

ASCAP NEWSLETTER

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Hedonic Anathetic Psalicolgy

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Stimulus and Response.

The idea of writing to all of you in this newsletter occurred to me in an afternoon dentist's chair and made an otherwise boring tooth cleaning quite exciting. So I tried out a draft with some new word-processing software, chewed on the results awhile, and decided that an idea of Paul Gilbert that we need a "hedonic science" made increasing good sense. So here goes, risking it, hopefully composing a light message that "plays around" with, but at the same time deals meaningfully with, the serious issues in which we are involved.

I am presuming that common interest in the ideas discussed here defines us as a group that would be interested in communicative exchange which here begins. If this is true for you, please write me. Hearing from you will determine a go/no-go decision on future issues of the newsletter and the rules by which the aims formally stated below would be implemented.

Formally stated aims: 1. A open exchange of letters, notes, articles, and ideas in brief format that were we not so distant from one another, we might share in person.

2. Elaboration of another's idea or ideas for fun or profit. (I try this out herein with an elaboration of Price and Sloman's 2 bird peck formula -- see pg.2, col.2.)

3. Keeping up with each other's productions, events, and other news.

4. Proposals for new initiatives, joint research endeavors, etc.

Concepts, neologisms & a new book.

We need a word on the concepts embedded in the above name and in the boxed neologisms. I summarize these to establish a communality of vocabulary as well as to illustrate a sense of play that "hedonic" implies.

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

The neologisms are those of:

1) Michael R. A. Chance, Birmingham, England: "hedonic" (and "agonic") refer to relaxed and fun-loving versus competitive monkey groups and to human groupings as well (1).

2) John S. Price, Milton Keynes, England: "anathetic" (versus "catathetic") are new terms to describe a classification of communications between conspecifics (members of a same species).

Catathetic messages are "put-downs" (such as his favorite message, the pecks of Schjelderup-Ebbe's chickens) whereas anathetic signals "build-up" the target individual.

3) Russell Gardner, Jr., Galveston, Texas: "Psalic" is a 2 way acronym: Propensity States Antedating Language In Communication and Programmed Linkages And Spacings In Conspecifics. These describe communicational states conjecturally seen in psychiatric disorders and in normals (humans and non-human animals,) such as alpha psalic seen in manics, high profile leaders and dominant non-human animals. I've listed 8 psalics in MRChance's new book.

Speaking of which, all of the above new terms are initiated or elaborated in this new work, Social Fabrics of the Mind, due out in early 1988, published by Lawrence Erlbaum Associates, Hove and New York. Of course, I recommend this trigger for new thought. I further know from recent correspondence that Dr. Chance desires to enlist more co-operative effort on comparative ethology.

Productions, events and other news.

In this first issue, I'll list a few things in addition to the news about Social Fabrics that I know about. Let me know things to be publicized in any future issues:

1. Paul Gilbert (who is this minute moving to Derbyshire, England) has completed the manuscript of a new book, Human Nature and Suffering, which is being looked at by Lawrence Erlbaum Associates, Hove and New York; they also did his first book, Depression: From Psychology to Brain State. 1984.

2. Leon Sloman had a paper accepted for presentation at the Montreal APA meetings in May, 1988. Co-authored by RGardner and JSPrice, its title is Biology of Family Systems and Mood Disorders.

3. In November, 1986, a conference entitled The Conceptual Basis of Animal Models in Psychiatry was held at the Center for Advanced Study in the Behavioral Sciences at Stanford, CA. Sponsored by the Foundation Fund for Research in Psychiatry, the conference was organized and chaired by William McKinney. A manuscript summarizing the conference is nearing completion.

4. I know many other things are occurring as well but I don't have my fingers on the details. But now you have a sampling.

Proposed generalizations of Price and Sloman's bird peck equation. (RG was assisted in the following by UTMB senior medical students Fran Roller and Jonathan Evans.)

Price and Sloman (2) for a symmetrical 2 bird social setting suggest the following pecking equation:

$$\text{Bird 1: } P_1 = a_1 + b_1P_2 \quad (1a)$$

$$\text{Bird 2: } p_2 = a_2 + b_2P_1 \quad (1b)$$

P = peck rate of 1 bird on the other

a = aggressiveness

b = retaliatory potential

Because the above represents an arms race and can't go on forever, JSP and LS propose that an upper limit on the b_1P_2 value induces a change state to occur and then a new asymmetrical steady state becomes established as bird 2 becomes the subordinate one:

$$\text{Bird 1: } P_1 = a_1 + b_1P_2 \quad (3a)$$

$$\text{Bird 2: } P_2 = a_2 - b_2P_1 \quad (3b)$$

I have left out interim formulae (2a) and (2b) because we conjecture below that the steady state formulae may be foundations for other quantitative estimates of communicative behavior that downstream could be subjected to experimental test. Indeed, that is a prime motive of this essay. However, note from the (3b) formula, that having a big b_2 value would mean an eventually larger victim potential than if bird 2 were

itself less vindictive, i.e., "the higher to begin with, the bigger the fall" which, anecdotally, happens.

From page 1, the reader knows about needing new dimensions of comparisons across species. In our recent discussions, FK, JE, and RG have wondered whether the JSP/LS formulae could be generalized for application to other species. Hopefully, the variables could be operationally defined and tested experimentally. Further, our interim thoughts and derivations relate to the concepts underlined by the boxed neologisms. This seems a brave endeavor, but social rank hierarchical phenomena seem so powerful in determining behavior, that these may not be as off the wall as the first look may seem. Think about it, play around with what has come out. We're eager for debate and discussion.

First, instead of birds, could we discuss individuals, (I) so as to move beyond avians? Second, instead of pecks (P), could we discuss conspecific signals more generally (S) hopefully thereby including anathetic signals (SA) as well as catathetic (SC) pecks? Indeed, to emphasize this, we propose a new equation for each individual (i) using JSP's anathetic/catathetic distinction.

$$S_i = SA_i - SC_i \quad (4)$$

Thus, the sign of S indicates that accumulated signals over a period of time by an individual produces a summative build-up versus put-down of other person(s) the signals target. Indeed, for a grouping of individuals ($I_1 + I_2 + I_n$), the hedonic versus agonistic tone of the group would depend upon the sign of the following equation (ha = hedonic/agonistic tone; n = number of individuals):

$$Sha = S_1 + S_2 + S_n \quad (5)$$

The group's hedonic tone would be inferred by greater positivity or agonistic tone by greater negativity.

Next, JSP has also emphasized in his chapter for the Chance book that Resource Holding Potential (RHP), a concept from behavioral ecology, could have meaning for humans. RHP has its origins in fighting capacity and is used to determine wins in agonistic encounters.

However, Bernstein and Gordon (3) have noted that agonistic dominance is a too simple concept for many primates; a "control" animal who does many other "leadership" things besides fight is usually present. In considering psalics, alpha psalic in primates and humans is far more complex than simple dominance alone, but includes generosity, altruism and leadership behaviors aimed at group benefit. JSP's RHP has (I think) this expanded meaning. The meaning of RHP in humans includes status, holdings, givingness — as well as dominance — humans have not abandoned fighting!

Returning to formulae (1a) and (1b), a and b relate to aggressiveness and retaliatory potential. In thinking of how to measure these without circularity, I've thought (and I think JSP/LS implied) that they are probably highly related in the same bird. For example, if the birds were male — which Schjelderup-Ebbe's chickens were not — then testosterone might be an indicator of either a or b. Rose et al (4) showed that testosterone goes down in defeat.

However, let us suppose that

$$a = b = RHP \quad (6)$$

Then rephrasing formulae, a new version of (1a) would be:

$$I-1: SC_1 = RHP_1 + RHP_1 \quad (SC_2) \quad (7)$$

This would then allow us to make hypotheses about animals other than chickens that would predict the nature of the signals exchanged. Let us see how this might work with an example from humans: A boss (Mr. Jones) who owns his own business with an RHP of 8 has a new employee (Joe).

They are exposed to each other for an hour per day and on day 1, the brash young man makes 4 sarcastic comments about the work situation. If SC1 is the unknown, then solving equation (7) results in a Jones carp rate of 40 aimed at the new man in contrast to day 7 when Joe has learned to keep his mouth shut. Thus, on that day, suppose we have data that boss Jones lowered his carping from 40 to 5. Solving equation (7) for Joe's SC2 (assuming that Jones' RHP hasn't changed in the interim) results in a value of -0.38 or a negative value essentially the same as 0. In other words, Joe keeps his mouth shut and doesn't show non-verbal catathetic signals either.

Given the human presence of anesthetic signals also and the frequent occurrence of hedonic as well as agonic work settings, we felt that we had to use these helpful concepts to broaden the ideas. For example, suppose that Mr. Jones is a supportive boss in order to get the most work from Joe and thereby to increase still further his RHP (maybe, too, he's a nice guy.)

FK tentatively suggested we play with the following hypotheses:

$$SC1 = k/RHP2 \quad (8)$$

$$SA1 = k(RHP2) \quad (9)$$

where $k = \text{constant}$

I appreciate this beginning though as yet substituting numbers in thought experiments produces evidence that these equations are still too simple. So we're still working to integrate these components. Do you have some variations on thinking about it? We're planning to continue working on the issue by deploying some of these or similar formulae when observing interviews on videotape as sample two person exchanges. If we should get some formulae that seem to work, primate or other animal observations in association with with someone who knows that conspecific repertoire of messages

might be interesting also. Further, families are multi-person groups that often exhibit repeated SA and SC so that videotapes of family interactions may be of eventual interest.

We also considered the relationship of internal communicative state to RHP. Quick definitions of the mental illnesses mania and depression result. Let us assume that alpha psalic = @, Mania = M, and in-group omega psalic (postulated to be seen in both depression and low ranking losers including bottom-of-the-heap humans and non-human animals) = IGO and Depression = D.

$$Mi = @i > RHPi \quad (10)$$

$$Di = IGOi < RHPi \quad (11)$$

JE tried out the relationship of internal states to number and directionality of communications and part of his equation, replicated here, is interesting:

$$S1 = @1 (SA2-SC2) \quad (12)$$

Thus if one were in a good, hypomanic mood, one says nice things so long as the comments coming in are positive ($SA2 > SC2$). But if $SA2 < SC2$, then, individual 1 can get pretty sarcastic also and the sign of S1 would turn negative. The two person social setting would turn agonic rather than hedonic. This is an interesting hypothesis and seems plausible from clinical experience.

Conclusions.

I hope that all this talk about hedonic and anesthetic communications doesn't bridle any criticism that you might otherwise send along. Let's welcome debate! We haven't taken ourselves and our clean teeth too seriously so far, have we? Like wolf-pups at play, let's lunge as though it's at the jugular, but please don't break the skin.

Warmest of Season's Greetings!
Merry Christmas and Happy New Year!

1. Chance MRA & Jolly CJ (1970) Social Groups of Monkeys, Apes and Men. New York: E.P.Dutton
2. Price JS, Sloman L (1987): Depression as yielding behavior: an animal model based on Schjelderup-Ebbe's pecking order. Ethology and Sociobiology 8::85S-98S.
3. Bernstein IS, Gordon TP (1974): The function of aggression in primate societies. Am Sci 62:304-311.
4. Rose RK, Bernstein IS, Gordon TP, Catlin SF (1974): Androgens and aggression: a review and recent findings in primates. In Primate Aggression, Territoriality and Xenophobia: A Comparative Perspective. (Ed. RL Holloway) New York and London: Academic Press.