

ASCAP

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"The salient point in the emerging understanding of the brain is 'plasticity' - that the ability to learn and change are brain based. So at any given point, what one brings to the table is a complex mix of one's genome, which is 'read out' in the context of environmental interactions."

Steven Hyman, New Director of the National Institute of Mental Health

Across Species Comparison and Psychopathology (ASCAP) 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.

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ASCAP Society Mission Statement

The ASCAP 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 or various methods of study; ranging from cellular processes to individuals in groups The ASCAP News-letter is a function of the ASCAP Society.

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

ADDRESSED TO & FROM ...

FRUITS OF APRIL

As he described in his short report of the May issue, John Price visited UTMB at Galveston this April and then went to New York for the Annual Meeting of The ASCAP Society just after. I believe it to have been a very useful visit for both of us.

We worked together in a number of clinical, theoretical and research projects and he was a source of useful consultation for myself and colleagues at this medical center and others with which I am associated (Texas Children's Hospital and Beaumont State Center for mentally retarded and developmentally disabled adults).

Although I had known him for his theoretical wisdom and his immense knowledge of the literature, I newly learned that his prowess as a clinician was striking and he impressively deployed the theory in helpful ways. He also made a very helpful methodological contribution to a research project being designed.

This issue celebrates some of the results with a special focus on the game theory derived concept of resource holding potential (RHP). First, Dr. Price discusses a 10 year pilot project in which he quantified the dynamics of asymmetric marital relationships

with reference to an RHP gap, a hypothetical homeostatic mechanism which he inferred was operating in his patients. He had presented this to an international meeting but had not previously published the findings.

Also, he describes his impression of the of the landmark book by Frank Salter, *Emotions in Command*, which arrived for review early in his visit. In it Dr. Salter discusses the concept of "face" initiated by Erving Goffman which, as Dr. Price points out, has similarities to our concept of what we agreed we will now call interpersonal R (resources) exchange, that is, anathesis (boosting or build-up signals) and catathesis (put-downs and reducing signals). In his earlier presentation, he calls this RHP (resource holding potential or fighting capacity).

In some of the earliest issues of this newsletter, I argued that it might be useful to broaden the concept as there are many sources of resources besides fighting capacity. Paul Gilbert spoke of social attention holding potential or power (SAHP) in referring to prestige competition, for example.

An outcome of the April discussions was a return to the benefits of discussing the usefulness of the idea of a homeostatic function for keeping relationships at a

similar distance from one another. I recall a particularly useful afternoon talk while walking Galveston's East Beach on 25 April that helped settle our research strategy which we have continued via fax and letter since then.

On page 18, we present an early working draft of some of our efforts at sociophysiological research using novel sources of data, including some pilot study data with cases stemming from published fictional and anthropological accounts.

Russell Gardner, Jr.
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"PHYSIOLOGY GONE WRONG???"

I read the splendid editorial in *Biological Psychiatry* for 15 May 1996, with great interest. I would be glad for a reprint and also for instruction to receive *The ASCAP Newsletter*.

I agree with all that you wrote. However, I do think that the basic science of psychiatry should save room for

1. The notion that some psychiatric illness represents primarily (not exclusively) physiology gone wrong: Klein's idea that panic comes from a low threshold for a

suffocation response and cognate notions.

2. The idea that endocrine changes can affect the threshold for, say, depression.

I doubt that you would disagree with the above.

Arthur J. Prange, Jr.

SOCIOPHYSIOLOGY, etc.

Let me call readers' attention to Jack Barchas' item in JAMA (19 June 96, V275, #23, pages 1847-1849) in the annual review of specialities issue. On page 1848 the editor of *The Archives of General Psychiatry* talks of the interplay of biological and social psychiatry: "The study of sociophysiology, the physiological concomitants of social behavior, undoubtedly will become a fruitful area for new psychiatric research."

Also, I anxiously await Kent Bailey's fourth section on mismatch theory. It has been an excellent review of a crucial area. Of course, this is a type of PHENOTYPIC REACTION (to use the technical terms of evolutionary genetics) but his elaboration of the socio-developmental aspects is remarkable. Also, I have just had time to reread David Stevens summary of Social Bimodal Theory.

Again, this is timely and excellent. It has taken me some years to fully appreciate the interrelated

elements of RHP, SAHP, agonic/hedonic and such. To have a report from a consensus conference is very helpful.

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"THE NEUROBIOLOGY OF AFFILIATION"

I read the recent editorial on Sociobiology in *Biological Psychiatry* with interest. I am a Schizophrenia researcher, but my funding has largely come in the area of the neurobiology of social behavior. The title of my funded Scientist Development Award was "The Neurobiology of Affiliation".

I recently served as a co-chair of a New York Academy of Sciences symposium on "The Integrative Neurobiology of Affiliation". A volume of the *Proceedings of the New York Academy of Sciences* with that title should be out next year. I have enclosed some recent editorials relating to neuro-psychiatric disorders and the neurobiology of social behavior, which also appeared in *Biological Psychiatry*.

My current work relates to sexual anatomical dimorphism in the control of parental behavior in the prairie vole; this work gets into issues of peptide co-localization and the more general significance of sexual dimorphism.

My other line of lab research is developing an animal model of

relevance to the deficit syndrome of schizophrenia. I work with Will Carpenter and others on the deficit syndrome in my clinical research. The deficit syndrome is interesting because of the marked decrease in interest in social relationships that these patients have, compared to other with schizophrenia. This difference can not be accounted for by a greater severity of psychosis in the deficit patients, nor to drug effect, suspicious withdrawal, etc.

I had not before heard about *The ASCAP Newsletter*, but would like to see it.

Brian Kirkpatrick

BOOK RECOMMENDATION FROM E-MAIL:

BITTERSWEET DESTINY: THE STORMY EVOLUTION OF HUMAN BEHAVIOR

A new book has appeared that deserves your attention: *Bittersweet Destiny: The Stormy Evolution of Human Behavior*, by Del Thiessen, a colleague of mine. It is available from Transaction Publishers, New Brunswick, NJ 08903.

As Thiessen says "*The stormy history of our past is upon us. The Darwinian revolution, begun nearly one hundred and fifty years ago, has finally swirled into our daily lives, showcasing the magnificence of our existence, and impressing us with its cold reality. We are now at the cusp, where an old millennium ends and a new one begins. Survival and*

extinction are at issue. If we are to overcome old politics, unsound ideologies, and the fragmentation of civilization, we must react. Part of that reaction is to admit our tie to the selfish gene, thereafter building a moral system that makes evolutionary sense. Knowing our origin, we must face our bittersweet destiny."

The book is a daring attempt to integrate evolutionary theory, paleobiology, cultural evolution and philosophy. It's a great read, and also could be used as an integrative text.

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WHY THE DIFFERENCE?

Regarding your piece in the March 1996 *ASCAP Newsletter*.

Because of our sojourn in the Southwest (without mail forwarding) and my piled-high desk on return, I had not read the March *ASCAP* until last week. Prince Arjuna's story is really a parable for us all, both as scientists and as human creatures, especially when viewed in juxtaposition with that other prince, Hamlet. Arjuna triumphs; Hamlet dies. Why the difference? Both are near-paralyzed with fear at the outset.

But Arjuna has an ally, who helps him to stabilize his thinking. As a result, Arjuna is able to take control of the situation and to strive toward a positive result for all, not just

himself. He becomes productive, even in a terrible situation.

Hamlet withdrew into himself and ruminated unproductively, shivering in self-absorbed ambivalence. He was depressed.

Krishna did foster an hedonic atmosphere, as you say, strengthening his prince. Hamlet had no one who was able to help him; all those who tried were without the authority, the stature, the leadership to calm and re-direct his thoughts. His downward, agonic spiral led to murder and suicide.

The good ally made all of the difference.

Remarks on the April 1996 *ASCAP Newsletter*.

I was glad that Kent Bailey recognizes that "cell dynamics are much more than depicted". While I generally have enjoyed his articles and see much that is valuable in his fourfold model, it shares the problems that many of these models suffer from. Anytime that one tries to cram human behavior into some kind of classification system, too much gets left out - - really of necessity.

The beauty of John Birtchnell's system is that the axes permit gradations and subtleties. (And yes, I know that Birtchnell describes different things than Bailey does, mostly. I'm talking about graphic design.) Could Bailey not re-design his cells so

that he illustrates the possible interactions and movements from one cell to another that inevitably occur in human life, as well as the placement of individuals at any one point in time. He recognizes movement in his text; I would like to see it in the tables.

As my contribution to John Pearce's "Be Kind to Authors Year" - - - a fine idea if I ever heard one — I want to thank both Johns, Pearce and Price, for their contribution to the education, entertainment, and general delight of this *ASCAP* reader! Both of them are original, smart, and literate.

With regard to the question about what happens when a stable but asymmetric relationship undergoes a change:

Since I am thinking Shakespeare, how about Lear's relationship with his daughters? He was a dominant figure, a king. But then, wearying of responsibility and longing for his daughters' love, he gives them his kingdom, expecting gratitude and love in return.

From Cordelia, he got both love and honesty and could not recognize the love, because his vanity was so hurt by her honest love of her husband.

Goneril and Regan were dishonest and gave no love either. In his case, when he lost his dominance, even though he gave it up voluntarily, he lost his mind too, because of his disillusioned suffering. Goneril and Regan

strove for dominance and only became evil - - like Krishna's demons, as a matter of fact.

Lear's loss of RHP did not confer an increase on two of this daughters; they only thought that it did. So does Lear's story indicate that RHP is not just a relative thing? I think so. It has to come from within; it can't just rise or fall in relationships. There's much more to it.

In non-literary human relationships, I got to thinking about how marriages change as the participants age. Women tend to be subordinate to husbands early in the marriage, even now when they bring substantial economic support to the household.

But as (healthy) women mature and become more confident of their abilities and worth (their RHP increases), many men can not tolerate it and leave the marriage for younger women. Now there are a lot reasons beyond the change in relative RHP, as David Buss for one pointed out, but RHP is certainly a factor.

In Arizona, we spent quite a lot of time with a first cousin, Barbara, a smart, funny, outspoken woman of whom I have grown very fond. In the inevitable family talk, she commented on the extremely dominant women in the family - - a great truth, if I ever heard one - - and told a story to illustrate.

Her grandmother was a fairly conventional wife in the early years of her marriage. Appar-

ently, the husband was the leader in the marriage and things went reasonably well. Harry ran a very lucrative pool hall. However, Mabel got religion as she grew older and she decided that a pool hall was a disgraceful way to make a living and absolutely badgered poor Harry into selling the place. She become dominant. Relative RHP changed.

However, Harry got a sort of passive-aggressive revenge. He never did another lick of work in his life!

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ETHOLOGY SITE ON THE INTERNET

Visit the [Danish Society for Human Ethology's](#) Home Page at:

<http://www.icafe.dk/sci/cirip/humanethology.html>

This home page is maintained by Tyge Schelde, an ASCAP Society member and the Editor for this home page.

Language problem? On the home page it says: "*We talk both English and Danish here. Other languages welcome too.*"

What is the definition? The Editor states: "*Ethological psychiatry is a young discipline, 20-30 years old. It is rooted in ethology (behavioral biology) and human ethology, and as such it belongs to the natural sciences.*"

Ethological psychiatry is the systematic, quantitative study of psychiatric patients' behavior in natural or semi-natural social environments, such as the ward environment. Descriptions of behavior are analyzed and results are interpreted in the context of evolutionary biology."

If you wish to E-Mail the Editor, Tyge Schelde, his E-Mail address is: arcirip@cybemnet.dk.

Frank Carrel
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Please E-mail any contributions to ascap@beach.utmb.edu, or mail hard copy and 3.5' HD diskette to Russell Gardner, Jr., c/o Frank Carrel. Dept of Psychiatry & Behavioral Sciences, University of Texas Medical Branch, Galveston TX 775550428, USA. WordPerfect. Microsoft Word or ASCII format preferred. Diskettes will be returned to you Thank you.

The Expression of Hostility in Complementary Relationships Change due to Depressed Mood

This paper was presented to the ISHE meeting in Tutzing, Germany, in 1986, by John S. Price, on behalf of himself and Leon Sloman. The paper represents an attempt to apply their theoretical work to the testing of a prediction in a clinical setting: For various reasons, it was not submitted for publication. However, in view of increased interest in rank orders (e.g. Frank Salter's new book), we are printing it in case it stimulates someone to do research in this relatively untrodden field.

Summary

A hypothesis relating depression to the yielding component of ritual agonistic behaviour predicted that the expression of hostility by depressed patients would depend on the relative rank of the object of the hostility. A literature review showed that relative rank was not a variable which had been considered in the many studies on the expression of hostility by depressed patients. Therefore a study was made of 21 outpatients who had developed a depressive episode since marriage. When rank relative to spouse was compared with change in hostility expressed to spouse, there was a not significant tendency for dominant spouses to express more hostility and subordinate spouses to express less hostility than before the onset of the depressive episode.

Introduction

In the tradition of applying the methods and data of comparative ethology to psychiatry,¹ we recently put forward a hypothesis which related episodes of human depression to the yielding component of ritual agonistic behaviour.²³ According to this hypothesis the biological function of the depressive episode, which has been responsible for its selection during evolution, is to enable the individual to accept a subordinate social rank. The depression achieves

this end in two different ways: firstly, it inhibits the expression of hostility and aggression (or, rather, what we have called catathetic or "putting down" behaviour) towards higher ranking individuals; and, secondly, it signals low competitive capacity, or Resource Holding Potential,⁴ on the part of the depressed individual towards those of higher rank, so that the latter are reassured that the depressed individual is not a threat to them, whereupon they desist from lowering the depressed person's Resource Holding Potential further, and the social group is able to switch from the agonistic to the hedonic mode,⁵ and get on with other matters which are important for survival, such as generating resources and competing with other groups. Most of the features of depression, which otherwise appears a totally maladaptive form of behaviour, can be accounted for in this way.² The hypothesis is a subdivision of that of Gardner,^{6, 7} which attributes a number of psycho-pathological states to innate communicational patterns or "psalics" (Propensity States Antedating Language In Communication) in which depression appears as an "in-group omega psalic".

One prediction of the hypothesis is that, during an episode of depression, expressed up-hierarchy aggression is reduced whereas expressed down-hierarchy aggression may be increased. In this paper we present briefly the derivation of the prediction from the hypothesis; then we look at the literature to see whether existing studies on the expression of hostility in depression can refute or confirm our prediction; then we describe a series of cases which were studied from the point of view of the prediction; and finally we discuss the problems likely to be encountered in making a more rigorous test of the hypothesis.

Derivation of the prediction

The function of ritual agonistic behaviour is to convert a symmetrical relationship between two individuals into a

relationship which is complementary for agonistic behaviour, one becoming dominant or higher-ranking and the other becoming subordinate or lower-ranking. In the terminology of Gregory Bateson and his colleagues in Palo Alto,^{8, 9} the subordinate accepts the definition of the relationship provided by the one who becomes dominant. Such a definition may be offered in many different ways. It may be offered physically by threat or attack, or it may be claimed in words, or it may be insinuated subtly by implication. Since the asymmetry of human relationships is more complex than mere dominance and submission, we will use the term Definer for the one who imposes his definition on the other, and the term Acceptor for the one who passively accepts the definition of the other.

The allocation of roles between Definer and Acceptor may occur without argument at the beginning of a relationship, as when a protege signs on with a mentor or when for any other reason there is an obvious disparity in rank between the two; or the allocation may be the result of some sort of mutual negotiation, such as a fight.

In a symmetrical relationship, an offered definition by one party elicits an alternative definition from the other, just as attack elicits attack, so that there tends to be an escalating level of hostility, as in an arms race, and the relationship is unstable. In a complementary relationship, an offered definition by the Definer elicits acceptance of the definition from the Acceptor, just as attack by a dominant elicits not attack but escape or submission from a subordinate; and a display of acceptance by the Acceptor means that the Definer needs to define less, in the way that a display of submission by a subordinate reduces the expression of hostility by a dominant. Whereas in a symmetrical relationship, a signal elicits "more of the same" from the other, in a complementary relationship a signal elicits "less of the same" or "something different" from the other, and this makes it stable. The ability to form complementary relationships is probably a necessary condition for living in groups.

The analysis of complementary relationships may be facilitated by the introduction of a self-concept called Resource Holding Potential (RHP) as a hypothetical

construct used as an intervening variable in the calculations. RHP is a term derived from behavioural ecology and is a measure of the fighting capacity which an individual can mobilise to defend his resources.⁴ We have adapted this term for use in psychology as an alternative to less well defined terms such as ego strength and self confidence.² RHP consists of a substantive component such as material resources and allies, and a ritual component which is conferred and taken away by others; it also has an endogenous component which reflects mood. Thus RHP can be lowered by loss of resources or allies, by receipt of hostility from others, and by endogenous lowering of mood. The relation of the variables is such that receipt of hostility (which is not returned in full measure) lowers RHP, and lowering of RHP (beyond certain limits) triggers a depressive state, part of which consists of a further lowering of RHP. In systems terms the relation between RHP and depression is similar to that between the value of a currency and devaluation. Outside scepticism of RHP (value) leads to hostility (selling) by which RHP (value) is reduced from outside in a manner which escalates to the end-point of depression (devaluation), in which RHP (value) is reduced from within.

The main "output" of RHP is reflected in the decision to attack or flee/submit. This involves comparing "own RHP" with "other's apparent RHP" to give "relative RHP". To take the simplest case, it may be obvious that "own RHP" is superior to "other's RHP" in which case a judgement of "favourable relative RHP" is made, and then (assuming the context is an agonistic one) the individual attacks. If, on the other hand, "own RHP" is clearly less than "other's RHP", a decision of "unfavourable relative RHP" is made, and the individual flees or submits. We can now define relationships in terms of RHP. A symmetrical relationship is one in which both parties make a judgement of "favourable relative RHP" and are therefore both oriented to attack, whereas in a complementary relationship one of the two makes a judgement of "unfavourable relative RHP" and is therefore oriented to flight or submission. In a complementary relationship the Definer signals that he has made a decision of "favourable relative RHP" by attacking, or offering a definition (which are both "catathetic signals"); whereas the Acceptor

signals that he has made a decision of "unfavourable relative RHP" by submitting, or accepting the offered definition without argument (both of which are "anathetic signals"). It is the perception of favourable relative RHP, plus the evidence that the other has accepted the role of Acceptor, that confirms the role of Definer, and enables the Definer to decide that the difference in RHP is sufficient (i.e., the "confidence-gap" is large enough). The Definer then stops attacking (and any Definition statements are seen by both parties as redundant) and the relationship can switch from the agonic to the hedonic mode through a process of reconciliation.

An attempt at mathematical formulation

The difference between a symmetrical relationship and a complementary relationship can be expressed, somewhat crudely, in the following equations. In a symmetrical relationship:

$$H_2 = R_2H_1 + RHP_2$$

where H_1 and H_2 represent the amount of hostility expressed by the 2 individuals, R_1 and R_2 are constants which represent the retaliatory tendency of each individual, and RHP_1 and RHP_2 represent relative Resource Holding Potential², which roughly expresses the degree to which each individual feels more powerful than the other. It can be seen that each individual's hostile behaviour increases the more he is attacked by the other and the more confident he feels.

The system escalates until some change occurs in the equation, and the simplest change is a change in the sign of the terms, to those we have suggested as the basis of the complementary relationship. In a complementary relationship:

$$H_D = R_D H_A - RHP_D \qquad H_A = RHP_A - R_A H_D$$

where H_D and H_A represent the hostility expressed by the Definer and Acceptor respectively, etc. The Definer increases his expression of hostility if he is attacked, but reduces it if he feels confident (the Acceptor then being no threat). In contrast, the Acceptor reduces his expression of hostility if he is attacked, but increases it if he feels confident enough to challenge the position of the Definer.

It can be seen from these equations that a drop in RHP has the effect of increasing the hostility expressed by the Definer to the Acceptor, whereas it reduces the hostility expressed by the Acceptor to the Definer.

A less mathematical derivation

Paraphrasing the above, we can say that the function of hostility is to create and maintain confidence gaps within couples. If a husband is "one-up" on his wife, he feels more confident than she looks, she feels less confident than he looks. The bigger the gap, the less hostility is shown. If for some reason (such as the wife going into therapy, or the husband getting a bad time from his boss) the confidence gap narrows and the husband becomes insecure about his one-up position, he "puts her down", using sarcasm or criticism, or possibly even verbal or physical abuse. If she sees him as less confident, or feels more confident herself, she is likely to say to herself "Why should I put up with that from him?" and she asserts herself by "answering back". Then if the husband feels more confident or he sees his wife as being depressed and lacking in confidence, he has no need to put her down any further, the confidence gap being sufficiently large, and he refrains from hostility. When he does criticise or abuse her, she lacks the confidence to answer back. Thus, if depression occurs in the dominant spouse the confidence gap is reduced and the hostility of the depressed spouse increases; if depression occurs in the subordinate spouse the confidence gap is increased and the hostility of the depressed spouse is reduced. We can talk interchangeably of a confidence-gap, an RHP-gap or a control-gap. The gap is monitored by the Definer who ensures that it is sufficiently large to ensure that he (or she) is comfortable.

Testing the hypothesis

It follows from the above argument that, other things being equal, when a (one up) Definer gets depressed his expressed hostility to the (one down) Acceptor should increase, whereas when an Acceptor gets depressed, his expressed hostility to the Definer should be reduced. Our first attempt to test this

hypothesis consisted of a review of previous studies of the relation between depression and hostility.

Depression and hostility

The relation of hostility to depression has been a subject of debate since Karl Abraham in 1911 formulated depression as aggression turned inward against the self.¹⁰ Early studies showed that aggression was reduced in depressed patients, as might be predicted from Abraham's hypothesis. However, more recent studies have failed to confirm these early findings, probably because the subjects were out-patients with less severe forms of depression. In fact, the relation between depression and aggression has been the subject of considerable debate.¹¹ Gottschalk et al.,¹² used verbal samples to generate scales which measured "hostility inward", "hostility outward" and "ambivalent hostility" (the last measured hostility directed by others to the self); in a series of psychiatric patients they found that ratings of depression showed a low positive correlation with "hostility inward" and a low negative correlation with "hostility outward". Using the same scales, Gershon et al.,¹³ confirmed the correlation between depression and "hostility inward" but found a zero correlation between depression and "hostility outward". Fernando¹⁴ and Millar¹⁵ used Foulds' Hostility and Direction of Hostility Questionnaire,¹⁶ which is mainly concerned with distinguishing between Hostility-In and Hostility-Out. Cochrane¹⁷ used a projective test, the Object Relations Technique, in which the subject identified both agent and victim of aggressive acts, but there was no measure of their relative rank, or of their rank relative to the patient.

Weissman et al.,¹⁸ compared a sample of depressed women with a control sample and found no difference in overall "hostility outward", but the depressed women showed more hostility to close relatives and particularly to their children and less hostility to distant relatives; data for hostility to husbands were not presented separately and dominance relations were not determined. Hooley et al.,¹⁹ confirmed work by Vaughn and Leff. That

depressed patients were more likely to relapse if their spouses expressed critical comments about them to the investigators, but again in neither study were dominance relationships within the marriage considered.

In studying communication between depressed patients and their spouses, McLean,²¹ found that items which were received as hostile were usually not recognised as such by the sender. As an example he gives the statement "You'd feel better if you didn't weep so much". This was intended as a constructive comment but was perceived by the recipient as criticism. It is of interest that in McLean's study 61 % of the communications between spouses were rated by the recipient as hostile.

In summary, apart from an increase of hostility to their children by Weissman and Paykel's depressed women, we can find no evidence to bear on our hypothesis from published data. This is because the studies reported have not included as a variable! the relative rank of the patient and the object of the hostility.

A clinical test of the hypothesis

The relationship most available for the psychiatrist to study is the marital relationship and therefore we formulated the hypothesis in terms of the expression of hostility within marriage. It is almost folk knowledge that a man gets depressed at work after receiving criticism from his boss and comes home and takes it out on his wife. This is in accord with ethological ideas on aggression redirected down the hierarchy, the only difference being that the boss and the wife occur in different social environments. However, aggression is not redirected up the hierarchy, so what happens to the man who is subordinate to his wife? Folk knowledge tells us that he takes it out, not on his wife, but on the dog, the children the furniture or preferably the firewood. Our hypothesis states: in those marriages in which the husband and wife exist in a complementary relationship the onset of a depressive episode in the dominant

spouse (the Definer) causes an increase of expressed hostility to the marriage partner, whereas the onset of a depressive episode in the subordinate spouse (the Acceptor) causes a reduction of expressed hostility to the marriage partner.

Method

During a six month period I screened the patients referred to me by general practitioners and selected those patients who were currently cohabiting (with the same partner for at least two years) and who were undergoing a depressive episode whose onset post-dated the commencement of cohabitation (regardless of the actual reason for referral).

These patients were interviewed together with their spouses and separately and were rated on the following two variables:

1. Patient is:
 - a. Definer b. Symmetrical to spouse c. Acceptor.
2. Expressed hostility to the spouse since the onset of the depressive episode is:
 - a. Increased b. Unchanged c. Reduced.

The observations were made in a clinical setting in the course of normal clinical work and therefore it was not possible to make any assessment of the reliability of the measures used. Although there was more than usual exploration of marital relationships and expression of hostility this was within the range of normal history taking and was relevant to patient management and therefore no informed consent was sought, nor was permission obtained from the hospital ethical committee.

Results

Of the 86 patients referred during the 6 month period 22 did not keep the appointment and of the remaining 64,28 were either unmarried or had been cohabiting with the current partner for less than 2 years. Of the remaining 36 patients 21 were judged to be suffering from a depressive episode which had started since

the marriage. In four cases it was not possible to interview the spouse, but these cases have been included. In only three cases was there no change in hostility, and these were all accepting wives who showed no hostility to start with; they have been included in the "hostility reduced" column. The results for the 21 couples are given below:

Patient	hostility increased		hostility reduced	
	male	female	male	female
Definer	2	1	0	1
Symmetrical	1	2	1	4
Acceptor	1	0	4	4

Combining the data for husbands and wives into a 2 by 2 contingency table of Definer/Acceptor by hostility increased/hostility not increased, the results just fail to support the hypothesis at the .05 level of probability (chi square with correction for continuity = 2.73, p = .0984; Fisher's exact test, p = .0517).

The results are subject to observer error in that the same person evaluated both complementarity and hostility with full knowledge of the hypothesis. In addition, there is the problem of circularity of reasoning because it is difficult not to take expressed hostility into account when judging complementarity, and although the comparison of complementarity applied to the situation before the onset of the depression, whereas the change in hostility applied to the period after the onset of the depression, in practice it was not always easy to discriminate between the two time periods. We regard this very much as a pilot study, in which the clinical details are likely to be more valuable than the statistical result.

Clinical details

Of the two defining husbands whose hostility was increased, one was referred because he had been charged with sexual abuse of his step-daughter; he was a primitive, chauvinistic man who treated his wife

like a chattel and frequently beat her up; he was depressed because of unemployment due to physical disease. The other male patient came because his wife had threatened to leave him on account of his violence to her which had made her terrified of him; he was depressed because his employer had required him to do work which he considered too menial. These two cases accord with our previous experience that men who take their depression out on their wives with physical violence are not likely to come spontaneously for treatment.

One defining husband had never shown any hostility to his wife and when he became depressed he became less supportive in terms of praise, encouragement, compliments and interest in her activities, but he did not express hostility.

The defining wife whose hostility was increased appeared to be depressed because of aggravation from her mother, to whom she related as Acceptor, and her hostility to her husband presented as premenstrual irritability.

Three of the accepting husbands whose hostility was reduced were depressed in relation to work, and their behaviour at home was characterised by social withdrawal. One spent most of his time in bed, one retired to the garage and the other was described as "going quiet". None of them had ever been very assertive at home. The fourth had been Definer in the early days of their marriage and had been violent to his wife on many occasions in the context of morbid jealousy; three years ago they joined a sporting club where, much to his horror, his wife excelled at the sport and was chosen for the club team; he suffered excruciating pain when she went off to play mixed doubles in away matches, but instead of attacking her he resigned from the club, spent his spare time alone at home, and soon became too depressed to go to work.

The accepting wives whose hostility was reduced or absent were dominated creatures who were stuck in unhappy marriages, constantly exposed to "angry, controlling behaviour" as described by Hauck.²²

The accepting husband whose hostility was increased is of particular interest. He had married two dominant women; during his marriage to the first wife she had a son by a man of different race. This son was now nine and although the racial difference from his parents was obvious he had not been told about his parentage. Although his second wife was faithful and kind, he felt excluded by her close relationship with his stepdaughters, and he was depressed because he had avoided approaching his first wife to discuss how to break the difficult information to the son. As part of his depressive syndrome he started having attacks of expressed hostility at home which he described as follows: "Like when you're a kid, you have a tantrum, you know you're not going to win You're on the roller coaster, there's no way of stopping (thumps table with fist) I take myself away, hurt -I go outside." His wife was frightened by these outbursts but she did not perceive them as a threat to her dominant position in the family.

One accepting wife who was also bossed by her mother and who had not expressed hostility was able, with the help of therapy, to obtain a part time job where she formed a close relationship with her female employer who was going through a divorce. This lady gave the patient a lot of support and self-confidence: so that she was able to stand up to her mother in a non-aggressive way and completely redefine the basis of their relationship. Having done this her depression often years duration cleared up and she decided to divorce her husband and at the time of writing is living in a symmetrical relationship with him until the house is sold. He is bewildered by what has happened and hopes that she will soon "come to her senses".

In general, patients and spouses found it very difficult to give the details of a hostile interaction. The episodes were first described in such terms as "Then he lost his cool" and it often took many questions to discover what actually happened or was said. The facts often seemed very banal in comparison with the emotion accompanying the general description, and gave us the impression that the subject had been affected by the ritual aspects of the hostility rather than by the actual words or actions.

Assessment of Marital Asymmetry

Research studies

A lucid and detailed review by Gray-Little and Burks,²³ emphasises the difficulty of measuring the power relationships in a marriage. Three methods have been used:

1. Reporting of decision-making processes by the marital partners. Most studies divide the marriages into husband-dominated, wife-dominated and egalitarian; some divide the third category into syncretic (in which decisions are made jointly) and autonomic (in which some decisions are made by the husband and others by the wife).
2. Observations of couples performing tasks, or interacting in some other way. The number of directive statements, and the proportion obeyed, give a division into husband-led and wife-led marriages.
3. Assessment of relative resources, such as age, popularity, income and capital, socioeconomic status of family of origin.

As yet, there is no valid instrument for assessing complementarity in a marriage. What is very much needed is a study which will show a correlation between complementarity as assessed by self report inventories and complementarity as assessed by direct observation of the couple interacting together. A step towards this might be a self report instrument which would show reliability between husband and wife.

Clinical studies

Clinicians have found it possible to assess the direction of complementarity in marriage and to distinguish complementarity from symmetry. Lidz et al.,²⁴ identified "marital skew" in which the husband was subordinate to the wife, and they distinguished this from "marital schism" in which the relationship was symmetrical and antagonistic; both these states in the parents were associated with schizophrenia in the children. Cohen et al.,²⁵ found marital

skew in the parents of manic-depressive children, in that there was "a rigid splitting of parental roles: the mother was usually seen as the decisive, orderly and prestigious parent, the father as a rather weak outsider and as despised (overtly or covertly) by the mother."

Stierlin et al.,²⁶ found marital schism among the parents of manic-depressive children, in that "we frequently observed a symmetrical struggle in which each parent seemed intent to devalue and hurt the other."

Other family therapists have found disorders in the children of parents who do not fight openly but nevertheless fail to define the relationship as either symmetrical or complementary.^{27,28} This work has stressed the importance of a clear and unambiguous hierarchy for family functioning. Also pathological for the children are symmetrical marriages in which one of the children gets "triangulated" into the marital power struggle in what Haley,²⁹ has called a "cross-generational coalition". Some family therapists have associated depression with the "one down" position in a marriage.^{29,30}

Who defines the relationship?

The concept of dominance in dyadic relationships has been subject to criticism over the past twenty years, and ethologists have even suggested that among primates it may be an artifact of captivity.³¹

The concept depends on the fact that certain variables are stable overtime and are consistently correlated with each other. The dominant member of a pair takes precedence over the other, receives attention from the other, expresses hostility to the other, displaces the other and has gait and posture which are upright and "jaunty"; whereas the subordinate is slouched and furtive, and avoids the other. More recent studies have supported the dominance concept,^{32, 33} and it may well be that the previous failure to find consistent dominance relationships was due to the observation of groups operating in the hedonic mode when dominance relationships are minimally expressed.'

However, the above considerations, together with problems which arise due to human language and conceptual thought, incline us to avoid the word dominant, which has the added disadvantage of carrying overtones of dominating behaviour. Hinde,³⁴ who uses the terms higher-ranking and lower-ranking, has pointed out that, due to delegation, one can get an infinite regression in the determination of rank order. For instance, the wife may make the decision about where they should go on holiday, but the husband may have told her to choose; but, again, the wife may have delegated to the husband the decision about who should choose; and so on, ad infinitum. The nearest one can get to ultimate power is the definition of the relationship.

For instance, a man who says to his fiancée "I insist that we both have equal power in our marriage" is giving a unilateral definition of the marital relationship, and thus assuming the dominant role. This is an example of a "double bind", in which the form of the statement invalidates the content. It is interesting that the only way the fiancée can get out of it (other than by metacommunicating) is by offering a "counter double bind" with a statement such as "On the contrary, I insist that you adopt the dominant role in our marriage", by means of which she herself makes a bid for the dominant role. It does not matter what the actual definition of the relationship is; the one who makes the definition has the power, the one who accepts the definition (even of himself in the "dominant" role) concedes the power. Can the power to define a relationship be delegated? In practice this does not appear to occur, and therefore in talking of Definer and Acceptor we feel that we have got as near to the ultimate distribution of power as is necessary for our hypothesis.

Assessment of Hostility towards Spouse

There is no valid instrument for assessing the expression of hostility towards a particular person. In thinking about hostility expressed in a dyadic relationship we have found it helpful to avoid the terms hostility and aggression, which are not technical terms, and to speak instead of catathesis or catathetic signals (or messages, or behaviour). A

catathetic signal is defined both according to sender and according to receiver.³⁵ For the sender it is a signal of favourable relative RHP, and it says "I have assessed your fighting ability in relation to my own, and have decided that mine is superior; I therefore require you to submit to me or to leave the field, otherwise I shall continue to attack you". For the receiver it is a signal which lowers RHP unless it is returned in full measure. In common parlance, it is a signal which threatens to "put down" the other person, who can either retaliate or "swallow the insult" (and by doing so lose RHP). One advantage of the term catathesis is that it enables us to exclude a number of forms of hostility (such as temper tantrums, homicide and running amok) which are not related to ritual agonistic behaviour, and at the same time to include some types of behaviour which do not appear hostile but are effective in causing or maintaining rank asymmetry (such as criticism, patronising behaviour, unilateral relationship definitions and the taking of unnegotiated precedence). It also facilitates cross-species comparisons in that we can talk about catathetic behaviour in animals and man without fear of either anthropomorphism or of reducing man to the level of animals. The following is a list of various forms of catathetic behaviour which are used by human beings:

1. Non-verbal

a. Non-contact

threat stare
 curled lip
 raised fist, wagging finger
 obscene gesture
 taking precedence
 omission of expected deference or attention
 patronising behaviour (e.g. tipping)

b. Contact

pushing, hitting, punching
 chasing
 corporal punishment of children, servants, etc.

2. Verbal

statement of superiority
threat of hitting, wounding or killing
unilateral definition of relationship
criticism, disapproval
sarcasm
insult, insult to mother or other allies
use of swear words
lying
omission of expected deference or attention
patronising statement
ordering, commanding
some forms of boasting

It can be seen how the use of words adds considerably to the repertoire of catathetic signals, both in directness and elaboration, so that one can have, at one extreme, a bald verbal statement of superior relative RHP (such as "I am better than you"), and at the other, the mutually abusive singing competitions of Eskimos which raise the expression of catathesis to an art form.³⁵ The expression of competence or achievement, as in art or literature, is not a catathetic signal but a signal of absolute RHP (rather than relative RHP). For a detailed discussion of the relation of RHP to catathesis and anathesis, see Price.³⁵

In one of the few experimental studies of conflict in marriage, Raush et al.,³⁷ were able to precipitate exchanges of catathetic signals (quarrels) in a proportion of couples, and they noted the repetitive, stereotyped quality of the verbal material expressed at such times; the descriptions of the exchanges were reminiscent of ethologists' descriptions of ritual agonistic behaviour in animals.

Choice of Couples

It may well be that depressed patients attending a psychiatric clinic are not the best subjects for study. Any "blind" study adopting validated "instruments" would require to be treated as an experiment to which the patients and spouses would have to give informed consent, and the procedures involved would not be a good way of commencing therapy with such patients.

One alternative would be a study of patients attending a specialised clinic for premenstrual depression. Such patients attend frequently, are sometimes in normal health while attending, and might be expected to be more sympathetic to research. We would, of course, predict that Definer wives would express premenstrual hostility to the husband, whereas Acceptor wives, if they express hostility at all, would express it only to the children (probably at times the husband is not present). There would also be a possibility of directly observing interaction between the spouses both during the depressive periods and during periods of normal mood.

Conclusions

We have presented suggestive but not statistically significant evidence that the expression of hostility by depressed patients is affected by the dominance relationship between the patient and the object of hostility. Both the conceptual issues underlying the hypothesis and the methodological problems of measuring the relevant variables are such that we feel it appropriate to present the findings at this stage, particularly as more stringent work might be a considerable imposition on patients attending an out-patient clinic. Therefore a stage of peer review seems appropriate before more experimental work is done.

In spite of the tentative nature of the results we claim some success in using an ethological frame to approach a problem of human psychopathology, an activity which has been regarded with considerable scepticism by commentators too numerous to document. The inherited mechanisms of ritual agonistic behaviour are so widespread among vertebrates that it would be most surprising if they were not operating in competitive human interactions, particularly those within the family. It is well known to ethologists that for any primate to threaten or attack another member of its group is a matter which depends for its result most importantly on the relative rank of the attacker and attacked. The fact that relative rank has not been taken into account hitherto in studies of the expression of hostility by depressed patients suggests that there is still considerable scope for the application of ethological ideas to research in psychiatry. c8

ARTICLE:

A Book Review by John S. Price

Emotions in Command: A Naturalistic Study of Institutional Dominance **by Frank K. Salter**

Salter, F. K., *Emotions in Command: A Naturalistic Study of Institutional Dominance*, Oxford: Oxford University Press, 1995.

This book is outstanding both for the original observational work by the author and for the scholarly review of the extensive multidisciplinary literature. The author describes his observations of the proceedings of courtrooms, committees, legislatures, parade grounds and the lobbies of night clubs where doormen interact with patrons who need to be refused admission. He addresses the question of whether the hierarchical behaviour seen in human organisations has any connection with the dominance behaviour seen in animals and in informal human groups:

My hypothesis was no more specific than the proposition that command-giving and -receiving would be constructed in significant part from behaviours belonging to the dominance repertoire, and that these behaviours would be manipulated by a dominance infrastructure. A corollary is that variations in command behaviour, when not due to individual differences, are caused by variations in dominance infrastructures, (p. 406).

In case this hypothesis seems at all obvious to readers, it is well to consider the climate of opinion which preceded the ethological view. Here is a statement from an authoritative textbook of social psychology:¹

Superficial resemblances between primate dominance hierarchies and human status systems have fostered inappropriate assertions that they serve the same functions and have the same origins. Dominance hierarchies among primates are based on biological states. Whereas such hierarchies among primates are determined by size, strength, sex, and

biochemical factors, social structures among men are determined by economic wealth, social skills, geographical location, and other nonbiological factors. In addition, human status hierarchies must be rationalised and legitimised if they are to be effective in regulating behavior. Among other primates a high position in a dominance hierarchy serves strictly selfish interests. Men award status to group members in exchange for contributions to group goals. Hence, biological factors are prominent in determining dominance hierarchies among primates, while social factors are major contributors to the formation of human status systems. There is no evidence to support the belief that men, like other primates, are genetically programmed to develop relations of super- and sub-ordination, (p. 496).

Salter's view is that in human formal hierarchies culture has moulded an innate disposition to dominant and subordinate behaviour. The moulding is effected by what he calls the "dominance infrastructure", which consists mainly of sets of rules, but is supported by spatial arrangements, differences in dress, etc.

His review of the literature seems to me to be not only extensive, but very comprehensive. It extends over sociology, social anthropology, psycholinguistics and psychology. As old readers of ASCAP may know, I have been struggling with the concepts of catathetic signals and RHP-gap, and here they both are under different names, one in the sociological literature and one in psycholinguistics.

Catathetic signals have been defined as signals which reduce RHP in the recipient unless returned in full measure. And here they appear in Brown and Levenson's theoretical scheme as Face Threatening Acts (FTAs).²

Acts which intrinsically threaten face are labelled 'face-threatening acts' (FTAs). Directives are one class of FTA, imperatives or commands being the most threatening type An FTA's strength varies inversely with risk of lost face. (p. 77)

Face is a concept popularised by Erving Goffman.³ Here is Salter's account of Brown and Levinson's theory:

Face [is equivalent to] status. Face is a public self-image that everyone wants to claim, consisting of negative face and positive face. The former is "the basic claim to territories, personal preserves, rights to non-distraction", which amount to freedom of action. Positive face is a positive self-image, including the desire that others approve of this self-image. ... face is associated with pride, embarrassment and humiliation. According to these assumptions, commands and requests are FTAs against the addressee's negative face, since they threaten to impede freedom of action. Similarly, threats and warnings are FTAs.... Positive face is threatened by negative evaluations (criticism, expression of contempt or ridicule, contradiction and challenges), and by actions that indicate the speaker does not care about the addressee's image (irreverence, raising dangerously emotional topics, blatant non-cooperation such as interruption and non-sequiturs, and using inappropriate address terms, (p. 78).

There is no reason why the concept of face cannot replace that of RHP/SAHP, if it enables us to communicate across disciplines. When we talk to behavioural ecologists, we can talk of RHP, which is a concept originated by them. Likewise in talking to psycholinguists, we can talk of face.

Indeed, we could use the term face to rename the somewhat cumbersome term "RHP-gap", which refers to the difference in RHP between two individuals occupying adjacent ranks in a social hierarchy (as seen by the higher-ranking one). It was suggested that the RHP-gap is maintained by the behaviour of the higher ranking person in a homeostatic manner, so that if the gap is narrowed, either by loss of RHP by the higher-ranking, or gain of RHP by the lower

ranking, the RHP-gap is restored by the emission of catathetic signals from the higher-ranking to the lower-ranking person. (This is important for therapy, because one reason for the rise in RHP in the lower-ranking person is response to therapy, and if this improvement is countered by the above homeostatic process, therapy is likely to be unsuccessful.) The RHP-gap appears in the writing of the sociologist Randall Collins,⁴ who has a concept allied to RHP which he calls "emotional energy" and likens to confidence. Here is Salter describing Collins' theory:

Formal power is converted into dominance relations through the rehearsal of command and obedience by bosses and subordinates. The conversion is brought about by increases and decreases in emotional energy caused by enacting superior and submissive roles, (p. 54).

But Salter is not happy with Collins' concept of emotional energy:

Unfortunately, the dominance mechanism is operationalised as flows of 'emotional energy' (p. 999). Although defined to mean degree of social confidence, the precise meaning of the energy concept is unclear, since the analogy with confidence is not consistently maintained, (p. 54)

If we replace the concepts of confidence, RHP and emotional energy by that of "face", we can talk of a "face-gap" to describe the difference between a boss and a subordinate. The boss is programmed to maintain his face a certain degree above that of his subordinate, in other words, to maintain a constant face-gap. Here we come to a major difference in predictions. Our own theory predicts that if the face-gap is reduced for any reason, the boss will try to restore it by the emission of face-threatening acts (FTAs). But Collins comes to the opposite prediction. Here is Salter quoting Collins:⁵

"Ritual interactions reinforce dominance and subordination, whether in routine command-giving, or in simply referring to others' prerogatives and property. The mark of dominance is confidence, operationalised as emotional energy. This energy falls rapidly if

one is repeatedly rejected or subordinated. Conversely, a boss who loses emotional energy due to ill health or family problems will tend to dominate his subordinates less, increasing their confidence levels (p. 1007)." (p. 56\7) (*My italics*).

Fortunately, this is an empirical matter which can be resolved by observation.

I have spent some time on two instances in which the material collected by Salter impinged on my own concerns, but there is very much more in this book, which is a landmark in the application of ethological methods to human social organisation. It should form the launch pad for a new adaptive radiation in organisational ethology. Apart from the research prospects discussed by the author, there would be a lot of mileage in applying these techniques to the problem of status incongruence (such as when formal rank and ability do not coincide), and to the process of reprimanding and firing subordinates, and to strategies for attempting to rise in the hierarchy (even simple requests for more pay) and the effect of hierarchical bullying on the mental health of subordinates - to name but a few of many promising topics.

One factor that needs to be operationalised is the difference between routine commands on the one hand, which are accepted as normal by the subordinate and are not likely to cause distress, and, on the other hand, new types of commands which are not part of the accepted routine, and which represent a new definition of the relationship by the superior. It is these types of commands, often presented in subtle ways which are hard to resist or to comment on, which (from clinical experience) tend to induce in the recipient an involuntary subordinate strategy (ISS) to help accommodate the subordinate to increased degrees of unacceptable subjugation.

And just in case all this hierarchy is getting anyone down, the author provides a reference to a do-it-yourself manual to sort it all out.⁶ c8



HERE ARE SOME PSYCHIATRY SITES ON THE INTERNET:

UTMB Psychiatry Home Page -
-<http://psy.utmb.edu/>

Mental Health Net - Psychiatry -
-<http://www.cmhc.com/guide/pro12.htm>

World Wide Web Psychiatry Links - -
<http://www.brown.edu/Departments/Psychiatry/psychilinks.shtml>

Institute of Psychiatry Home Page -
-<http://www.iop.bpmfac.uk/>

Psychiatry Departments on the Web - -
<http://www.med.nyu.edu/Psych/depts.psych.html>

Yahoo Psychiatry Search Engine -
-<http://www.yahoo.com/Health/Medicine/Psychiatry/>

Psychiatry & the WWW Sites - -
<http://www.psych,med.umich,ed;u/web/psytimes/psychwww.htm>

**Coming soon to a
Internet Site near you - -
The ASCAP Newsletter &
The ASCAP Society
Home Page.**

**Details to be announced
later in an upcoming
newsletter.**

Homeostasis of R-Gap: Theory, Preliminary Study, and Early Results

Theory. The idea of body homeostasis borrows from the 19th century physiologists led by Claude Bernard.² Bernard's concept of interior milieu related to many body mechanisms deployed by the body to keep the water, electrolytes, oxygen and many other body constituents in appropriate functioning condition. This powerful concept for physiologists has guided within-body physiological research ever since.

The present work hypothesizes that the human brain may assess and control environmental circumstances involving other people in a way that maintains homeostatic equilibrium for the person. While this may be true for people known slightly or somewhat (strangers or work companions), we suspect that it holds most powerfully with people known well. Moreover in early attempts at study, this source of information may be easier to examine systematically.

We study interpersonal homeostasis with the mediating concept of R (resources) which indicates the resources of an individual, especially as evaluated by another or others. R-gap refers to differential resources as detected by two individuals who have known each other well. We hypothesize that people detect changes in such gaps and then work automatically to maintain the former established differential. They do this by using anathesis or catathesis. Anathesis is a compliment, a pat on the shoulder, an affirming lover's kiss; anathesis likes what the other person is doing, genuinely admires, and hoists the winning coach upon the shoulders of the appreciative team. Catathesis cuts down, as with direct scorn, destructive criticism, or a mocking laugh. Catathesis damns with faint praise; catathesis can put down directly or subtly, as when there is a difference between what was expected but not quite received.

With what we know of the importance of other people for one's well being, constancy of one's interpersonal environment may have bearings on Bernard's internal milieu as well. Myron Hofer and colleagues have determined in detail how this works out with mother-infant relationship as they have measured the importance of the female rat for the heart and gut of her developing pups.³ On the other end of the life cycle, we know from data on human mortality that increased longevity exists for men if they possess committed partners. Married men survive longer than widowed, divorced or never married males and once having had a mate is better for you than never.

The mediating concept of R derives from the concept of RHP (resource holding potential) but represents a more general quantity. The original concept indicates "fighting capacity." The more general concept is needed for human sociophysiology because there are many sources for doing well or poorly in addition to, though still including, fighting capacity. Some people are attractive and for that reason given status (rather than their winning aggressive battles; indeed, athletic ability should be part of the label for fighting capacity). Paul Gilbert has labeled social attention holding potential or power as SAHP.⁴ SAHP may be a higher brain derivative of RHP and indeed a variation of the original concept which was based on the battles of male dung beetles which were invariably settled on the basis of size.⁵ Use of a more general R recognizes that there exist many variations and permutations of RHP in humans (as well as in mammals and primates more generally).

The idea that people strive to maintain an R-gap stemmed from observations of marital couples by one of us (John S. Price).⁶ Thus, a dominant spouse typically attempts to return the gap to its former status should there be a change in the resources held by one or the other. Exemplifying

changes in R are gain or loss of health, wealth, position, allies and the like. If the change is a gain, the dominant will communicate positively so that there is a gain for the spouse too; if the change results in loss, the dominant will suppress the partner. If the gap narrows (subordinate gains in some way), the dominant will engage in put-downs; if it widens (subordinate loses), signals that would tend to enhance the partner will eventuate.

Thus R-gap theory predicts that if the subordinate gains or loses, the dominant (or person with more R whom we will designate as A) will behave so as to maintain the gap with respect to B who has less R. Less formally stated, A will be nice to B if A gains something or B loses something and nasty if A loses something or B gains.

We suspect that the formulation does not need to be limited to marital partners. An example of R-gap homeostasis other than those that exist in marital relationships stems from the movie Mullholland Falls. The setting was Los Angeles during the 1950's when covert operations hold sway. A police officer (B) answers to his chief (A) who has set up special unit of covert activities which B leads. B suffers an R reduction with respect to A when the FBI comes to L.A. to intervene with a murder case — murdered was a woman formerly B's lover as well as the lover of a highly placed man in the Atomic Energy Commission; hence, the intervention stemmed from the highest FBI levels. The FBI agent communicates threat when he alludes to knowledge of B's being connected to the woman. The chief registers the putdown, but is nevertheless positive to his subordinate after the agent's departure, breaking out a bottle of Scotch to share a drink. B suffered a reduction in

group-conferred R via the visit of the FBI agent, but A enhanced his subordinate's R by an anathetic boost.

We present the original form of the hypothesis in the following diagram. The shaded cells would be filled if situations possessing the following features exist: two people A and B have a definite invested relationship six months or more in length; there is a clear difference in their overall R. Something happens that either A or B has a change in R. If the non-shaded cells are the ones that are filled the result would be contrary to the hypothesis. (The exception to the above symmetrical hypothesis (cross-hatched cell) was contributed by Winston Pineda, M.D. a resident in psychiatry at UTMB. He pointed out that if B's increase in R results in A's increase also, then A is likely to be anathetic. For instance, if a student gains credentials (narrowing the gap with his teacher), a teacher or patient/client is likely to be complimentary because the teacher or treater too gains in stature having produced success; in fact, then, the gap was not narrowed but maintained homeostatically.) In summary, we hypothesized that A will emit signals that will tend to maintain the same R gap, i.e., anathesis if A is R up, B is R down, or B is R up and this adds to A's R; catathesis occurs if A is R down or B is R up.

We call the below exchanges fluctuations in **interpersonal R**. This terminology is altered from animal agonistic encounters where a similar concept has been previously labeled ritual RHP. We have identified eleven additional sources of R. They are not mutually exclusive: thus substantive R may overlap with territorial R if one owns a house or castle, substantive R may contribute to mate value, differentially depending on culture.

Direction of interpersonal signals from A to B	Non-interpersonal R change (ΔR) in previously constant asymmetric relationship (R-gap)			
	A Δ R+	A Δ R-	B Δ R+	B Δ R-
Anathetic ($\uparrow R$)				
Catathetic ($\downarrow R$)				
No change (no ΔR)				

The twelve kinds of R are listed in the following table with brief definitions and examples:

Varieties of R		
R-source	Definition	Example
Substantive	Financial well being, education & training	Credit card rating, ability to pass examinations
Territorial	Possession of place	House, office, place in line
Individual storyline	Self-conviction about place and standing: trait	Mother felt offspring meant for high things & offspring believes so lifelong
Mate value	Reproductive capacity	Sexiness, age factors
Social attractiveness	Social attention holding potential/power	Social poise, friendliness gregariousness
Allies	People able & willing to aid	Friends, family, aides
Group-conferred	In-group, out-group status, ranking, formal heirarchy	Memberships, honors, demerits
Thymic	Self-conviction about place and standing: state	If depressed, show less R If manic, show more R
Fighting ability/athletic	Resource holding potential	Speed, strength, skill, coordination
Somatic health	Presence or absence of physical handicaps/illness	No diseases vs the extent to which illnesses interfere with function
Moral high ground	"Being in the right" from culture & situation values	Righetousness means feeling empowered
Interpersonal	Signals to elevate or diminish	Anathesis/catathesis

Proposed study. We assume that fictional, biographical or historical accounts of relationships will be representative of relationships more generally. We examined vignettes if they had three components:

1.

An established relationship of 6 months or more that involves an asymmetric pairing in that one partner is clearly experienced by both partners as having more R than the other (A=higher R; b=lower R).

2.

There is a change in R (not consequent to interpersonal R exchange between the two of them) for one partner, either A or B, in the following possible combinations:

- A gains (AR+)
- A loses (AR-)
- B gains (B R+)
- B loses (BR-)

3. How the partner with greater R behaves with the other can be registered by the reader within the vignette. That is, does A emit to B anathetic or catathetic signals, or signals that have neither valence?

Preliminary Study: The following are three vignettes from a fairy story, an anthropological account, and a short story. We had also preliminarily selected a vignette from a biography which we had to reject after discussion because the relationship of ruler and subjects was not that of a close personal relationship of six months or more.

In each case the incident chosen was the first vignette within the narrative that fit the above criteria. The conclusions were jointly agreed on.

A. *Russian fairy tale:* "A brave soldier, while serving in his regiment, received a hundred rubles from home. The sergeant got wind of it and borrowed his money from him. When the time came to settle the debt, instead of paying it, he gave the soldier a hundred blows on his back with a stick, saying: "I never saw your money. You invented the whole thing." "7

1. *Was there an established relationship of 6 months or more that involves an assymetric pairing in that A is clearly experienced by both A and B as having more R than the other?* Time is not specifically designated, but we will assume positive; certainly there is an established relationship in which the sergeant had group-conferred greater R than the soldier.

2. *Was there a R for A or B?* The soldier B clearly gained substantive R in form of 100 rubles.
3. *Directionality, if any, of interpersonal signals:* Catathetic. The sergeant took the B's money and kept it, eventually disclaiming the original agreement that it was a loan and in addition confirming his dominant status with a beating.

In narrative summary, the sergeant is dominant and the soldier subordinate according to *group-conferred membership R*. A change in R occurred with the infusion of the 100 rubles to the soldier. There was a series of catathetic signals emitted by A: first, he "borrowed" the 100 rubles; later after not restoring them and after B emitted catathetic signals of the nature, "give the money back", A emitted even more emphatic catathesis with disavowal of debt and the beating. John S. Price noted that A needed to express additional catathesis because he had lost *moral high ground R* with the outright theft.

8. *Anthropologist report of a Yanamami husband and wife:* "Ohimi arrived ... accompanied by her husband and his elder brother. She had been living with her parents-in-law for a long time, and she wanted to see her mother and brothers again. The family reunion was a happy one.... All went smoothly, until one day the husband's brother lured Ohimi into the garden to make love. It was not the first time he had acted this way; she put up resistance for appearances' sake, then she yielded. The husband had noticed that they were both absent. He was usually tolerant, for it is accepted among the Yanamami that a man have access to his brothers'

Direction of interpersonal signals from A to B Sergeant -Soldier	Non-interpersonal R change (AR) in previously constant asymmetric relationship (R-gap)			
	A Δ R+	AΔR-	BΔR+	BΔR-
Anathetic (↑R)				
Catathetic (↓R)			+	
No change (no Δ R)				

wives; but that day he was perhaps hurt in his pride because he was in a foreign group, and he wounded Ohimi in the shoulder when she returned."⁸

1. *Was there an established relationship of 6 months or more that involves an asymmetric pairing in that A is clearly experienced by both A and B as having more R than the other?* Though not mentioned, they were probably married for at least six months. Though not completely discussed, we estimate that it was an asymmetric relationship.
2. *Was there a R for A or B?* A seems to have lost *territorial and group-membership R* by not being in his own village whereas B seemed to have gained R.) She seems to have gained *group-membership R* by being in her own village.
3. *Directionality, if any, of interpersonal signals:* Catathetic. He injured her shoulder impairing her health and lessening thereby her *somatic health R*.

In narrative summary, the pair is husband (A) and wife, Ohimi (B). He had a diminished R from group-membership (and she had increased) for a narrowed R-gap. He therefore seemed to be more than usually sensitive to a perception of a still more greatly reduced R-gap induced by Ohimi's having had sex with his brother. He responded with a catathetic signal (injuring B in the shoulder and thereby reducing her somatic health R).

C. *John Steinbeck short story, "The leader of the people"*. A grandfather who had led a pioneering wagon train many years before visits his daughter, son-in-law and grandson, Jody. He tells stories told many times before which especially annoy son-in-law, who loudly expresses displeasure at breakfast in the grandfather's absence; however, the complaint is overheard by the old man who becomes depressed.

Jody had hoped Grandfather would join in a game of killing mice, but he refuses, sitting on the porch looking thin and diminished. He later tells Jody that he didn't want to bore people but hoped people would feel the excitement of the leadership responsibility. Jody mentions that he wishes to be a leader himself, but grandfather notes that westering is over and it can't be done any more.

In a last sequence, "Jody felt very sad. If you'd like a glass of lemonade I could make it for you." Grandfather was about to refuse, and then he saw Jody's face" and accepted the offer.¹

1. *Was there an established relationship of 6 months or more that involves an asymmetric pairing in that A is clearly experienced by both A and B as having more R than the other?* The grandfather had made previous visits so was well known; age and seniority (*group-conferred R*) make for the asymmetry.
2. *Was there a R for A or B?* A loses *group-conferred R* in that he became diminished on learning that his stories were not

Direction of interpersonal signals from A to B Husband - Ohimi	Non-interpersonal R change (ΔR) in previously constant asymmetric relationship (R-gap)			
	A Δ R+	A Δ R-	B Δ R+	B Δ R-
Anathetic ($\uparrow R$)				
Catathetic ($\downarrow R$)		+		
No change (no ΔR)				

appreciated. He received catathesis but from a third party (the son-in-law).

3. *Directionality, if any, of interpersonal signals: Catathesis.* A told his grandson that he would not join in B's game and that Jody couldn't be a leader himself.

In narrative summary, grandfather (A) suffers a loss of group-membership R from Carl's statement. He then emits the catathetic signal to Jody (B) that he is not interested in B's games. The second stage in this narrative occurs when his catathesis unacceptably enlarges the R-gap between them. The grandfather registers this from the look on Jody's face. He then gives Jody the anathetic interpersonal signal of accepting his anathetic offer. This restored the pre-set differential R-gap. when A noted Jody's "loss of face" and restored it by being accepting of the little boy's offer of food anathesis.

This illustrates nicely R-gap homeostasis but this latter part of the overall vignette no longer applies to the hypothesis-test as the definition was already met.

Summary: These first three vignettes from arbitrarily chosen narratives featured change in the R-gap between stably related parties. Interpersonal changed in the predicted directions, despite all representing catathesis. However, these early results on only three vignettes indicate that further work is needed before conclusions can be reached. Moreover, to us, the methodology seems appropriate. We are very interested in

ASCAP reader reactions to the study design and early results.

We have practiced on other vignettes and are now launched on a more extensive study involving 40. Both John S. Price and Russell Gardner must agree that each meets criteria.

Twenty will be chosen from the six political novels of Anthony Trollope read consecutively by both Price and Gardner. Vignettes are to be chosen sequentially and no character can be used more than once.

Twenty more vignettes will stem from completely independent sources (no two by the same author); five each will be historical accounts, biographies, myth/fiction, and political/business stories.

The interpersonal exchanges which may or may not feature interpersonal R transfer are usually recorded as quotes from the source material and then independently rated. Thus far, about twenty overall have been agreed on by both us as meriting inclusion. All of the four R situations seem to be represented. Genders, ages and relationships have varied. The tabulations, we estimate, will be interesting results in themselves. Return to future contributions for more of the developing story.

In conclusion, preliminary results demonstrate that a R-gap homeostatic mechanism might exist in the human brain such that it regulates relationships with respect to detection and management of resource fluctuations. More data needs gathering that bears on the hypothesis. c8

Direction of interpersonal signals from A to B Grandfather - Jody	Non-interpersonal R change (ΔR) in previously constant asymmetric relationship (R-gap)			
	A Δ R+	A Δ R-	B Δ R+	B Δ R-
Anathetic ($\uparrow R$)				
Catathetic ($\downarrow R$)		+		
No change (no A R)				

ABSTRACTS & EXTRACTS ...

Beahrs, J. A.: Ritual deception: a window to the hidden determinants of human politics

Hurst, L. D.: Selfish genetic elements and their role in evolution: the evolution of sex and some of what that entails

Self, D.W.; Barnhart W, J.; Lehman; Nestier, E. J.: Opposite modulation of cocaine-seeking behavior by D₁ - and D₂-like dopamine receptor agonists

Morrow, B. A.; Elsworth, J. D.; Roth, R. J.: Tyrosine enhances behavioral and mesocortico-limbic dopaminergic responses to aversive conditioning

Williams, G. V.; Goldman-Rakic, P. S.: Modulation of memory fields by dopamine D₁ receptors in prefrontal cortex

Singer, W.: Development and plasticity of cortical processing architectures

Tomkins, D. M.; Fletcher, P. J.: Evidence that GABA_A but not GABA_B receptor activation in the dorsal raphe nucleus modulates ethanol in Wistar rats.

Beahrs, J. A.: Ritual deception: a window to the hidden determinants of human politics. *Politics and the Life Sciences*, 1996;15(1):3-12

Abstract: Political leaders of all persuasions are known to make public statements of affiliative allegiance with more form than substance, and to disavow political motivations obvious to the public. Such "ritual deceptions" are better understood in the same light as social etiquette - as partly deceptive behaviors that help to bond individuals with conflicting interests. Those who are more open and honest are often punished, more for breaking unspoken rules and taboos than for the actual content revealed. The functions of ritual deception are explicated by sociobiological theory, and the process, by understanding hypnotic transactions. Political deceptions require the active collaboration of subjects, achieved through the same skills used by experienced hypnotists. Deceptive transactions are more likely to occur in internally traumatized societies, and occur along a continuum from ritual deception to overt disinformation. Examples are taken from recent American history. That the content of ritual deception is so close to full awareness suggests its value as a focal point, both for studying the hidden determinants within human politics, and for policy intervention when appropriate.

Hurst, L. D.: Selfish genetic elements and their role in evolution: the evolution of sex and some of what that entails. *Phil Trans. R. Soc. Lond. B* 1995;349:321-332.

Abstract: An individual is often considered (sometimes implicitly) to be the product of a well-functioning mutualism between its constituent genes. This however, need not be so. One consequence of sexual reproduction is that costly competition within an individual between genes that are effectively allelic can provide the conditions for the spread of suppres-

sors of such competition. The spread of both these ultracompetitive alleles (alias selfish genetic elements) and their suppressors is evidence of a 'conflict of interests' within the genome. That this conflict is a potentially important force in the evolution of genetic systems is illustrated by consideration of the problem of the evolution of sexes (alias mating types). One hypothesis holds that sexes are the result of selection on nuclear genes to coordinate the inheritance of cytoplasmic genomes (usually this means the enforcement of uniparental inheritance) so as to prevent competition between unrelated cytoplasmic genomes. This hypothesis is tested against five comparative predictions and shown to receive considerable empirical support.

Self, D. W.; Barnhart W. J.; Lehman; Nestler, E. J.: Opposite modulation of cocaine-seeking behavior by D1 -and D2-like dopamine receptor agonists. *Science* 1996;271:1586-1589.

Abstract: Activation of the mesolimbic dopamine system is known to trigger relapse in animal models of cocaine-seeking behavior. We found that this "priming" effect was selectively induced by D2-like, and not by D1-like, dopamine receptor agonists in rats. Moreover, D1-like receptor agonists prevented cocaine-seeking behavior induced by cocaine itself, whereas D2-like receptor agonists enhanced this behavior. These results demonstrate an important dissociation between D1 and D2-like receptor processes in cocaine-seeking behavior and support further evaluation of D1-like receptor agonists as a possible pharmacotherapy for cocaine addiction.

Morrow, B. A.; Elsworth, J. D.; Roth, R. J.: Tyrosine enhances behavioral and mesocortico-limbic dopaminergic responses to aversive conditioning. *Synapse* 1996;22:100-105

Abstract: Tyrosine is a precursor in the biosynthesis of catecholamines and, when administered systemi-

cally, has been shown to enhance the *in vivo* rate of tyrosine hydroxylation in the medial prefrontal cortex. Additionally exogenous tyrosine has been demonstrated to enhance the pharmacologically-induced increase in dopamine metabolism seen following administration of haloperidol or the anxiogenic-carboline, FG-7142. In this report, we examine the effect of a physiologically relevant dose of tyrosine (25 mg/kg) on biochemical and behavioral consequences of aversive conditioning. Rats were conditioned to a fear a tone by pairing it with foot-shock, so that when challenged with the tone alone, rats responded with immobility, defecation, and elevated dopamine metabolism in the medial prefrontal cortex and nucleus accumbens. When tyrosine was administered on the test day (tones alone), the rats displayed an even greater elevation of dopamine metabolism in the nucleus accumbens and prolonged immobility to the tone, compared to the saline/conditioned controls. Tyrosine did not alter mobility or dopamine utilization in the nucleus accumbens in non-conditioned controls. However, dopamine metabolism in the medial prefrontal cortex of non-conditioned rats treated with tyrosine was increased to levels similar to those in the conditioned groups. This may be accounted for by handling and by exposure to an unfamiliar environment necessary for non-conditioned controls. We conclude that exogenous tyrosine is able to: (1) elevate stress-induced dopamine metabolism in the nucleus accumbens, (2) alter dopamine utilization in the medial prefrontal cortex of handled, non-conditioned controls, and (3) enhance fear-induced immobilization. These data suggest a role for dietary tyrosine in biochemical and behavioral responses to aversive stimuli.

Williams, G. V.; Goldman-Rakic, P. S.: Modulation of memory fields by dopamine D₁ receptors in prefrontal cortex. *Nature* 1995;37G:572-575.

Abstract: Dopamine has been implicated in the cognitive process of working memory but the cellular basis of its action has yet to be revealed. By combining iontophoretic analysis of dopamine receptors

with single-cell recording during behaviour, we found that Di antagonists can selectively potentiate the memory fields of prefrontal neurons which subserve working memory. The precision shown for D1 receptor modulation of mnemonic processing indicated a direct gating of selective excitatory synaptic inputs to prefrontal neurons during cognition.

Singer, W.: Development and plasticity of cortical processing architectures. *Science* 1996;270:758-764.

Abstract: One of the basic functions of the cerebral cortex is the analysis and representation of relations among the components of sensory and motor patterns. It is proposed that the cortex applied two complementary strategies to cope with the combinatorial problems posed by the astronomical number of possible relations: (1) the analysis and representation of frequently occurring, behaviorally relevant relations by groups of cells with fixed but broadly tuned response properties; (2) the dynamic association of these cells into functionally coherent assemblies. Feedforward connections and reciprocal associative connections, respectively, are thought to underlie these two operations. The architectures of both types of connections are susceptible to experience-dependent modifications during development, but they become fixed in the adult. As development proceeds, feedforward connections also appear to lose much of their functional plasticity, whereas the synapses of the associative connections retain a high susceptibility to use-dependent modifications. The reduced plasticity of feedforward connections is probably responsible for the invariance of cognitive categories acquired early in development. The persistent adaptivity of reciprocal connections is a likely substrate for the ability to generate representations for new perceptual objects and motor patterns throughout life.

Tomkins, D. M.; Fletcher, P. J.: Evidence that GABAA but not GABAB receptor activation in the dorsal raphe nucleus modulates ethanol in Wister rats. *Behavioural Pharmacology* 1996;7:85-93.

Abstract: Injection of the GABAA agonist muscimol into the dorsal raphe nucleus produces a marked and selective increase in voluntary ethanol intake. The purpose of the present study was threefold: (1) to demonstrate that the effect of muscimol on ethanol consumption is mediated by GABAA receptors; (2) to test the generalizability of this effect by examining the effects of another GABAA agonist, THIP, on ethanol drinking, and (3) to examine whether GABAB receptors within the dorsal raphe also play a role in modifying voluntary ethanol consumption under the same experimental conditions. Rats were trained to drink a 12% ethanol solution in a limited access paradigm with water concurrently available. Muscimol (50 ng) injected into the dorsal raphe enhanced ethanol intake by at least 100%. Peripheral administration of the GABAA antagonist bicuculline (4 mg/kg), but not the 5-HT1A antagonist (+)-WAY100135 (1 & 3 mg/kg), antagonized the stimulatory effect of muscimol as a dose which, when administered alone, did not alter ethanol intake. This supports the suggestion that the effect of muscimol is mediated via GABAA receptors. This conclusion was further supported by the finding that another GABAA agonist, THIP (500 ng), also selectively increased ethanol intake in this paradigm. Injection of bicuculline (60 ng) into the dorsal raphe reduced ethanol intake, but also appeared to reduce water intake. Finally intra-dorsal raphe injection of the GABAA agonist baclofen (62.5 and 125 ng) did not produce any change in ethanol or water consumption. Together, these findings suggest that enhancement of GABAergic activity in the dorsal raphe increased voluntary ethanol intake via activation of GABAA but not GABAergic activity in the dorsal raphe increased voluntary ethanol intake via activation of GABAA but not GABAB receptors.

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