A S C A P N E W S L E T T E R

Across-Species Comparisons And Psychiatry Newsletter
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A new scientific truth does not triumph by convincing its opponents but rather because its opponents die, and a new generation grows up that is familiar with it. Max Planck

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For the philosophy guiding this newsletter, see footnote on p. 6(1). Newsletter aims: 1. A free exchange of letters, notes, articles, essays or ideas in whatever brief format.
2. Elaboration of others' ideas.
3. Keeping up with productions, events, and other news.
4. Proposals for new initiatives, joint research endeavors, etc.

Notes: Randy Nesse, Coordinator of the UMich Evolution & Human Behavior Program notes (next page) that ASCAP looks a bit like a journal, an anathetic comment of others also.

I register ASCAP's enhanced R (1b) from this but here's another view: ASCAP hopefully performs different functions than a journal. Journals publish peer-reviewed, hence solid, research findings using paradigmatic investigational values. But I believe that a biologic basic science, for psychiatry has yet to be codified. Traditional categorizations need change; like exoskeletons of invertebrates, they limit flexibility.

We need new central concepts more akin to the internal skeleton of vertebrates, providing stability and muscle attachment while not limiting growth. ASCAP's neologisms (1) might help by focusing on functional adaptations not arbitrarily considered unique to humans nor focused too exclusively on a cellular-molecular level of analysis? Also we also need ASCAP's brainstorming, with room for new and contradictory ideas expressed playfully and seriously, including playing off ideas of others similarly engaged in thoughts of psychiatry and its eventual basic science. Such, Paul Gilbert's "hedonic science," differs from the necessarily agonic tone of a journal.

Avissar et al(2) recently noted that "Lithium at therapeutic .. concentrations completely blocked both adrenergic and cholinergic agonist-induced increases in ..GTP binding to [post-receptor] membranes from rat cerebral cortex .. [This] suggest[s] G proteins..[are] the molecular site of action for both the antimanic and antidepressant effects of lithium... [and fits Janowsky et al's] "adrenergic-cholinergic balance hypothesis of bipolar disorders."

This is exciting for psychiatry. But how does such balance and the related actions of G proteins in mania and depression implied by the findings function in the normal behavior of rats and man? Of course, science never develops logically and there is nothing wrong with discovered mechanisms of drug action instructing us about normality.

But should we be working on such "instructions?" Do we need a review for ASCAP (or perhaps Ethology & Sociobiology. refereed journal edited by MTMcGuire) of an analysis of the meaning of "adrenergic-cholinergic balance" across-species, including review of communicational processes such as psalics (1c), signals(1b) and tone(1a) and not excluding the perception and management of R (1b)? Or, if there is too little data yet, is this a future line of research? Any takers?

Letter:
April 28, 1988

I'm really enjoying your newsletter and will jot a contribution soon. It's beginning to look a bit like a journal except more interesting than most. I can't quite believe you already have an issue out with kind comments about the EHB meeting.

Randolph M. Nesse, UMich, Ann Arbor

Help! R is not mine! John Price

In ASCAP #4, RG speaks of "John Price's resource holding potential (RHP or R)". But, although like other contributors, I am an unrepentant neologiser, R is not my term. In fact, one of the term's advantages is that it comes from animal behavior. In developing equations to describe the evolution of ritual agonistic behavior (pairwise contests, in their terminology) behavioral ecologists found it necessary to introduce an intervening variable which expressed fighting capacity, or in human terms, ability to deal successfully with competitive interpersonal interactions. In order for ritual agonistic behavior to evolve as an evolutionarily stable strategy, animals had to use knowledge about their own R and about the R of any animal they were competing with, and they had to have the capacity for comparing these two pieces of knowledge, giving them an estimate of "relative R." Clearly, they also had to develop ways to signal R to competitors and to decode competitors' signals of R.

This means that the apparatus for estimating R must exist in the "reptilian brain" (McLean) of birds and mammals. Not only can reptiles estimate their own R and their adversary's R but they must have some mechanism of comparing the two estimates to come up with an estimate of relative R. This suggests that these calculations are going on in our own brains, well below the level of consciousness, perhaps. I think that here is one crucial application of the terms agonic and hedonic mode (Chance). Are such calculations of relative R going on only when we are in the agonistic or agonic modes, or are they going on even in the hedonic mode, with people, for example, with whom we have never felt in any kind of competitive relationship?

Moving on to Paul Gilbert's point about economics, I think that there is a useful analogy between R and a country's financial situation as manifested in the exchange rate of its currency. The relationship between the exchange rate and devaluation helps to illustrate the relation between R and clinical depression. Speculative selling of sterling, say, is the equivalent to catathetic signals. As speculators sell, the value of sterling falls, and the more it falls, the more they sell. This goes on until sterling is devalued; in other words, the value of sterling is even further reduced from within. Then speculators stop selling sterling because it is no longer advantageous to do so, and the exchange rate stabilises. Likewise, if other people disparage me with catathetic signals, my R falls until depression develops, which consists in part of a further, endogenous reduction of R. Then others see that my R is so low it is not worth putting me down further and the system becomes stable again. Incidently, this depression does not need to be as severe as a major depression, affecting sleep, appetite, interest in things, concentration etc.; it just needs to be severe enough to reduce or stop my "conspicuous participation" (Hilary Callan) in things such as ASCAP.

Even the components of R have analogies in the financial sphere. Part of R is substantive, consisting of real resources like size, strength, skill and allies, and this component is equivalent to real

financial resources such as gold reserves. Then there is the ritual component of R which is lowered by catathetic signals and raised by anathetic signals, and this equivalent to the "confidence" element in the exchange rate mediated by buying and selling. The endogenous component of R due to mood is the equivalent of monetary policy including adjustments of the exchange rate. A situational component of R (such as being on home ground, or being in the right) is equivalent to such economic matters as seasonal variations and economic forecasts. In man there is a group membership component of R, deriving from affiliations, very like linking or exchange rates as in the European Common Market.

We did not have the concept of R when we developed the original pecking equations. It came later when we compared our equations with those of the behavioral ecologists. But once you start thinking about R you realise that we as human beings spend a lot of time and effort adjusting each other's R either upward or downward, and this is what led us to the concepts of catathetic and anathetic signals. At first we called them "feel bad signals" and "feel good signals," but Michael Chance suggested we introduce less informal terms. We considered various possibilities such as aggression, hostility and dominance (although not actually "hostile dominance") but these terms already had meanings and moreover did not express the exact meaning we required, which was that of interpersonal signals which raise and lower R in the recipient. We felt like a lady who borrows a friend's dress to go to a dance, and then, wondering whether she should use her old accessories, decides no, she will buy new gloves and a new handbag that exactly match her new dress. So after borrowing the term, resource holding potential, we felt that new supporting terms should match it exactly.

I think I am correct in saying that ritual agonistic behavior does not require (in order to work) the R-shifting effect of anathetic and catathetic signals, in other words, the ritual component of R. The advantage of ritual R lies in its capacity to increase the variation of asymmetrical contests. It may be more important in group-living than territorial species. In territorial species, asymmetry is provided by the situational component of R, in that the first-comer to a territory always wins (or, in some species, the first-comer always loses). In species in which a group shares the same territory, this source of asymmetry is not available, and therefore, individual variation in R is much more important as a source of asymmetry. Possibly the capacity to alter R ritually with anathetic and catathetic signals was an adaptive change in the ritual agonistic behavior mechanisms which evolved as part of the adaption to group living, along with the psychobiological response pattern (Gilbert) or in-group omega psalic (Gardner) or yielding subroutine (Sloman and Price) in depression.

R and inclusive fitness Paul Gilbert

First, are dominance and R synonymous? If not, then R represents a principle in selection, and dominance and submission are "displays of relative R." One is not motivated to dominate but to increase R, and one medium of this is "display behavior." Hence we can make the following classification:

1) R relates directly to inclusive fitness.

2) R is expressed in display behaviour (and other forms, eg, guardina)

3) Hostility is an affective component energizing behaviour (eg, display), but in some contexts the motor outputs may inhibited, eg, the non-expression of hostility.

My next point follows on "R relates to inclusive fitness." With some complications, species evolved to increase R in related individuals. Increasing R in related individuals of course is. inclusive fitness. Crucially, the "expressed behaviour" is less dominance than nurturance (or teaching etc) with an affective component closer to affection.

R may not link solely to intraspecific contexts. Does there also exist something like R but related to maintaining an ecological niche when animals compete with those of other species? A "species-R" will relate to the competencies to exploit an environment (eg, hunt) and avoid being preyed upon. Now this evolutionary pressure may well have had major modifying effects on individual conspecific R, or at least the tactics of gaining individual R. My point is, then, that when we consider factors that give rise to individual behaviour, we also need to be aware of pressures exerted from outside (competing for niches). Indeed, Chance (1980) shows how the hedonic mode gives rise to joint defense behaviour; eg, a group of primates harassing a snake rather than each having to defend itself separately.

This suggests that while pressures exist to maximise R within a group, pressures also exist to facilitate the holding and developing of environmental niches. I think sociobiologists recognize this but haven't yet fully separated the within-species versus between-species forms of selective pressure and the implications of the confluence of these two forces on individual adaptation.

In many ways our ability to outcompete other species by virtue of our highly organized social life now threatens us with mass exploitation and pollution of the environment. Our actions destroy many species.

When we consider the selective pressures that have modified R-related behaviours of reptiles (eg, fighting), we see movement from r to k selective strategies. We see (I think) a response here to outside forces, eg, protecting the young from predation. Other group members help increase one's survival. Here we see is a shift from aversive (threat) interactions as the medium of group organization to positive reinforcement.

More about catathetic signals JPrice

RG (ASCAP #3) pointed out the intricate interweaving of catathesis with anathesis that occurs in sophisticated human exchange such as that between Mr. Knightley and Emma (ASCAP #2). Mr. Knightley certainly knew how to "sugar the pill" of his catathetic signals for Emma, or, as Benjamin Disraeli's father said of Pierre Bayle, how to "wreathe the rod of criticism with roses." (3)

Did Mr. Knightley intend to put Emma down, or build her up, or both? You will have noticed that I have not used "intention to lower R" as the sender's definition of catathetic signals, in the way "intention to harm" has been used to define "aggression" (See Bandura (4), Moyer (5), and Eibl-Eibesfeldt (6, pp339-40) for discussion of this point). Anathesis being more recent than catathesis in phylogeny, anathetic intent is probably mediated by a higher level of the nervous system than catathetic intent, so that there may be no mechanism for ensuring that output is consistently one or the other. Mr. Knightley loved Emma and may have wanted to make her a better person, more admired by others and more acceptable as his wife; at the same time, he may have thought her too "cocky" and opinionated, and have wanted to humble her a little.

I think the answer to this problem lies in the components of R (See above, pp 2-3). Likely, Mr. Knightley was trying to reduce Emma's ritual R but to increase her substantive R.

Words, threats or blows?

There is a lot of folklore about the relative painfulness of words and blows. There is the schoolboy jingle:

> Sticks and stones may break my bones
> but words can never hurt me.

This is in direct opposition to the teaching of the Bible:

> The blow of the whip raises a welt,
> but a blow of the tongue crushes
> bones. Eccleasiasticus 28, 17

The potential interchangeability of blows and insults was demonstrated in a chimpanzee who was trained to use sign language by Fouts (7). Eibl-Eibesfeldt (6, pl38) describes the interaction as follows:

> Once while learning the sign monkey she was observed exchanging threats with a mature male rhesus monkey. Fouts interfered and showed her monkeys in other cages. Upon being asked Lucy correctly named siamangs and squirrel monkeys with the monkey sign. The rhesus monkey, however, was described in answer to each of Fouts' several questions as dirty monkey. Since then she has been observed to used the dirty sign as an adjective to describe experimenters who refused to grant her requests. Prior to this time the sign was used to describe soiled items and faeces only. This seems to have been the genesis of an insult.

In the above example, Lucy did not actually make the "dirty" sign to the rhesus monkey, so that we cannot say for certain that the sign was interchangable with the non-verbal threats; but she showed that she could have done so by going one stage further in using sign language to disparage her opponent to a third party (the experimenter). Was she the first non-human primate in history to use this typically human method of displacing aggression?

If she had made such a catathetic signal to another sign-language-speaking chimpanzee, would the latter have have had the capacity to receive it as a catathetic signal, to realise that he was being called a "shit" and to be hurt by it and to suffer loss of R? Or would he have received it as a nurturing signal, like "Excuse me, but I think that you've forgotten to wipe your bottom?"

More about criticism

The work of Peter McLean and his colleagues in Vancouver, B.C., deserves recognition (8). They recorded the verbal exchanges of married couples. Over 60% of the exchanges were regarded by the recipient as critical. But less than half of these critical comments were intended as critical by the sender. They were intended to be helpful, like "You'd feel much better if you didn't cry so much." McLean calls these critical comments "micro-stressors" and suggests they cause recipient depressed mood. These findings of McLean are confirmed by my clinical work: each of a couple complains that the other is "putting me down all the time," but neither realises that he/she is doing as much putting down as the other. Few married couples can cope with Moliere's idea that "The proof of married love is to be unsparing in criticism" (The Misanthrope).

When one gives a scientific paper (or an ASCAP contribution) to another for "constructive criticism", one asks for a boost in one's substantive R (improvement in the paper and thus in one's oevre) at the risk of some loss of ritual R; but is difficult to not to hope for a boost in ritual R too! As Somerset Maugham put it (Of Human Bondage): "People ask for criticism but they only want praise."

For those desiring to enhance R by getting old ASCAPs, ask.

In ASCAP #7 (June 15), we will learn about how inclusive fitness theory perhaps seen in animals may be also seen in humans, as from Kroll & Bachrach's example of medieval dynastic decision. Also how calculating R helped manage a patient will be presented.

ASCAP #8 (July 15) will abstract Hank Slotnick's computer simulation of a behaving single "animal."

1. Philosophy and goal: High scientific importance rests on comparing animal behaviors across-species to understand better human behavior, knowing as we do so that evolutionary factors mast be considered for understanding properly such behaviors. To accomplish these comparisons, very different new ways of viewing psychological and behavioral phenomena are required. This in torn explains why we need new words to define and illustrate new dimensions of comparisons across species. 1e expect that work in natural history biology combioed with cellular-molecular biologic research will emerge as a comprehensive biologic basic science of psychiatry. Indeed, this most happen if we are to explain psychiatric illnesses as deviations from normal processes, something not possible now. Compare to pathogenesis in diseases of internal medicine.

Some neologisms that hopefully will help implement these goals are those of:

a) Michael R. A. Chance: "hedonic" and "agonic" refer to the tone of groupings of conspecifics (members of a same species) i.e., relaxed and fan-loving versus tense and competitive. First initiated with CJ Jolly in 1970, this term is referenced fully in ASCAP #1, Footnote 1.

b) John S. Price: "anathetic" and "catathetic" describe conspecific communications. Catathetic messages "pit-down" whereas anathetic signals "build-up" the resource holding potential (R) of target individuals.

c) Russell Gardner, Jr.: "psalic" is a 2 way acronym: Propensity States Antedating Language In Communication and Programmed Spacings And Linkages In Conspecifics. This describes communicational states conjecturely seen with psychiatric disorder and normality (human and non-human), ie, alpha psalic seen in manics, high profile leaders and dominant non-human animals. Eight psalics are named alpha (A), alpha-reciprocal (At), in-group omega (IGO), oat-group omega (0G0), spacing (Sp), sexual (S), nurturant (N), and nurturant-recipient (NR).

All of the above new or renewed terms are initiated or elaborated in Chance, MRA (Ed) Social Fabrics of the Mind, due out in 1988, published by Lawrence Erlbaum Associates, Hove and New York.

2. Avissar S, Schreiber G, Danon A, Belmaker RH (1988) Lithium inhibits adrenergic and cholinergic increases in GTP binding in rat cortex Nature 331440-2.

3. John Price admits that he collects dictionaries of quotations.

4. Bandura A (1983) Psychological mechanisms in aggression. In Aggression: Theoretical and Empirical Reviews. V 1: Theoretical and Methodological Issues. (RGGreen & EIDonnnerstein, Ed) IT: Academic Press.

5. Moyer KE (1976) The Psychology of Aggression London: Harper and Row.

6. Eibl-Eibesfeldt I (1975) Ethology: The Biology of Behaviour (2nd ed.) NY: Holt, Reinhart & Winston.

7. Fouts, RS (1974) Communication with chimpanzees. In Hominisation and Verhalten (IEibl-Eibesfeldt & GKurth) Heidelberg: Fischer.

8. a. McLean PD (1976) Depression as a specific response to stress. In Stress and Anxiety (IG Sarason and CD Speilberger, Ed.) NY: John Wiley.

b. McLean PD, Ogston K, Grauer L (1973) A behavioral approach to the treatment of depression. J Behav Ther & Exp Psychol 4: 323-30.