality*, 25, 265-276 (Wright State Univ., Dept. Community Health, P.O.Box 927, Dayton, OH 45401, USA)
- Sasaya, R. (1997). Inferring others' emotion from facial and situational cues. *Japanese Journal of Educational Psychology*, 45, 312-319 (Nagoya Univ., Grad. Sch. Educ., Dept. Educ. Psychol., Nagoya, Aichi, Japan)
- Scarpa, A. & Raine, A. (1997). Biology of wickedness. *Psychiatric Annals*, 27, 624-629 (Virginia Tech., Dept. Psychol., Berring Hall, Blacksburg, VA 24061, USA)
- Scherer, K. (1996). Emotion. In M. Hewstone, W. Stroebe & G. Stephenson (Eds.), *Introduction to Social Psychology: A European perspective*. Blackwell Publishers, 238 Main St., Cambridge, MA 02142, USA, \$31.95 (ppr.).
- Schwab, R. (1997). Parental mourning and children's behavior. *Journal of Counseling and Development*, 75, 258-265 (Old Dominion Univ., Dept. Educ., Norfolk, VA 23529, USA)
- Schedle, A. & Reicherts, M. (1997). Maternal coping and early child temperament: Their influence on mother-child attachment and the coping behaviour of a one year old child. *Psychologie in Erziehung und Unterricht*, 44, 307 (Kinderheim Bachtlen, 2540 Grenchen, Switzerland)
- Segerstråle, U., & Molnár, P. (Eds.) (1997). *Nonverbal Communication: Where nature meets culture*. Lawrence Erlbaum, 10 Industrial Ave., Mahwah, NJ 07430, USA, \$29.95 (hdbk.). **Needs Reviewer.**
- Serketich, W.J. & Dumas, J.E. (1997). Adults' perceptions of the behavior of competent and dysfunctional children based on the children's physical appearance. *Behavior Modification*, 21, 457-469 (Purdue Univ., Dept. Psychol., Child & Adolescent Clin., W. Lafayette, IN 47907, USA)
- Seyfarth, R.M. & Cheney, D.L. (1997). Behavioral mechanisms underlying vocal communication in nonhuman primates. *Animal Learning & Behavior*, 25, 249-267 (Univ. Pennsylvania, Dept. Psychol., Walnut St., Philadelphia, PA 19104, USA)

- Shackelford, T.K., & Buss, D.M. (1997). Marital satisfaction in evolutionary psychological perspective. In R.J. Sternberg & M. Hojjat (Eds.), *Satisfaction in Close Relationships*. Guilford Publications, 72 Spring St., New York, NY 10012, USA, \$40.50 (hdbk.).
- Shek, D.T.L. (1997). The relation of parent-adolescent conflict to adolescent psychological well-being, school adjustment and problem behavior. *Social Behavior and Personality*, 25, 277-90 (Chin. Univ. Hong Kong, Dept. Social Work, Shatin, Hong Kong)
- Simons, R.C. (1996). *Boo!: Culture, experience, and the startle reflex*. Oxford Univ. Press, 198 Madison Ave., New York, NY 10016, USA.
- Soulayrol, R., Moser, J. & Derynck, F. (1997). The gestural symbolism of the psychotic child. *Psychiatrie de l'Enfant*, 40, 143-174 (Chu Ste. Marguerite, Service Pedopsychiat., Bd. Ste. Marguerite, 13009 Marseille, France)
- Sporer, S.L. (1997). The less travelled road to truth: Verbal cues in deception detection in accounts of fabricated and self-experienced events. *Applied Cognitive Psychology*, 11, 373-398 (Univ. Giessen, Dept. Physiol., Otto Behagel Str. 10, 35394 Giessen, Germany)
- Stein, D.J. & Bouwer, C. (1997). A neuro-evolutionary approach to anxiety disorders. *Journal of Anxiety Disorders*, 11, 409-430 (POB 19063, ZA-7505 Tygerberg, South Africa)
- Stets, J.E. (1997). Status and identity in marital interaction. *Social Psychology Quarterly*, 60, 185-217 (Washington State Univ., Dept. Sociol., Pullman, WA 99164, USA)
- Stueve, A. & Link, B.G. (1997). Violence and psychiatric disorders: Results from an epidemiological study of young adults in Israel. *Psychiatry Quarterly*, 68, 327-342 (Columbia Univ., Sch. Publ. Hlth, New York State Psychiat. Inst., 600 168th St., 7th Floor, New York, NY 10032, USA)
- Sutton-Smith, B. (1998). *The Ambiguity of Play*. Harvard Univ. Press, 79 Garden St., Cambridge, MA 02138, USA, \$39.95 (ppr.).
- Tanaka, J.W. & Sengco, J.A. (1997). Features and their configuration in face recognition. *Memory & Cognition*, 25, 583-592 (Oberlin Coll., Dept. Psychol., Severance Lab., Oberlin, OH 44074, USA)
- Taris, T.W. & Semin, G.R. (1997). Parent-child interaction during adolescence, and the adolescent's sexual experience: control, closeness and conflict. *Journal of Youth & Adolescence*, 26, 373-398 (Free Univ. Amsterdam, Dept. Soc. Psychol., vd Boechorststr. 1, 1081 BT Amsterdam, Netherlands)
- Thiblin, I., Kristiansson, R. & Rais, J. (1997). Anabolic androgenic steroids and behavioural patterns among violent offenders. *Journal of Forensic Psychiatry*, 8, 299-310 (Karolinska Inst., Dept. Forens. Med., S-17177 Stockholm, Sweden)
- Tomasello, M., & Call, J. (1997). *Primate Cognition*. Oxford Univ. Press, 198 Madison Ave., New York, NY 10016, USA, \$75 (hdbk.), \$35 (ppr.).
- Van der Kolk, B.A. (1997). The psychobiology of posttraumatic stress disorder. *Journal of Clinical Psychiatry*, 58, Suppl. 9, 16-24 (HRI, Ctr. Trauma, 227 Babcock St., Brookline, MA 02146, USA)
- Vroon, P. (1994/1997). *Smell: The secret seducer*. FS & G, 19 Union Sq., New York, NY 10003, USA, \$23 (hdbk.).
- Waxman, R.P., Spencer, P.E. & Poisson, S.S. (1997). Reciprocity, responsiveness, and timing in interactions between mothers and deaf and hearing children. *Journal of Early Intervention*, 20, 341-350 (Univ. Maryland, Sch. Med., Dept. Psychiat., 645 W Redwood St, Baltimore, MD 21201, USA)
- Weingart, P., Mitchell, S.D., Richerson, P.J. & Maasen, S. (1997) (Eds.). *Human by Nature: Between Biology and the Social Sciences*. Lawrence Erlbaum, 10 Industrial Ave, Mahwah, NJ 07430-2262, USA. Needs Reviewer.
- Worchel, F.F. & Allen, M. (1997). Mothers' ability to discriminate cry types in low-birthweight premature and full-term infants. *Children's Health Care*, 26, 183 (Texas A&M Univ., Dept. Educ. Psychol., College Stn., TX 77843, USA)

