

ASCAP

Volume 7. No 5. (Cumulative #78)

May 1994

"We should never forget just how remarkable and wonderful it is that, in a natural world full of stress, violence, and competition, nature should have fashioned a solution to the problem of survival that is based on cooperation."
Stephen Budiansky¹

Newsletter Aims

- A free exchange of letters, notes, articles, essays or ideas in brief format.
- Elaboration of others' ideas.
- Keeping up with productions, events, and other news.
- Proposals for new initiatives, joint research endeavors, etc.

ASCAP Society Executive Council
 President: Paul Gilbert
 President-Elect: John K Pearce
 1st Vice President: Leon Sloman
 2nd Vice President: Daniel R Wilson
 Past Presidents; Michael A Chance, John S Price
 Editor: R. Gardner, Graves Bldg, D-28, University of Texas Medical Branch, Galveston TX 77555-0428.
 Tel: (409) 772-7029
 Fax: (409) 772-6771
 E-Mail: rgardner@utmb.edu
 Previous volumes are available. For details, contact Managing Editor: Erica Ainsbury, at above address.

ASCAP Society Mission Statement

The society represents a group of people who view forms of psychopathology in the context of evolutionary biology and who wish to mobilize the resources of various disciplines and individuals potentially involved so as to enhance the further investigation and study of the conceptual and research questions involved. This scientific society is concerned with the basic plans of behavior that have evolved over millions of years and that have resulted in psychopathologically related states. We are interested in the integration of various methods of study ranging from cellular processes to individuals in groups. The ASCAP Newsletter is a function of the ASCAP society.

Contents

- To & from the Editor.....page 2
- *Selfish genes are selfish despite Cortina's argument* by Mike Waller.....page 5
- *Alternative strategies in electric fish* by John Price.....page 8
- Book Announcement.....page 11
- *Vertical and Horizontal* by Russell Gardner, Jr.....page 12
- Abstracts & Extracts on schizophrenia, depression, subordination stress, adhesion molecules and social cognition, spatial learning deficits, evolution of MHC genetic diversity, and ancient duplicated genespage 16
- References.....page 19

DON'T FORGET MEETING IN PHILADELPHIA -- May 21st



**PLEASE NOTE CORRECTED
 E-MAIL ADDRESS FOR
 JOHN PEARCE:**

jkp@world.std.com

Concerning paleobiology, sociophysiology, interpersonal and group relations, and psychopathology

ADDRESSED TO & FROM ...

NEW LOOK

Just a note to let you know that we love the new look of the Newsletter. Dare I say that we possibly have a new journal on the horizon? I am very pleased and proud to have something in the first issue of the new look.

Kent Bailey

[Editor's Note: Many thanks for the compliments. In his letter below, Dan Wilson provides us with some thinking on why perhaps the informal format of a newsletter should persist. Brainstorming and idea-formation in hedonic mode are less likely to happen with more formal processes.]

PRINT MEMBERS' NAMES

I thought the latest ASCAP was WONDERFUL.

Could I make the suggestion that following articles, names and addresses are printed? I would (for example) like to contact Dr Cortina. You might also consider printing the names and addresses of new members.

Paul Gilbert

[Editor's Note: This is an issue that might best be decided by the readership in general. If you would like your name and address to be made available to other members of ASCAP, or if you object to this, please let us know. We are happy to be a conduit, as it were, and indeed, would prefer that all correspondence on articles

continue to be published in ASCAP - that's what makes this newsletter so stimulating. Let us know your thoughts on the matter.]

BUSHMAN SOCIETY

You should be congratulated on the new design of ASCAP. It looks real good right now as well as serving a useful function. I find myself very much in agreement with you about the importance of the role that ASCAP could play as an organization for those interested in the importance of evolutionary principles in understanding human psychopathology.

I returned from South Africa a few weeks ago and had a delightful visit with Paul Gilbert and his family en route. While in Cape Town, I had a wide ranging discussion with Patrick Tummon, a Jungian analyst with a background in ethology, who is also interested in Bushman folk tales. Just before I arrived he had taken a group on an expedition to caves with Bushman paintings and had arranged for an enactment of some Bushman folk tales. I met with people who participated and described this as a memorable experience. Because the Bushmen were a primitive hunter-gatherer society when these folk tales were recorded and when these paintings were made, Patrick believes that one can delineate archetypal themes in the folk tales that had important adaptive functions in the Bushman society. He views archetypal

mechanisms as akin to the biological mechanisms that we have been trying to understand.

A group of us here at the Clarke Institute of Psychiatry in Toronto are pursuing relationships between attachment theory and social hierarchy theory. For me it's really fascinating to see how these two models compliment each other. In my view, the development of an integrated model has many implications for psychotherapy. Furthermore, having an integrated model which has an underpinning of so-called biological mechanisms might enable us to bridge the gap between the biological and psychodynamic approaches in psychiatry.

Leon Sloman

EGOCIDE

I was unable to contact either Paul Gilbert or Michael Chance when in England recently, but I did manage to see Anthony Stevens who had just the day before seen Michael Chance in Birmingham.

I look forward to your reaction to my book *Transforming Depression: A Jungian Approach Using the Creative Arts*. I'm rather embarrassed that various ASCAP works on depression are not cited. I had to sacrifice nearly two hundred pages of text and numerous references because my manuscript was too "academic". Talk about egocide -- there was blood all over the editor's room

floor. Part of the problem was Putnam buying Tarcher and they wanted a "trade book" which is very hard for us academics to write. I fought for many things to stay in - 1 won some and I lost some. Also, as you'll quickly note, the book is clinical as well as theoretical. Nevertheless, I do present depression in a balanced, adaptive, evolutionary and holistic manner. In addition, the book is also about suicide and egocide.

By the way, I continue to like the acronym ASCAP. P can also stand for Psychology as well as Psychopathology, but I like Psalich and inclusion of your "Archetypal" in one of the new versions. P factor is creative, too.¹

David Rosen

ON INFORMAL & FORMAL COMMUNICATION

The new layout of ASCAP is fantastic. It really looks sharp. Kudos to they who masterminded this highly professional schema. In fact, this attractive design gives me reason to reflect more fully on the role of ASCAP. subject to which I shall return presently. First, I would like to update colleagues and friends who may well have been trying to track me down.

We returned from a glorious year in Cambridge, England, last autumn. Regrettably, the year was less favorable to my former haunts: poor McLean Hospital has fallen into serious decline and the Department of Psychiatry at Harvard is less the pluralistic place it once was. It was time for me to move on. A number of fine

opportunities existed, and soon enough I alit in Cincinnati.

Here I am forging an affiliation between the University and the Ohio Department of Mental Health. By days I run a 357 bed psychiatric hospital which went through a sharp accreditation survey by the Joint Commission two months after I arrived. I also took up appointments as Associate Professor at the University of Cincinnati Department of Psychiatry and Director of the Division of Clinical Anthropology.

It is an excellent combination of administrative, clinical and academic engagements. Though we do miss Boston, Cincinnati deserves its recent accolades as "the most livable city in North America". It is, after all, Longfellow's "Queen City" and Dickens' "most beautiful city in America". Also, my connection with the University of Cambridge continues in collaboration with Nick Mascie-Taylor who is Head of the Department of Biological Anthropology and a noted population geneticist. I enclose several reprints with which he helped me considerably.¹⁻⁴

So it is in the last seven months we have lived in two continents and three states, all of which has distracted - for better or worse - my pen from contributing to ASCAP. Arrivals are much more pleasant than departures. It is, in any event, with great pleasure that I now offer a further contribution to ASCAP.

As it happens, my observations actually focus on the publication

itself. It seems to me to serve an important function in the emerging realm of evolutionary psychology. Let me expand on this a bit. One of my favorite professors at Yale was Derek de Solla Price (no relation to Dr. John so far as I know) in the Department of the History of Science and Medicine. Dr. Price, as I recall, held two Ph.D.s, one in Physics from London and one in History of Science from Cambridge. He helped establish the fine Department at Yale. A specialty of his was the historiography of scientific publications.⁵⁶ His principal thesis was that (peer-reviewed) publications have grown, at a regular exponential rate, since the first issue of the Proceedings of the Royal Society. He linked this rate of growth to the expansion of technology as a direct co-efficient, and charted this growth at least until the 1960s in a smooth J-curve.

Thereafter he noted a change. His interpretation was that some time in the 1960s, science began to be shaped by something other than publication in the usual manner. Motivations for another channel he attributed to a bit of a breakdown in the governance of peer-review, e.g. the corruption of the process due to a slippage in the quality of reviewers. At worst, this slippage converged on intellectual theft, but even less severe instances of cynical reviews (to constrain competitors) had grave consequence. The review of my own first contribution of evolutionism to the American Journal of Psychiatry was little more than a screed about 'yet another dangerous Wilson at Harvard wishing to

mix genetics and behavior...'. Ah well. Meanwhile, Dr. Price inferred that this 'something different' was comprised of *informal* communications via either newsletter or personal chats at meetings. He proposed that these informal communications could eventually supplant the more traditional mode of peer-reviewed journals, especially if the ills of reviewers were not corrected. Dr. Price strongly anticipated the growth of informal scientific communications despite a career devoted to meta-analyses of formal scientific communications.

In this light, I do think informal channels of communication such as ASCAP are surprisingly influential. The ease of contribution is not so much the central issue as is the span of interest and the openness to works in progress. In my own short embellishment of Dr. Price, ASCAP and other informal channels appear to be more intellectually "r-selected" than the more formal journals. I think Dr. Price, were he alive today, would note an overweening "K-selectedness" amongst the more established journals. My own view is that the 'mainstream' academic press is moving beyond "K-selectedness" into algorithms of compulsive self-absorption. Were it not that such publications are the currency with which academic promotions are bought, would many otherwise bother?

As an amusing side comment, we do well to recall the origins of that most establishmentarian of journals, Nature.⁷ Charles Darwin, Thomas Huxley and other outre contributors were so stymied by

the ideational oligarchs of their day (Sir Richard Owen being a prime example), that they set up their own rag! Too bad ASCAP, unlike Darwin, does not have the Wedgwood china fortune behind it. Still, seventy-seven intellectually vibrant issues of increasing aesthetic appeal count for something.

As to the works of Derek de Solla Price, these I would be only too happy to review at a future time and in greater detail should there be sufficient interest from our readership or, failing this, at least from our kind editor. See you in Philly.

Daniel Wilson

MANICS & CLOSENESS

John Birtchnell's letter last issue dealt with a pair of loving manics. Why did hunter-gatherers probably exhibit more closeness and less upperness? Probably like the chimpanzees of Frans de Waals because they had no choice. Napoleon Chagnon, anthropologist student (and friend) of the Yanomamo of South America noted that when he first visited them, he did not learn for a long time who the headman was.¹ When he did, he found someone with limited power.

Only with the invention of "packaged upperness" in the form of surplus grains and meat about 10 or 13 millenia ago was concentration of power possible.² Only then did the irrigated fields and the city states emerge with the complex social structure of civilization. In modern times we in the U.S. participate in the upward mobility of the American frontier with its

societal consequences.

Amongst the many social consequences has been poor health in the form of heart disease. In the quotation at the beginning of last month's issue, we see that the effects of such increased vertical axis emphases. In the new book from which this excerpt was taken, decades-long research by Wolf and Bruhn demonstrated lessened heart disease in Rosetto, Pennsylvania, several decades ago, despite high lipid intake in overweight citizens.³ The citizens were very close to each other, in good part because the xenophobia of neighboring communities pressed upon them, and this seemed to make a major difference. This changed and, as predicted, Rosetto began to look like its neighbor communities as xenophobia faded, the values of the American society permeated its culture, and the citizens became oriented to Birtchnell's vertical axis values.

Russell Gardner, Jr.

CASE HISTORIES

I enclose case histories from Anthony Ryle's book.¹ He seems to be working on hierarchical basic plans. Some of his patients seem limited to the "self subordinate/other dominant" plan, while others alternate between that and the self dominant/other subordinate plan. His therapy is directed towards achieving "mutuality" which is the self equal/other equal plan (a recent evolutionary development, I think we agree, and possibly not present in some people who have been labelled "authoritarian personalities"). The patients Ryle describes are not good leaders

(acceptable to followers) because when they adopt the self dominant/other subordinate plan they are rejected by the hoped-for followers. Therefore, the only way they can obtain closeness is by being subservient. As one of his patients put it: "I must either be alone or be a slave".

John Price

THREE CASES OF RYLE

1. Julia

Julia, a 32-year-old separated secretary, sought help for feelings of inability to cope at the time of divorce from her second husband. Her life was further complicated by involvement with another man and an unsatisfactory housing situation for herself and her two children.

Reformulation included target problems of 'feeling bad about myself and 'difficulty in relationships' as follows:

- 1. In relationships it is as if I am either playing games, disarmingly excitingly in control but not feeling understood, or vulnerable, likely to get hurt, out of control and not feeling understood.*
- 2. Either placation, or aggression.*
- 3. It is as if I cannot hold on to my adequacy, my success, my decisions, because I feel I do not deserve them or feel guilty.*

2. Emma

Emma, a 45-year-old civil servant, had a lifelong history of being placatory. She was able to identify her unassertive behaviour but could not manage to change this, except to a certain extent with her immediate family. In situations involving strangers in which it would have been appropriate to

stand up for herself she felt very anxious and reverted to her habitual pattern of placation. In order to help her overcome this, some time during sessions was spent examining such situations in detail and in considering different possible ways of reacting and their likely results. However, whilst she could appreciate that her own pattern of activity was not the only possible course of action, the patient said that she could not imagine herself being able to act in any other way than her habitual fashion. She was asked by the therapist to rehearse in her imagination being assertive, at which she became visibly panicky. The automatic thoughts which accompanied this were explored. The patient was asked to continue to rehearse in her imagination appropriately assertive behaviour for situations which cropped up in her daily life between sessions and to try to examine the thoughts and feelings which this produced. It turned out to be a task she found difficult and which continued to give rise to considerable anxiety. When she reported this at the next session the therapist suggested a role-play, during the session, of an everyday situation in which the patient thought she could be more assertive, but had so far been unsuccessful in practice. Her marked anxiety was immediately apparent in the role-play; at the first attempt she was unable to continue. The therapist then adopted the role of the patient and modelled appropriately assertive behaviour. This then enabled the patient to role-play herself in the feared situation, and her anxiety diminished with practice and with further explora-

tion of the irrational thoughts which accompanied the anxiety. By the end of therapy, she had begun to be more assertive in her dealings with strangers.

3. Martin

Martin, a 64-year-old divorced artist on the verge of retirement, came to seek help for his bitterness at feeling perpetually undervalued and his fear that his whole life would amount to nothing. He was much the youngest of a family of three children and had always had a sense that he was an afterthought, that he did not count or belong.

Reformulation identified the social isolation and placation traps, and two dilemmas: 1) Either being assertive and rejected, or compliant and abused; 2) Either being beautiful and idealized, or damaged, crippled and undervalued.

**PLEASE SEND IN
YOUR
LETTERS &
UNPUBLISHED
ARTICLES
(SO WE CAN PRINT
THEM IN ASCAP)**

**AND YOUR
PUBLISHED
ARTICLES
(SO WE CAN
PUBLICIZE THEM
BY REPLICATING
THE SUMMARY)**

ARTICLE:

Selfish genes are selfish despite Cortina's argument

May I say how overjoyed I was to see Mauricio Cortina's piece in the February ASCAP Newsletter. In taking issue with some of the arguments he puts forward so clearly, I want to suggest that whilst those opposed to the Williams-Dawkins school of thought are wasting their energies repeatedly attacking an aspect of the argument which seems to me to be irrefutable, there is enormous progress to be made if the implications of a flaw currently at the centre of the Williams-Dawkins thesis, is recognised.

The impregnable element of genic theory is the one which Mauricio attacks head on: the idea that natural selection can only operate at the level of the gene. Dawkins puts his rationale for believing this particularly clearly:

*"Natural selection in its most general form means the differential survival of entities. Some entities live and others die, but, in order for this selective death to have any impact on the world, an additional condition must be met. Each entity must exist in the form of lots of copies, and at least some of the entities must be potentially capable of surviving - in the form of copies - for a significant period of evolutionary time. Small genetic units have these properties: individuals, groups and species do not."*¹

Those whose views Mauricio espouses (Gould, Lewontin, Sober) do not deny this, they simply seek to marginalise it. We are told that genes, rather than being at the centre of nature selection, merely serve as its bookkeeper. Yet quite what this means is far from clear. I have in hand a press cutting describing an international research project, the object of which is to produce a genetic map of the genus "prunus" which includes the cherry, peach, plum, apricot and almond. The incentive is commercial. Identification of the genes which control 250 key characteristics will enable plant breeders to select and reject seedlings ten times earlier than at present. Instead of waiting to see if the sought after characteristics appear within the maturing plant, seedlings will be rejected simply because they lack genes sought by

the breeders. The procedure must be evoked continuously to preclude the fixation of a rival gene with positive adaptive value. At population level, the result could be a stable polymorphism. Sober develops this argument beyond the theoretical level by citing Lewontin and Dunn's study of a driving gene which renders homozygous male house mice sterile.²³ The initial research hypothesis assumed a frequency for the gene reflecting a gene/individual conflict of interest of the type just sketched. In fact the frequency was significantly lower, reflecting the occasional loss of complete breeding groups when all males chanced to be carriers of the gene.

I believe that this type of information is of great value, but not for the reasons Mauricio suggests. It in no way discomforts the selfish gene thesis. As genes are amoral, no qualitative distinction should be made between the evolutionary strategies they adopt. The only things which count are success and failure. As organisms, we will naturally have a high regard for genes which "earn their keep" by enabling us to, say, think better, run faster, or make love more often. We may be expected to have very little regard for genes which just hitch a ride without making a contribution, and to positively loathe those which have harmful effects on us. Yet as scientists we should view the matter with total neutrality. And if we take the selfish gene as our guide we will have no difficulty whatsoever in explaining the strategies of "free-loading" or "sterility" genes. After all, what could be more selfish than taking a ride you have not paid for, or rendering sterile a proportion of the organisms which provide your ticket to immortality?

The real value of Sober's material lies not in its (non-existent) potential to undermine the genic theory of evolution. Its true worth lies in the unequivocal damage it does to the Dawkinian fiction that although *"there are two ways of looking at natural selection, the gene's angle and that of the individual, (if properly understood they are equivalent.."*² This is the major flaw in modern genic theory of which I spoke in my opening paragraph. The existence of

free-loading genes and sterility genes makes clear that there is no inevitable equivalence between the interests of genes and the interests of the individuals which carry them. Indeed, in his latest book, Sober quite properly takes Dawkins to task over precisely this point. But what he then conspicuously fails to do is to realise that this simple fact opens up the possibility of achieving the apparently impossible: the incorporation within the genic pale of what has hitherto been known as group selectionism.

Because there can be divergences of interest between genes and their bearers, it is a complete *non sequitur* to infer the behaviour of individuals from the motivation imputed to genes. (This, it seems to me, is the real problem for the Slavin and Kriegman endeavour.)⁴ It

is quite possible that genes, in pursuing their own selfish interests, will cause their bearers to behave altruistically. Kin selection is but the best known example. From an evolutionary standpoint,

kin selection persists by causing those carrying the genes responsible, to behave in ways which optimise the throughput of kin selection genes, albeit at great cost to some of the bearers. When spawning salmon die in their thousands having given their all to get their eggs to the spawning grounds, they are not being selfish. But, in terms of the genic metaphor, the genes which specify this particular pattern of behaviour most certainly are. The salmon's loss is their gain.

It has hitherto been thought that there is an insurmountable problem in seeking to generalise this pattern to explain apparent acts of altruism between genetic strangers. The rationale seems impeccable. General purpose altruists must be self-eliminating. If they go around saying "After you" to all their competitors, they will not reproduce. Ergo, they will take their altruism genes with them into extinction. Two concepts make this problem disappear: contingency and genetic fixation. Contingency takes us into the world of Messrs Gardner and Price. Social competition theory does not suggest that we are pre-ordained as either winners or losers; as dominants who

take all, or as one of those at the bottom of the pecking order who must behave with unalloyed altruism. Our positions in the hierarchy, and the suite of behaviours appropriate to these positions, are a function of our relative success. Self-evidently, we carry within us the potential to behave in a wide variety of ways. In deference to J. M. Barrie's "Admirable Crichton" I call this crichtonism. We should therefore speak not of genes which code for unchanging selfishness or unchanging altruism, but of contingent behavioural genes (or, perhaps, crichton genes) which specify programs of situation-dependent responses.

This raises the question of under what circumstances "chameleonism" of this type would work to the

evolutionary advantage of the genes which specify it. Again Price and Gardner have given us a significant part of the answer. Genes which make their bearers behave like Attila the Hun when they are in a

powerful position, and like Uriah Heep at his most obsequious when they are not, have such a clever strategy that the genes responsible have swept to fixation. Unlike competitors who lack a linkage between rank and behaviour, those with such a mechanism will be motivated to maximise their reproductive potential when dominant, and act in ways which minimise the chances of physical elimination when rivals are more powerful than they are. Self-evidently at this stage the interests of the genes responsible are identical to those of their bearers. But once fixation is achieved, the whole ball-game changes. With every member of the species carrying a social comparison gene, mutation can start to modify these genes in a way which orchestrates the behaviour of the gene responsible for the mechanism. Think how a stockbreeder sets about improving the quality of his stock. This is a quotation from a book called *Breeding Better Cows*:

"...the fact remains that the early shorthorns were soundly and brilliantly bred, by selection with particular objects in mind, followed by a great deal of close breeding to fix desirable characteristics and ruthless

**... It is quite possible that genes,
in pursuing their own selfish
interests, will cause their bearers
to behave altruistically...**

*culling to get rid of the undesirable characters as they showed up under the pressure of inbreeding."*⁵

Think how an industrial manager improves the effectiveness of his/her workforce. This is the father of Scientific Management, F. W. Taylor, describing how he improved productivity at a ball-bearing factory:

*"For the ultimate good of the girls (sic) as well as the company ...it became necessary to exclude all girls who lacked a low personal coefficient. And unfortunately, this involved laying off many of the most intelligent, hardest working and most trustworthy girls merely because they did not possess the quality of quick perception followed by quick action."*⁶

These examples are strongly suggestive to me of the direction in which selective pressures would take a social comparison gene (SCG) once it had achieved fixation. Previously a self-assessed sense of failure would cause an organism to hunker-down and wait, Macawber-like, "for something to turn up". Now the interests of the ubiquitous gene lie in following the military maxim: "Always exploit success, but never reinforce failure". There is an ever present risk that mutation may bring forth individuals lacking the social comparison gene whilst coincidentally having some major adaptive advantage. The SCG has, therefore, always to make sure that its bearers are subject to a continuous process of improvement. Natural selection on its own is not enough. The brains of each bearer must be utilised to make the

process of selection intelligent. It still makes sense to favour those who can properly assess themselves as comparatively successful by inbuilding a behavioural repertoire leading to the maximisation of their genetic throughput. Dawkins calls this "The Duke of Marlborough Effect".¹ But instead of continuing to induce a quiescent state which serves to preserve the vulnerable, those whose own brains tell them that they have made a poor fist of furthering the gene's evolutionary interests are now afflicted with the kinds of psychosomatic condition which the science of psychopathology knows so well. And, as John Price has pointed out, in the natural world, the consequences are almost invariably lethal. The objective (or, more correctly, the effect) is well caught in a question put to F. W. Taylor by a House of Representatives special committee in 1911:

*"Under scientific management, then, you propose that because a man is not in the first class as a workman, there is no place in the world for him - if he is not in the first class in some particular line he must be destroyed and removed?"*⁷

This may not be a pleasant idea but, regrettably, that does not mean it is not true. What it does mean, in terms of the Sober/Dawkins debate, is that an exceptionally selfish gene is operating at group level in a way which should warm the cockles of a group selectionist's heart. And I would very much like to know what Mauricio thinks of that!

References: page 19

by J Price

ARTICLE: Alternative strategies in electric fish

In our theorising about the evolution of mood disorders, we have suggested that mania and depression are exaggerations of alternative agonistic strategies (escalation and de-escalation) and that the choice of strategy depends on the self/other comparison of relative resource-holding potential (RHP).¹ We have pointed out that this new approach of regarding behavioural variation in terms of sets of alternative strategies is something which has been developed in zoology and lends itself to an evolutionary approach. We have examined some examples of strategy sets

in animals in order to clarify the models ([ASCAP](#), November 1992 and April 1993). Here I would like to examine another example, which is not only a choice between two mutually incompatible alternative strategies, but one in which the choice depends on a self/other comparison.² Therefore, although the behaviour concerned (the emission of electric discharges) is one which has not evolved at all in mammals, in formal terms the strategy choice is similar to the one we are interested in and might repay study. Also, it is the only strategy choice which

has been followed in the brain by neuranatomical study from the stage at which the need for a strategy choice is detected to the final making of the choice.

It is thought that all cartilaginous fishes were electrosensitive, using ampullary organs in the skin to detect geological electric fields for purposes of navigation, and biological electric fields for purposes of prey detection. This capacity was lost during the evolution of the bony fishes (our ancestors), but it was regained independently in two lineages of bony fish, and this retrieval of the old capacity to detect electrical fields was associated with the development of the capacity for electrogenesis, in which electric organ discharges (EODs) are emitted from the muscles in the caudal half of the body and the resulting electric fields are detected by ampullae covering the whole body surface. The distortion of the electric field by objects whose impedance differs from seawater allows the fish to "see" these objects, in the way that bats "see" with their sonar. In this way they are able to navigate through murky water and at night, and to go to depths at which sunlight does not penetrate. They can also use their EODs to communicate with conspecifics. However, the emission of EODs by conspecifics leads to the possibility of "jamming" if the frequencies of two fish are very similar, because the electroreception process depends on the detection of small differences in frequency and amplitude in particular patterns across the body of the fish. This difficulty has favoured the evolution of the jamming avoidance response (JAR). When a fish detects another fish of very similar frequency, it chooses between two mutually incompatible alternative strategies: it either increases its own frequency or it reduces its own frequency.

If we describe our ranking theory in terms of resource-holding potential (RHP), we get a very similar situation. Imagine an agonistic social group, one in which symmetrical relationships are not tolerated, as exists in olive baboons and a large number of macaque species. (We know that although human groups can be hedonic, this also applies to many human situations, especially when cultural constraints have been weakened. Then, in the words of Sydney Sheldon, speaking of social relations in a women's prison, you have to "fight, fuck or hit the fence".) In such groups there is an intolerance of

equal RHP, just as in the fish there is an intolerance of equal frequencies. Each baboon struts around emitting signals of absolute RHP; if he meets another baboon signalling clearly higher RHP, he adopts the subordinate basic plan; if he meets a baboon signalling clearly lower RHP, he adopts the dominant basic plan. But if he meets a baboon signalling the same RHP as his own, he cannot adopt either of his customary basic plans, and he has a problem. Or, rather, both baboons have a problem. They have to find some way of developing a difference in RHP, or of detecting and subsequently being able to recognise a difference in RHP. Each has the capacity to alter his own RHP either up or down (or it might be more correct to say that he can alter his own perception of his own RHP up or down) - what Hartung has called "deceiving up" and "deceiving down".³ We would say that each has a choice of either an escalating or a de-escalating strategy. Each of the pair of equal RHP baboons has an interest in getting the matter settled one way or the other, and also an interest in having it settled in a particular way; i.e. with himself as top baboon. They are in a non-zero sum game, and the choice of strategies has been the subject of much research by game theorists ~ in fact the concept of RHP was developed by a game theorist (Geoffrey Parker) while tackling just this sort of problem. We can assume that the same problems face a pair of electric fish which happen to have very similar frequencies, and it may well be that each would prefer to adopt one strategy, such as lowering its frequency, which may involve less energy expenditure than raising its frequency. Each would therefore like the other fish to immediately raise its frequency - and while both are waiting for the other to do so, both are paying the cost of having incapacitated navigation systems.

What the fish do is to examine the frequencies and work out whether their own is slightly higher or slightly lower (they can tell which frequency is emanating from themselves). If theirs is slightly lower, they then lower their frequency further, and *vice versa*. Presumably they have some plan in the event of the frequencies being exactly the same - some sort of default setting which says, for instance, "if no detectable difference, raise frequency". In the case of baboons evaluating each other's RHP, much the same process seems to be taking place. They

explore each other's RHP, using species specific signals (ritualised fighting) which take the form of statements of equal or superior (favourable) relative RHP. When the baboon threatens the other, he is saying "My RHP is greater than yours" and when the other baboon threatens back, it is saying, "No, it isn't". Eventually, one baboon decides that its RHP is very slightly lower than the other's, and it then adopts the de-escalation strategy which consists, at least in part, of a lowering of its RHP. In this way a difference in RHP is created where none (or at least no clearly detectable difference) existed before.

It may be instructive to look at the similarities and differences between the situations of the baboons and the fish.

Similarities:

There is a population whose well-being depends on all the members having different values of some variable X.

If two members happen to have the same value of X, each can deal with the problem by raising its value of X or by lowering its value of X.

It is in both their interests to create a difference, but their interests conflict over which increases X and which lowers it.

Satisfactory outcomes occur if:

1. One makes an adjustment and the other does nothing.
 2. Both make adjustments but in opposite directions.
- An unsatisfactory outcome occurs if both make adjustments in the same direction.

They examine the values of X to see if there is a slight difference. If they find a difference, they adopt a strategy which enlarges the difference. If there is no detectable difference, they could randomise the choice of strategy, or they could implement a default strategy which could be either to raise or to lower X. In the latter case the population would be dimorphic, but the morphs would only be apparent when the comparison process was activated, and even then an observer could not know whether a default setting had been activated, or whether a minute difference had been detected. The default strategy could be

either genetically determined or it could be contingent on some environmental factor, active either earlier in life or concurrently with the strategy choice. Or it could be randomised. Or it could be a combination. For instance, there could be a genetically determined strategy which read, "if you received love in childhood from your mother, activate a default setting of "lower X" when the adversary is blonde, but "raise X" when the adversary is dark; if you did not receive mother love, operate a randomised default strategy, with a frequency of "raise X" of 0.3". In the case of RHP, I think that a default setting of "raise RHP" is what Maynard Smith refers to as a "hawk strategy" and "lower RHP" is what he calls a "dove strategy".⁴

Differences:

The baboons explore the difference in RHP by exchanging signals, which are at the same time statements of favourable relative RHP (the fact that the signal is given) and of absolute RHP (the intensity of the signal). We have defined signals of favourable relative RHP (catathetic signals) as signals which lower RHP in the receiver, provided they are not returned in full measure. It is the detection of the fact that it is not returning the adversary's catathetic signals in full measure which convinces the baboon that it is losing the fight and leads to it adopting the de-escalating strategy. Therefore in the case of the baboon, it does not matter whether we say that RHP is lowered by the catathetic signals of the adversary, or as part of its own de-escalating strategy. The two things are part of a systematic dyadic interaction which is recursive in its causative mechanisms.

Likewise, with a pair of baboons it does not matter whether we say that one baboon lowers its RHP or that both baboons look at the RHP scale with much higher definition, and see differences which were previously sub-threshold. However, if we are dealing with a group, the distinction does matter, because in lowering its RHP to create a difference with baboon A, a baboon may alter its RHP difference with previously lower-ranking baboons, either becoming equal in RHP or even lower than those to whom it was formerly superior. This last situation seems to be the case in many animal species, as a defeated animal may fall to the very bottom of the social

hierarchy.

The comparison of frequencies.

The most simple thing would be for the fish to compare the incoming jamming frequency with an "output copy" of its own frequency; and, if the income frequency was higher, to lower its own frequency, and *vice versa*. But they do not do this. They do not appear to have evolved the capacity to retain an output copy. They can tell from the pattern made by the two frequencies on their bodies whether the incoming frequency is higher or lower than their own. Then they alter their own frequency accordingly.

We do not know how animals (or humans) make

comparisons of relative RHP. Probably when the capacity to make the comparison first evolved it was based on a single feature, like size, although even this comparison cannot have been easy because the representation of one's idea of one's own size, and one's idea of the size of an adversary, use different kinds of information. It is not as simple as comparing two shades of wallpaper placed side by side. At some stage we will make models of the comparison which give different predictions, but at this stage I think it helps just to know that this kind of self/other comparison is made in electric fish, and that the result of the comparison decides between alternative strategies.

References: page 19 .

ANNOUNCEMENT

Staying Human in the Organization: Our Biological Heritage and the Workplace

By J. Gary Bernhard and Kalman Glantz

In the series **Human Evolution, Behavior, and Intelligence**

Bernhard and Glantz have written the first book applying modern concepts of evolution to the problems of the workplace. *Staying Human in the Organization* asserts that the prevalence of employee dissatisfaction is due, at least in part, to a basic conflict between human needs and the structure of modern organizations. Because human beings evolved in small, egalitarian bands, most humans feel at home in small groups. People crave face-to-face contact, personal reciprocity, sharing, teamwork and interdependence. They do best in groups where leadership is based on spontaneously acknowledged personal ability, not on institutional authority. People need to have a common goal, to feel valued, have a say, and know that they are making a contribution to the group. Bernhard and Glantz examine the sharp contrasts between modern, hierarchical organizations and the hunter-gatherer bands in which human beings evolved. They find that formal hierarchies actually promote pre-human, ape-like social relationships in which bluffing, threatening and fighting were predominant.

The authors' points are made largely through anecdotes drawn from real-life work situations. They suggest ways to help people stay human, no matter what their roles in the organizational hierarchy.

Publisher: Praeger Publishers, Greenwood Publishing Group, Inc.
88 Post Road West, PO Box 5007, Westport CT 06881-9990.
Tel: (203) 226-3571 Fax: (203) 222-1502.
Price: \$42.95 ISBN 0-275-94295-3. 176 pages.
Credit card orders: 1 (800) 225-5800. Fax: (203) 226-3571.

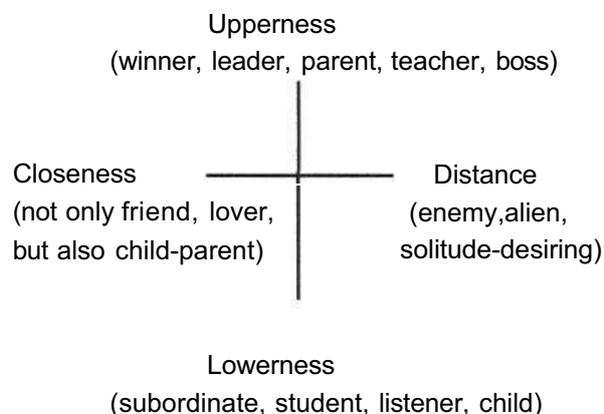
ARTICLE: Vertical and Horizontal

The first Vertical and Horizontal

ASCAP jargon now has John Birtchnell's (JB's) terms reduced to the terms used in this essay's title. Like all jargon, this may oversimplify and even lampoon his excellent contribution. But more of this later.

My first acquaintance with the terms of the title stemmed from a novel written in the mid-1960s, hilarious at the time, about New York's psychoanalytic scene. Lillian Ross used a fine mockery to skewer the field. I recognized some of this as I was then a resident in psychiatry in a program known for its psychoanalytic bent. I learned later that it may have been intended less as a blast at the field than it was aimed at particular people.

The analyst was Dr. Blauberman, a vacant sort of person who treated internist Spencer Fifield for endless analytic sessions over endless years. "Horizontal" in the title referred, I gathered, to the posture of the patient. Vertical referred to the variations on phallic symbol that Ms Ross' posturing analysts used to compete against each other at their professional meetings. Apparently Lillian's sister, Helen Ross, was a prominent New York psychoanalyst, so Lillian came by her material through a form of familial bonding, a variant of the Birtchnellian horizontal axis (see figure below).¹



I learned about an in-joke in this novel through a startling experience. In the fall of 1967, I applied to the two most conservative and official of the many

psychoanalytic institutes in New York at the time. (As Sulloway has pointed out, this fits with my sibship position of oldest, and therefore conservative.)

Most of the interviewers for the two institutes were courteous, pleasant, more-or-less interactive and interested in me: they related with upperness (in charge of the interview), lowerness (listened to what I had to say), were appropriately close (they were interested in personal details, smiled and nodded with receptivity) yet were also appropriately distant (did not themselves share many personal details beyond what their offices looked like).

Then my sixth interview took place on the upper east side office of an analyst I will call Dr BL: his waiting room was so striking that I did not read available magazine materials despite the fact he was late, but simply stared and thought astounded thoughts. Two objects were large striking lamps made of nicely polished wood selected from natural formations of upright structures with two burls or boles extruding from the bottom of each - explicit phallic structures with the testes included! Not quite pornographic perhaps, but approaching it. There was also a stuffed leather pig about two feet high.

I was bemused, though also intimidated of course. The waiting room certainly communicated its owner's appetite for upperness. Despite Dr BL's lateness, he unsmilingly and unapologetically directed me to a chair next to his desk which was polished dark wood neatly cleared of all extraneous paper. From a pile of sheets on the corner, he extracted a blank and poised his pen above it. Most of the other interviewing psychoanalysts had contrastingly placed me in comfortable lounge or easy chairs closely similar or parallel to the ones they themselves had occupied and in various ways put me at ease and were involved with what I had to say, as opposed to making records of information already available.

He contrastingly then asked my name and numerous demographic, biographic and family details. He did

this in a formalistic manner that seemed completely irrelevant. This went on and on. I became irritated, but then self-counseled, "he's doing this on purpose; keep cool. If he's playing some kind of game, I can do it too." I sensed that I was being put through some kind of test, to see how I would react.

Apparently my strategy of getting through this interview worked. In the course of it, he learned that my father was a farmer in Wisconsin. In his now established format, he asked many detailed questions about the farm: how many cows? what do the cows eat? how many acres does one need per cow? Suddenly he broke into a smile and said, "You may be wondering why I'm asking these questions, but I've always wanted to be a gentleman farmer." He was now warm, sharing of *his* inner feelings, personal, even the supplicant as he wished to know more of the details of how it might work to fulfill his city kid's romantic vision of owning a dairy farm, somewhat silly to the farm kid whose father he knew had some feelings about "gentleman farmers."

When I learned that he was the model for Lillian Ross' analysts, I understood. I, however, stayed very clear of that institute (though I was accepted into it - perhaps in part from my father's exotic occupation.

Blauberman in light of Birtchnell

I think I understand BL and his Blauberman caricature better with the Birtchnellian axes: compared to his peers, he was inappropriately upper in the intimidation of the waiting room and his formalistic and idiosyncratic manner. Ross in her "vertical" jokes on analysts and their phallic symbols may have emphasized this component of upperness. Certainly many hunter-gatherer tribes do various things to emphasize their penis, as with ritualized penis-shields (feeling naked without them). Perhaps among one of the many reasons for clothes more generally especially over the genitals is to reduce the upperness communicative meaning that exhibition of the erect phallus might have. If concealed, the exhibiter and others don't have to think about it and they can get on with their more profitable horizontal business.

Back to BL: he changed his upperness posture arbitrarily, making his intimidating "show" a sham. He was first inordinately upper and distancing (the upper

right hand corner of the figure). Then suddenly (perhaps the suddenness was the particularly disconcerting part), he was lower and close, switching to the lower left corner of the diagram. He was supplicant for information and newly friendly, as he gave me changed status; moreover, I seemed to have withstood some kind of test so that the hazing was over, similar to entering fraternity or sorority groups for college students, where something similar is highly formalized through tradition.

On the cartoonization of Birtchnell's dimensions: Vertical-horizontal xenophobias

If BL was an actualized cartoonization of psychoanalysis in New York of the late 1960s, I have had a feeling of another cartoonization lately in ASCAP discussions of Birtchnellian axes: I learn that X is a "horizontal thinker" because X espouses Bowlby and Y is "vertical" in his orientation if he prefers John Price's formulation. I believe that this is a distortion and caricaturization of Birtchnell's concept and that it could be used to further in-out group differentiation within our group. Aren't *both* of great importance so that the issue really is how to study them and their juxtapositions?

Complexity

Recall the four familiar points: on the top, upperness reigns. People and other creatures who exhibit the upperness appetite demonstrate they are winning or want to and that they like that status. It can have intimidating harsh components as in Michael Chance's agonistic group environment or pleasant and playful as in his other hedonic group environment when the alpha is sometimes hardly discernable. Good leaders are known for their senses of humor. JB points out that humans are extremely flexible in their upperness: one can be upper to a pet, for instance, or for that matter, to one's self, as in exerting self-control, as when overcoming the habit of smoking.

And those exhibiting appetites for lowerness show like Hades and Hecate who ruled in the Underworld of the Greeks that they have an appetite for that, like a child wishing nurturance from a parent or other adults, for example, or as adults to be cared for as a patient when ill (or not physically ill! - as we see in patients with what are called somatoform illnesses).

Or, indeed to submit or show subordination to an authority, (liking that better, perhaps, than some other alternative such as death or injurious defeat). As with upperness, JB notes that one can show lowerness to something non-human, e.g. a traffic light.

Closeness occupies the left edge of the figure evoking images of mother and child, bonded couples, good buddies and girlfriends, and touching scenes of self-sacrificing altruism, sometimes impulsive as when a rescue is quickly accomplished. And people similarly have appetites for distance relating, for being physically alone for awhile, as to study, relax, or salve one's wounds from the sorrows of life incurred with too much closeness for the time. Anthony Storr spoke of the normality and creative power of solitude.²

I'm elaborating the subtlety, complexity and appetitive nature of JB's concept because it has become simplified and caricatured. These terms have now become a simple shorthand for those who seem to prefer a competitive, agonistic dimension of relating (vertical with upperness on top and liking subordinate lowerness down below) versus Bowlby's bonding or Michael Chance's emphasis on hedonic atmospheres which prominently feature fun and friendliness and reduced emphasis on hierarchical structures.

On the advisability of a harness if one has a foot on each of two horses running together

Indeed, controversy on ASCAP's pages has featured a Price camp *versus* a Bowlby camp split along these simplified lines, as though the one could exist without the other, like the nature-nurture split. Indeed, it seems much like the nature-nurture debate. Those heavily invested in individual development are very impressed with the vicissitudes of what happens to children when young (the nurture mavens). For them, the "blank slate" of childhood should certainly not be neglected - referring to the incredible absorption of knowledge of which children are capable and so impressed John Locke that he formulated *tabula rasa*. The nature mavens on the other hand emphasize the ancient plans of ancestral creatures, as though the later add-ons of learning and humanistic influences are trivial and insignifi-

cant.

If we were to join one or the other groups, if one or the other were to win, this would leave me precariously straddling two horses not linked together with a harness, as I believe that we should study the two concepts with recognition of their joint importance, not dangerously fall between. In the last ASCAP issue, for instance, I illustrated how the utility of the Birtchnellian dimensions may lie in how a grouping of people may shift from one to the other of the axes, and, despite reasonable sophistication and awareness, not be able to shift back easily.

Horizontal axis integrates with basic plans

John Price himself is conciliatory, acknowledging the horizontal axis, as in his telling us in the April ASCAP about Turgenev's deathbed wish that Tolstoy, alpha and superior, would (1) continue writing, and (2) drop a note to Turgenev (which Tolstoy - seemingly vertical -- did not do). JP notes that basic plan concepts help: over evolutionary time, the basic plan of dominance surely came first. In present day lizards we do not see symmetrical relating in adults. In the February 1994 issue of ASCAP when he discussed the ranking problems of the Houston Oilers, he pointed out the difficulty of such symmetry and seems impressed with the "new" primate attribute of ally-formation and fellowship.

In discussion at a UTMB Grand Rounds, Jean Goodwin mentioned Tolstoy's early loss of a mother; I asked her for her notes on him, as his early loss of a mother might shed light on his vertical orientation during adulthood. These notes in turn came from the Henry Troyat biography for a course in which Jean had used Tolstoy's development as illustrations for stages of development. I learned that Tolstoy lost his mother at age 23 months and later could differentiate the smells of his substitute mothers: Grandmother, with whom he slept, and who died when he was aged 10 and the housekeeper, Aunt Aline, who died when he was 13. His father also died when Leo was a youth. He moved in affluent circles with tutors and daydreams. He failed his college entry exams but then retook them and passed. He was friends with Turgenev when age 28 but challenged Turgenev to a duel four years later. Tolstoy was a young and immature man when he inherited large estates. He

was often depressed throughout adulthood.

So without knowing much more about Tolstoy, the clinician in me knows the novelist was traumatized by his many losses. Was his seeming indifference to his friend and enemy from young adulthood a reflection of his avoidance of issues of intimacy? Was he reactively distant (in combination with upperness perhaps) in his handling (non-handling) of the pleas from the dying Turgenev? Tolstoy was often depressed. Kay Jamison, writing on creativity and manic-depression, quotes him as follows:¹

The thought of suicide came to me as naturally then as the thought of improving life had come to me before. This thought was such a temptation that I had to use cunning against myself in order not to go through with it too hastily. I did not want to be in a hurry only because I wanted to use all my strength to untangle my thoughts. If I could not get them untangled, I told myself, I could always go through with it. And there I was, a fortunate man, carrying a rope from my room, where I was alone every night as I undressed, so that I would not hang myself from the beam between the closets. And I quit going hunting with a gun, so that I would not be too easily tempted to rid myself of life. I myself did not know what I wanted. I was afraid of life, I struggled to get rid of it, and yet I hoped for something from it.

In this state for which antidepressant medications may be indicated in our current age, the nature of his suicidal thoughts (hanging, shooting) may indicate that he was vertical to himself; yet his self-counsel to wait for untangling indicates closeness and tenderness towards himself at the same time. Also, we don't know what he envisions the suicide to accomplish? Was it in fact a reunion (on the horizontal axis) with longed for familiar smells of mother, grandmother and Aunt Aline? Psychoanalyst Jean Goodwin in bringing him up at a UTMB Grand Rounds recently, for instance, did so for the purpose of highlighting the reason that she conjectured caused him to write so much: to reconstitute his lost family, as in the one so warmly depicted in War and Peace.

We do not yet have the evidence for which Aaron Tim Beck suggests we examine concerning horizon-

tal axis *versus* vertical axis depressions. In Tolstoy, both seem hopelessly and inextricably mixed.

Tolstoy reminds me of another New York psychoanalytic interview scene from my young adult past. About 8 years before Dr BL, Jose Barchilon, residency director then at the Albert Einstein College of Medicine interviewed me for the residency program to which I ultimately went, partly for his Great Novels course. He already knew about farms, having worked one in upstate New York when he first arrived in the U.S. from France as a young man. He asked me what novels I had read and War and Peace was the one on which he focused: what characters had interested me? My answer was Kutusov, the low key Russian general ultimately defeating Napoleon, (foreshadowing my current interests in high and low profile leaders perhaps). He then asked me interesting and provocative questions about what I thought of the family; Sonia, for instance, the charming young woman who later becomes a loving wife and mother. In his fiction, certainly, Leo Tolstoy could focus on closeness and warmth.

Certainly the psychoanalysts Barchilon and Goodwin exemplify warmth and concerned horizontal interest, and counter the Blauberger caricature of psychoanalysts. Nor are they unconcerned with verticality (they know about it and write about the involved issues, each in their own way -- *vive la* freedom of expression), but they are uncaricatured, genuine and creative people.

In summary then, we must be careful about using oversimplified distinctions to foment in-out group distinctions and consequent conflict rather than using them to help dissect complex phenomena in the manner of our science. They are two horses of a team: we need them harnessed. The two axes represent natural resection lines, just as birth is a natural resection line for distinguishing between nature and nurture. But we in fact do not ordinarily function with either one or the other of the axes, just as we do not singly use either nature or nurture. The dissected cadaver may demonstrate muscles separated from bones, but the living person uses both in synchrony.

References: page 19

ABSTRACTS & EXTRACTS...

Carpenter WT & Buchanan TW:
Schizophrenia

Beverly Sutton from Austin has
sent us her "crunch" of an
important article...

Haslam N & Beck A: Categorization
of Major Depression in an Outpatient

Carpenter WT & Buchanan TW: Schizophrenia NEJM
1994;330:10:681-690.

Blanchard C, Sakai R, McEwen B,
Weiss S & Blanchard R: Subordina-
tion stress: behavioral, brain, and
neuroendocrine correlates
Sample

The worldwide prevalence of schizophrenia (S) in a
lifetime is 0.85%. S is a diagnosis of exclusion: 1)
exclude psychoses with known organic etiology; 2)
differentiate from schizoaffective disorders (psychotic
symptoms occur with the mood disturbance and the
psychotic symptoms are less bizarre).

Kenrick DT, Neuberg SL, Zierk KL &
Krones JM: Evolution and social
cognition: Contrast effects as a
function of sex, dominance and
physical attractiveness

Course: The onset is acute or insidious (poorer
prognosis) and the process becomes fairly stable after
5 to 10 years of illness. Psychotic symptoms are less
of a problem late in the illness. Psychotic symptoms
start between 17-30 years for men and 20-40 years
for women. The onset of thought disturbances and
impaired attention has less data but may be like the
onset of psychotic symptoms. 5-15% have fairly
severe continuous psychosis. The onset of negative
symptoms is more variable.

Cremer H, Lange R, Christoph A,
Plomann M, Vopper G, Roes J, Brown
R, Baldwin S, Kraemer P, Scheff S,
Barthels D, Rajewsky K & Wille W:
Inactivation of the N-CAM gene in
mice results in size reduction of the
olfactory bulb and deficits in spatial
learning

Epidemiology: Risk factors. 1) Genetics: Risk for first-
degree relative is 10%; risk for children with both
parents being schizophrenic is 40%; concordance for
dizygotic twins is 10% and monozygotic twins 40%. 2)
Increased risk of S for children whose mother was
sick during an influenza epidemic in the 6th or 7th
month of gestation. Maternal starvation in the first
trimester also increases risk. 3) 8% excess of S is
seen in winter births.

Potts W & Wakeland E: Evolution of
MHC genetic diversity: a tale of
incest, pestilence and sexual prefer-
ence.

Kersanach R, Brinkmann H, Llaud
MF, Zhang D, Martin W & Cerff R:
Five identical intron positions in
ancient duplicated genes of
eubacterial origin

Pathophysiology: The dopamine hypothesis is based
on data that medication reducing firing rates of
mesolimbic dopamine neurons decrease psychosis
and medication increasing the firing rate make
psychosis and thought disorder worse and can make
normal people psychotic. Increased dopamine or HVA
and dopamine receptors are seen in autopsies of

schizophrenic patients. A recent modification of the dopamine hypothesis says that hypodopaminergic activity in the mesocortical system produces negative symptoms and hyperdopaminergic activity in the mesolimbic system produces psychosis. Alterations in norepinephrine activity has been reported. The serotonergic system is now of interest because of clozapine. Glutamatergic and excitatory amino acids are being studied. MRI studies show structural abnormalities in the temporal lobe with decreased volume in the amygdala and hippocampus. Structural changes in the superior temporal gyrus are related to hallucinations and formal thought disorder. Autopsy findings include abnormalities in the entorhinal cortex of the parahippocampal gyrus and the anterior cingulate gyrus. MRI and autopsy studies show enlarged basal ganglia. This enlargement may be secondary to treatment. PET shows decreased activity in the frontal lobes especially during tasks requiring the frontal lobes. There is an association between negative symptoms and decreased activity in the prefrontal cortex. Decreased activity in the inferior parietal cortex (many connections with prefrontal cortex) is also related to negative symptoms.

Haslam N & Beck A: Categorization of Major Depression in an Outpatient Sample J Nerv Ment Dis 1993;181:725-731.

Intake Beck Depression Inventory (BDI) item scores of 400 outpatient major depressives were submitted to a categorization algorithm developed for artificial intelligence applications. The algorithm maximizes a function of "category utility" that is preferable in several respects to available clustering methods, and has demonstrated its capacity to locate the most informative or "basic" level of categorization. The analysis yielded four syndromal subtypes: a common, general depressive type; a common and relatively severe melancholic type; an infrequent type characterized by self-critical features, generalized anxiety, and an absence of melancholic features; and an infrequent, mild type distinguished by enervation and anhedonic features. Implications for the classification of depression are discussed.

Blanchard C, Sakai R, McEwen B, Weiss S & Blanchard R: Subordination stress: behavioral, brain, and neuroendocrine correlates Behavioural Brain Research 1993;58:113-121.

In mixed-sex rat groups consistent asymmetries in offensive and defensive behaviors of male dyads are associated with the development of dominance hierarchies. Subordinate males can be differentiated from dominants on the basis of both agonistic and non-agonistic behaviors, wound patterns, weight changes. Their behavior changes suggest chronic defensiveness and are also broadly isomorphic to many of the symptoms of depression; their voluntary alcohol consumption increases, and their life-spans are shortened. Both subordinate and dominant males tend to show organ change compared to non-grouped controls, with adrenal and spleen enlargement and thymus reduction. However, these changes appear to be more marked in subordinates, and only subordinates show reduced testes weights. Basal corticosterone (CORT) levels were sharply higher, and plasma testosterone (T) sharply lower, in subordinates compared to both dominants and controls, and reduced corticosterone binding globulin further enhanced free CORT for subordinates particularly. Many subordinates failed to show a normal CORT response to restraint stress. Subordinates also appear to show widespread changes in serotonin systems, with increased 5-HIAA/5-HT ratios in a number of brain areas, and alterations of 5H-HT_{1A} receptor binding at some sites. These changes suggest that subordination, a common and consistent feature of life for many animals living in social groups, may be a particularly relevant model for investigating the behavioral, neural and endocrine correlates of chronic stress.

Kenrick DT, Neuberg SL, Zierk KL & Krones JM: Evolution and social cognition: Contrast effects as a function of sex, dominance and physical attractiveness Personality & Social Psychology Bulletin 1994;20(2):210-217.

Previous research indicates that males, compared with females, evaluate their relationships less favorably after exposure to physically attractive members of the other sex. An evolutionary model

predicts a converse effect after exposure to opposite-sex individuals high in dominance, which should lead females to evaluate their current relationships less favorable than males. Women and men rated their current relationships after being exposed to opposite-sex targets varying in both dominance and physical attractiveness. Consistent with earlier research, males exposed to physically attractive, as compared with average, targets rated their current relationships less favorably. Males' relationship evaluations were not directly influenced by the targets' dominance, although the effect of physical attractiveness was significant only for men exposed to women low in dominance. However, females' evaluations of their relationships were unaffected by exposure to targets high in dominance. These data support predictions derived from an evolutionary model and suggest that such models can be used to generate testable hypotheses about ongoing social cognition.

Potts W & Wakeland E: Evolution of MHC genetic diversity: a tale of incest, pestilence and sexual preference Trends in Genetics 1993;9:408-412.

Evidence from the house mouse (*Mus*) suggests that the extreme diversity of genes of the major histocompatibility complex (MHC) results from three different forms of selection involving infectious disease (pestilence), inbreeding (incest) and MHC-based mating (sexual) preferences. MHC-based disassortative mating preferences are presumed to have evolved because they reduce homozygosity throughout the genome, and particularly within loci linked to the MHC. Progeny derived from such disassortative matings would enjoy increased fitness because of both reduced levels of inbreeding depression and increased resistance to infectious disease arising from their increased MHC heterozygosity.

Cremer H, Lange R, Christoph A, Plomann M, Vopper G, Roes J, Brown R, Baldwin S, Kraemer P, Scheff S, Barthels D, Rajewsky K & Wille W: Inactivation of the N-CAM gene in mice results in size reduction of the olfactory bulb and deficits in spatial learning Letters to Nature 1994;367:455-459.

Neural-cell adhesion molecules (N-CAMs) are members of the immunoglobulin superfamily mediating homo- and heterophilic cell-cell interactions. N-CAM exists in various isoforms which are generated by alternative splicing. During embryonic development, N-CAMs are expressed in derivatives of all three germ layers, whereas in the adult animal they are predominantly present in neural tissue. Processes like neurulation axonal outgrowth, histogenesis of the retina and development of the olfactory system are correlated with the regulated expression of N-CAMs. We show here that N-CAM-deficient mice generated by gene targeting appear healthy and fertile, but adult mutants show a 10% reduction in overall brain weight and a 36% decline in size of the olfactory bulb. N-CAM deficiency coincides with almost total loss of protein-bound α -(2,8)-linked polysialic acid, a carbohydrate structure thought to be correlated with neural development and plasticity. The animals showed deficits in spatial learning when tested in the Morris water maze, whereas activity and motor abilities appeared normal.

Kersanach R, Brinkmann H, Llaud MF, Zhang D, Martin W & Cerff R: Five identical intron positions in ancient duplicated genes of eubacterial origin Letters to Nature 1994;367:387-389.

In 1985 Cornish-Bowden wrote "although there is now much to suggest that introns are an ancient relic of primordial genes, convincing proof must await the discovery of clearly corresponding intron arrangements in genes that arose by duplication before the separation of prokaryotes and eukaryotes". Genes for chloroplast and cytosolic glyceraldehyde-3-phosphate dehydrogenases of eukaryotes are descendants of an ancient gene family that existed in the common ancestor of extant eubacteria. During eukaryotic evolution, both genes were transferred to the nucleus from the antecedents of present-day chloroplasts and mitochondria, respectively. Here we report the discovery of five spliceosomal introns at positions that are precisely conserved between nuclear genes for this chloroplast/cytosol enzyme pair. These data provide strong evidence in favour of the 'introns early' hypothesis, which proposes that introns facilitated the assembly of primordial genes by accelerating the rate of exon shuffling.

AS CITED BY...

Cover Page

¹ Budiansky S: A special relationship: the coevolution of human beings and domesticated animals. JAVMA 1994;204:365-368.

Rosen: Letter... p 3

¹ Gardner R: ASCAP/IASCAP mission and name-change. The ASCAP Newsletter 1993;6(#11):4-7.

Wilson: Letter... p 3

¹ Wilson DR: Evolutionary Epidemiology: Darwinian theory in the service of medicine and psychiatry. Acta Biotheoretica 1993;41:205-218.

² Wilson DR: Ideas in Theoretical Biology: Autologous clones. Acta Biotheoretica 1993;11:267-269.

³ Wilson DR: The Darwinian Roots of Human Neurosis. Acta Biotheoretica 1994;42. (In press).

⁴ Wilson DR: (also Nesse R): in Natalie Angler's article "In search of an evolutionary persistence of suicide". The New York Times. Science Times, pp B5-8 passim, 5 April 1994.

⁵ Price D: Science since Babylon. New Haven: Yale University Press, 1961.

⁶ Price D: Little Science. Big Science. New York: Columbia University Press, 1963.

⁷ Desmond P: Darwin. New York, NY: Penguin, 1992.

Price: Letter... p 4

¹ Ryle A: Coanitive-Analytic Therapy: Active Participation in Change. NY: John Wiley & Sons, 1988.

Gardner: Letter... p 4

¹ Chagnon NA: Yanomamo: The Last Days of Eden. NY: Harcourt Brace Jovanovich, 1992

² Wilson PJ: The Domestication of the Human Species. New Haven: Yale U Press, 1988. [Jared Diamond also discusses the origins of the human use of food plants in the May issue of Natural History (5/94 - pp. 16-23) in an article entitled "Spacious skies and tilted axes." He bases it considerably on Zohary D, Hopf M: Domestication of Plants in the Old World Revised edition. Unfortunately the article doesn't provide the publisher and date.]

³ Wolf S, Bruhn JG: The Power of Clan: The Influence of Human Relationships on Heart Disease. New Brunswick, NJ, USA: Transaction Publishers, 1993.

Waller: Selfish Genes .. p 6

¹ Dawkins R: The Selfish Gene. Oxford University Press (2nd Edition), 1989.

² Sober E: Philosophy of Biology. Oxford University Press, 1993.

Lewontin R & Dunn L: The evolutionary dynamics of a polymorphism in the house mouse. Genetics 1960;45:705-722.

⁴ Slavin MO & Kriegman D: The Adaptive Design of the Human Psyche: Psychoanalysis, Evolutionary Biology, and the Therapeutic Process. NY: The Guilford Press, 1992.

⁵ Wheaton-Smith C: Breeding Better Cows. Ipswich: Dairy Farmer (Books) Ltd., 1957.

⁶ Taylor FW: Scientific Management. New York: Harper and Brothers, 1947.

⁷ Williams G: Adaptation and Natural Selection. Princeton University Press, 1966.

Price: Electric Fish ... p 8

¹ Price JS, Sloman L, Gardner R, Gilbert P & Rohde P: The social competition hypothesis of depression. British Journal of Psychiatry In press, 1994.

² Heiligenberg WF: Neural Nets in Electric Fish. Cambridge, MA: MIT Press, 1991.

³ Hartung J: Deceiving down: Conjectures on the management of subordinate status. In J Lockhard and D Pulhus (Eds) Self-deceit: An Adaptive Strategy. Englewood Cliffs, NJ: Prentice-Hall, 1987.

⁴ Maynard Smith J: Evolution and the Theory of Games. Cambridge: University Press, 1982.

Gardner: Vertical & Horizontal... p 15

¹ Birtchnell J: How Humans Relate: A New Interpersonal Theory. Westport, CT: Praeger, 1993.

² Storr A: Solitude: A Return to the Self. NY: The Free Press, 1988.

³ Gardner R: Iron will versus iron whim: The vertical axis displaces fun. The ASCAP Newsletter 1994;7:#4:13-15.

⁴ Jamison KR: Touched with Fire: Manic-Depressive Illness and the Artistic Temperament. The Free Press, 1993, p. 44.