ASCAP NEWSLETTER

Across-species Comparisons And Psychiatry Newsletter
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"Psychiatric epistemology has suffered from a dearth of knowledge about the psychophysiology underlying psychopathology." Preskorn[1]

(c/o Russell Gardner, 1.200 Graves Building (D29), University of Texas Medical Branch, Galveston, TX 77550)[2]

For the philosophy guiding this newsletter, predicated upon combinations of top-down and bottom-up analyses, see footnote on p11[3]

Newsletter aims; 1. A free exchange of letters, notes, articles, essays or ideas in whatever brief format.
2. Elaboration of others' ideas.
3. Keeping up with productions, events, and other news.
4. Proposals for new initiatives, joint research endeavors, etc.

Features; 1) John Price of Milton-Keynes continues with his part of the Price-Randrup/Sorenson-Price exchange p2

2) Glenn Weisfeld responds to JS Price's July essay. p5

3) John Pearce of Boston tells his reaction to an unpublished book on human evolution by A Squires p6

4) John Wylie of Washington, DC, presents an emphasis on social-hierarchical behaviors different from what we are familiar with in these pages. His ideas stemmed originally from the observation of prisoners and his essay is entitled: "The typology of dominance-submission dimorphism in the evolution of religion." He first presented it in the Aug, 1990, meeting of the Human Behavior and Evolution Society (HBES) in LA and it follows an earlier paper of 1989 .... p7

Comment; This first issue of 1991 reflects the ongoing themes and concerns of the Newsletter. We are multi-disciplinary, we draw from many sources and from many levels of discourse, and we are interested both in our ASCAP traditions (eg, as reflected in the correspondence from and with John Price) and in new unexplored ideas (eg, Pearce & Squires, Wylie). First presentation of ideas amongst friends is a high priority for ASCAP as a tool of idea-forging amongst friends. Provocative new ideas should eventually distribute more widely than ASCAP. For example, Dr Wylie's unique observations now expressed in condensed prose may become more user-friendly than they are at present.

Announcement: A non-anticipated benefit of ASCAP is that I've been asked to write a chapter on "Sociobiology and its applications to psychiatry" for the 6th ed of The Comprehensive Textbook of Psychiatry edited by BJ Sadock & HI Kaplan. ASCAP was cited as a reason for being asked. I feel honored to contribute a descriptive yet critical chapter to this mainstay textbook of several decades. May I ask the readership for help? What emphases do you feel I should make and what critical issues should be reflected.

Quote; Abstract from Simon HA: A mechanism for social selection and successful altruism. Science 1990; 250:1665-1668 (21 Dec issue).

Within the framework of neo-Darwinism, with its focus on fitness, it has been hard to account for altruism, behavior that reduces the fitness of the altruist but increases the average fitness in society. Many population biologists argue that, ex-

cept for altruism to close relatives, human behavior that appears to be altruistic amounts to reciprocal altruism, behavior undertaken with an expectation of reciprocation, hence incurring no net cost to fitness. Herein is proposed a simple and robust mechanism, based on human docility and bounded rationality, that can account for the evolutionary success of genuinely altruistic behavior. Because docility--receptivity to social influence--contributes greatly to fitness in the human species, it will be positively selected. As a consequence, society can impose a "tax" on the gross benefits gained by individuals from docility by inducing docile individuals to engage in altruistic behaviors. Limits on rationality in the face of environmental complexity prevent the individual from avoiding this "tax." An upper bound is imposed on altruism by the condition that there must remain a net fitness advantage for docile behavior after the cost to the individual has been deducted.

Note: An interesting notion about *trans-species* biology is in 13 Dec Nature regarding the origin and spread of AIDS . In Africa monkey species are infected with lentiviruses related to HIV. These viruses may have come from monkeys first. The Idjwi tribe of East Zaire tell from their history that "To stimulate a man or a woman and induce them to intense sexual activity, male monkey blood for a man or she-monkey blood for a woman, was directly inoculated into the thighs and back. The author felt that this might have constituted an "efficient means of trans-species transmission" perhaps causing the emergence of HIV.

Letter *October 18, 1990*

My apologies for not getting back to you sooner..., but I've just moved house, which meant all my papers etc disappeared into boxes, to re-emerge gradually!. . But the good news is that I've spoken to the newly appointed professor of psychiatry at the University of Capetown (UCT) and he expressed interest in the proposed cross-cultural study. He thought that some of his research staff might be interested in the cross-cultural study...

I've a draft of a response to JS Price's essay written, which I found very thought-provoking. But I haven't got the chance to resurrect it from my papers and have it typed...

PJ Tummon, Capetown, South Africa

Letters (Cont) *11-12-90*

..There was a minor error in the text of my "reply to Sloman" - there were too many heads and not enough hearts in the Richard II quote. RII felt his people treading on his heart while alive, so he says why shouldn't they tread on my head after I'm dead... 21-12-90

...Arrangements for the session [of the Royal College of Psychiatrists annual meeting in Brighton, England, in early July] are going ahead and I should get a yes or no from the College in mid-January...

May 1991 be full of unalloyed anathesis for all of us!

John Price, Milton Keynes, England

Price-Randrup/Sorenson-Price by JSP

I am impressed by the great variation in hierarchical behaviour both within and between species, such that in some hierarchies to be subordinate gives rise to no problems, whereas in others the subordinate role seems to be one of continuous terror and humiliation. In your own work with bank voles , you found that an enriched environment greatly reduced the "putting down" of subordinates by high ranking voles; but even in the enriched environment there was one tyrant who persecuted the subordinate for no apparent reason, and in the pernicious environment some hierarchies were peaceful. In many species the unprovoked bullying of subordinates is enough to induce a state

of learned helplessness - no electrified grid is necessary in these species. In some species there are physiological effects in subordinates which seem an important part of their adaptation; inhibition of sex change in certain fish, adoption of juvenile colouring in lizards, inhibition of ovulation in mice and some new World monkeys; we do not know the mechanisms of these changes, nor whether they are related to the central nervous mechanisms responsible for psychogenic death. Nor do we know whether hypertension and other causes of psychogenic death are entirely mediated by the increased secretion of corticosteroids and/or catecholamines which are recognised accompaniments of subordinate status. Research on subordination has a long way to go; at present it seems to be mainly motivated by cardiologists, gastroenterologists, nephrologists, and more recently, immunologists; only in Denmark is it realised that psychological problems may intervene between aversive social experiences and serious physical disease.

I would agree with you that subordination is not pathogenic in itself: only in certain circumstances. These circumstances would seem to be:

1. If the environment is unfavourable so that agonistic interactions are increased.
2. If the higher ranking individual is a bully or lacks the social skill to accept submission.
3. If the individual lacks the social skill to submit adequately (or does not wish to submit) or lacks other skills for coping with subordination such as the stereotypies in your voles.

It might clarify things if we reserved the term submission for voluntary acceptance of subordination, in contrast to its involuntary depressive counterpart, which could be called depressive yielding. The title of my essay was confusing, suggesting that depression masquerading as physical illness was a metaphor of submission, whereas, being totally involuntary, it should not have come into the category of submission at all. The title should have been "Metaphors of yielding." If you submit voluntarily, you do not need to undergo depressive yielding.

Report from *the Institute of Zoology in London*

After writing the above, I attended a meeting of the Association for the Study of Animal Behaviour at the London Zoo. The subject was "Neural and Endocrine Mechanisms in the Control of Behaviour." Three of the talks were relevant to the above discussion and I would like to share with you my somewhat patchy memory of them.

Norbert Sachser from Bayreuth in Germany described his work on captive colonies of guinea pigs. Two dozen mixed sexed animals kept in a 12 metre square enclosure develop a stable social structure in which there is social asymmetry among the males but not among the females. About three males become territorial males, relating to half a dozen females; each territorial male has two or three satellite males, who each relate to two or three only of the territorial male's females. Other males occupy the space between the territories and do not try to mate with each other's females, even if they stray onto their territories. There is no difference in adrenal cortical or medullary function or in testosterone levels between the three categories of males.

If two strange males are caged together with a strange female, the outcome depends on the social history of the males. If they have been brought up with other males, there is a day or two of intense fighting and then one submits and becomes a satellite male, and the fighting stops. If the two males have been brought up with females only, the fighting goes

on and the loser dies, not of wounds but of metabolic disorder; it seems that the losing males have never learned to submit. Without this learning experience, the guinea pigs are like those of von Hoist's losing tree shrews who hid away and died; with learning, the guinea pigs did much better as the adrenomedullary function of the losers returned to normal, unlike that of the other category of losing shrews who became uneasy subordinates. It seems that some animals like the wolf and the rhesus monkey have an innate capacity for submission,others like the tree shrew and the male patas monkey lack the capacity to learn submission. This no doubt reflects social structure during evolution. The wolf always lived in groups, the tree shrew always lived in territorial pairs, the guinea pig had a more flexible social structure. John Crook once said:"Ecology determines social structure which determines personality."

One finding in the guinea pig work deserves special mention. When two strange group-reared animals are matched in a fight, the first clue to the outcome of the fight is a huge increase in adrenocortical activity in the eventual loser; at the same time the winner-to-be and the female make mutual courtship gestures; both these changes occur before there is any differentiation in the agonistic behaviour of the two males. This suggests at least two possibilities. One is that the winner-to-be is emitting an olfactory agonistic signal. The other is that the corticosteroid response to the stress of fighting is part of a feed-back loop which triggers the decision to lose in the eventual loser; this would fit in with the ideas of Leshner[7] and his findings that adrenalectomized mice show exaggerated losing behaviour.

The other two relevant talks concerned the social suppression *of.* ovulation. Dave Abbott, recently moved from the London Zoo to Wisconsin Primate Centre, described his work on the marmoset. In a group of marmosets, there are separate male and female linear hierarchies, and only the alpha male and female mate. The subordinate females have low serum LH and undeveloped ovaries. The mechanism that blocks sexual development is a scent emitted by the alpha female, as anosmic subordinate females ovulate normally (unless they have been subordinate for a long time). Subordinate females with apparatus that administered intermittent subcutaneous doses of gonadotropin releasing hormone also ovulated normally.

Chris Faulkes of the Institute of Zoology described his work on captive mole rats, in which the situation seems to be very similar to the marmoset, except that it has not been shown conclusively that the suppression is effected by a scent from the alpha female. The degree of suppression is prodigious: one "queen" may suppress a hundred subordinate females for as long as fifteen years; the junior subordinates dig tunnels and collect roots and tubers which they bring back to the queen in the nest chamber; the senior subordinates protect the colony from snakes and other predators. In the subordinate females the preoptic area of the hypothalamus is loaded with gonadotropin releasing hormone (more so even than the alpha female) but it is not released.

I think the guinea pig, the marmoset and the mole rat are instructive examples of subordinate behaviour but I do not think they offer promising animal models of human depression. Human depression has a long time scale and a momentum of its own once it has started; in all the cases described above the subordinate animals return to normal as soon as they can get away from the dominant animals. Male guinea pigs whose

sexual behaviour has been suppressed for many months start mating within minutes when put on their own with a female. And the female marmosets start ovulating straight away. The suppressed males have motile sperm - this is necessary because it takes six weeks to manufacture a sperm, whereas ovulation can occur quickly enough to allow fertilisation from a mating occurring immediately after release from suppression; in this way a suppressed couple which suddenly obtains a territory can achieve a fertile mating without delay. Unlike depression, these rodent forms of subordination are mediated by olfaction, and the subordination depends on the continued presence of the olfactory stimulus; this seems to be true of rodent subordination generally. In "depressed" dogs and vervet monkeys the behavioural change is not contingent on the continued presence of the dominant animal. Also the strategy is different in the two cases: the subordinate rodent is waiting to get away, and alert for the opportunity to do so. The human undergoing depressive yielding is learning to adjust to an unfavorable social situation (lowered social status) and is not alert about anything. My guess is that vertebrates have only one mechanism for making a long-term behavioural response to an unfavourable situation; rodents have used this for responding to unfavourable weather; primates, and possibly other orders, have used it for responding to unfavourable social adversity. But I am probably wrong, and even if the guess were correct, I think this work on rodent agonistic behaviour is of great importance for a science of social behaviour basic to the study of psychopathology, and we should add our psychiatric voice to the cardiologists and reproductive physiologists who are supporting it.

Price-Weisfeld Exchange

by Glenn Weisfeld

I find John Price's article in the July newsletter creative and stimulating. I also liked the remark in Price and Sloman[8] that some depressed patients may not benefit from being assertive. I wish to respond to several points made in these papers.

I am not sure the concept of agonic vs hedonic mode is very useful in explaining human behavior. The concept underscores some general behavioral differences between primate species. But, there is little in the way of functional explanation. Are chimpanzees relatively hedonic because they practice sperm competition, or why? It is true that, among humans, different moods prevail at different times, but this can be explained by the presence of danger, or food, or fatigue, or an influential leader.

I would prefer an analysis in terms of motive rather than mode or mood. Motives have identifiable functions, revealed by comparative analysis. That is the beauty of using the dominance motive to explain some forms of depression.

Take the question of why some depressed individuals get angry. Anger may function to punish perceived violators of social norms, including rules of dominance competition . Those who feel they have lost status unfairly will get angry, and may exhibit aggression , as in Price's quote from Mourning and Melancholia on p3. Those who feel responsible for their failure will simply feel shame. Experimental subjects get angry when abused; why not depressed patients too?

Ensuing aggression may not be redirected toward a less threatening target. This may be partially explained because an organism dropping in rank needs to assert itself against its subordinates to break its fall and keep them inferior.

Concerning the observation that

some depressed people adopt the sick role, this may need no deep psychological explanation. They resemble sick people in being lethargic, subdued and withdrawn; consequently others may view them as sick, especially in a society where depression is classed as a disease. Both illness and loss of rank call for recuperation, which is promoted by rest and withdrawal from social competition.

By assuming a submissive role, they may be entitled to some concessions, apart from the privileges of a sick person. Submission is a capitulation, not an unconditional surrender. By submitting, the organism concedes some status in return for some privilege, such as exemption from further attack. In humans, status is often traded for aid, as in accepting charity. A depressed person--or anyone else-—may express respect for another, or denigrate himself, in exchange for assistance.

Sex differences in depression may also be explained by the dominance model. Males in most species need more competitive motivation than females; they need to issue and accept challenges. Cognitively, this may be accomplished in humans by exaggerated self-confidence and self-esteem, and by a tendency to deny failure. Conversely, females have lower (more realistic) self-esteem, and so more depression (and anxiety about failure); references in Weisfeld and Linkey[11].

Report on Arthur Squires: The Left Hand of Love by John Pearce

[For me] the most rewarding part [of the August trip to the Human Behavior and Evolution (HBES) meeting in LA] was reading the latest version [of the above book in manuscript form] while flying. Squires, professor emeritus of chemical engineering from Va Inst of Tech had been rejected for presentation at the conference, but the manuscript is terrific.

Last year, William Hamilton of Oxford, the first president of HBES, urged HBES to embrace "just so" stories.In fact, he suggested that a "just so story" award be given at the end of each HBES meeting for the best "just so" story presented. Hamilton felt that he had to speak up for evolutionary stories because they are currently unfashionable.

The usual story of human speciation is the one we (Glantz and Pearce) tell in our book, Exiles From Eden. Squires tells an alternative story, that African grassland savannas were not capable of providing the kind of reliable, high calorie food resources that the first evolving big brained humans needed. Rather, he argues that when, in an interglacial period, the African Rift Valley was flooded, sea-creatures would have been a more reliable source of nutrition for the isolated bands of apes that were to become the first humans.

Squires draws on Sarah Hrdy's insight that male breeding strategies are based on the feeding spacing of the females. That is, if you want to get the girls you have to patrol the area in which they are getting their food. If the women were on the seashore in a group of 50 to 100, concentrated where the food supply was richest, the males would probably (if they were like other primates) be on the periphery of the group, guarding and competing for opportunities to mate. We know that multiple, promiscuous matings occurred because human males have exceptionally large penises and testes. Species with strong pair-bonding have small genitals since sexual access is secure. When mating is competitive and promiscuous, males compete with sperm. Large genitals that produce copious ejaculate of very motile sperm make more children. This phenomena can be

seen in different species of whales and apes.

In these seaside groups of females, strong female pair-bonding among the females would be the best bet for providing the calories that big brained babies need. Humans need twice the calories that other primates need for pregnancy and lactation. For human females, pregnancy is not required for lactation. A female partner helping to care for a baby is able to start lactating. That means a double supply of milk which is a good thing when one lactating female is not enough. Even in our calories-rich contemporary society, many women find that they can not produce enough milk to meet a baby's needs.

Squires argues for major anatomical differences between men and women at this evolutionary stage (sexual dimorphism). As he imagines it, women and men lived apart, the women in large cohorts guarded by smaller bands of men. The men defended them from the attentions of other bands of men. As Squires sees it, same sex pair-bonding for women came first, group male homosexual initiation came next (as it still does in many societies). With growing sexual skills in both sexes, the cultivations of heterosexual pleasures could develop.

Much later, after the big brain had evolved, when the sea dried up (during a next glacial period), scarcer food resources forced humans to wander in small groups. Heterosexual bonding came next, though it has never been permanent pair-bonding. Helen Fisher has pointed out that when considerations of property do not hold couples together, the average length of marriages is four years. Our species is inclined to serial monogamy.

This story ingeniously pulls together lots of stray, odd facts about humans. For example, men in all cultures are almost universally turned on by seeing two women making love. Few women respond to seeing two men making love. Squires explains: since love making skills developed among women, men had been spectators for a long time. Women made love and a man waited around for his brief turn for a quick copulation. Much later men learned to take pleasure in prolonged love-making, to take their time with women. (As background you need to know that copulating seems to have little pleasure for most male primates. It is very quick and routine, particularly in promiscuous species.)

Squires describes ingenious research on the genetics of left-handedness and proposes that sexual preferences might have similar genetic origins. This is a neglected research area. Kinsey was the last person to do research on sex behavior that could provide the sort of data needed for genetic analysis. Kinsey was finally put out of business by outraged citizenry and nothing much has happened in populations studies since. Squires proposes how the research should be done.

The typology of dominance-submission dimorphism in the evolution of religion

by JV Wylie

RA Fisher pointed out 60 years ago that when there is preference in one sex for a characteristic in the other, such as plumage, the stage is set for "runaway" evolution in which both the plumage and, more importantly, the capacity to select ever more elaborate plumage, are developed at a geometrically accelerating rate. There is thus, not only selection for the sexually attractive characteristic, but also accelerated selection for the capacity to select that characteristic.

Of course, a sexually selected characteristic does not normally con-

fer an advantage in the arena of natural selection; indeed, natural selection usually decelerates the runaway process such as when the plumage becomes so elaborate that it interferes substantially with survival. However, in more and more complex social settings, it is not difficult to imagine that sexually attractive mental or emotional characteristics could also confer advantages in the arena of natural selection. For example, selection in the female for the ability to determine resource holding capacity in the males who throw up multiple strategies of pretension surely could produce a subtlety of intelligence which could then be turned to good use in other facets of the business of survival in the natural world.

The main point is that when a dimorphism in a species exists, there is a probability that one of the forms will develop the capacity to select characteristics of the other and vice versa: there is selection for the capacity to select, a phenomenon I call "selection inclusion". The organism thereby seizes Darwin's ponderous "hand" of natural selection unto itself, greatly refining and accelerating the process.

I began my career in psychiatry by working in a prison. It was very clear that in this setting there were two basic mentalities: one possessed by those who were in dominant roles and the other by those in submissive roles. I became fascinated by the dominance-submissive relationships in prison and observed the stereotypic transformations they characteristically underwent over time. I noted the similarity of the interaction between mentalities in the dominance-submissive relationship to that between the internal psychoanalytic constructs of superego and self within a single mind. At that time, I struck on the idea that the mentalities developed in the dominance-submissiye relationship over the millennia were subsequently "folded in" to create the internal dynamics of the modern mind.

These ideas have become a conviction as I have gone on in the practice of psychiatry and seen the ubiquity of dominance-submissive dynamics in every conceivable type of family and work relationship, and how these interactions correlate with intrapsychic dynamics.

In 1989 at the first HBES meeting, I speculated that subsequent to the stabilization of the fight-flight reflex into the dominance-submission interactions seen in primates as a means of inhibiting aggression, elements of the parent-child relationship were melded into increasingly cooperative overlays which were integrated into the core construct of dominance and submission. Thus, emotionally, the dominance mentality came to be marked by not only the atavistic gratification resulting from the extension of one's power, but also by the projected narcissism of parental pride; and the submissive mentality marked not only by the avoidance of fear, but also by the childlike pleasure of pleasing a parent. Gradually, a true dimorphism emerged in the mental, emotional, and behavioral spheres. Just as is in the fight-flight reflex, each single organism was bipotential for either mode of behavior with reciprocal inhibition of the opposite mode at any one time. As the dominance-submission dimorphism emerged, the phenomenon of selection for the capacity to select, or "selection inclusion", also emerged, providing a vehicle for explosive acceleration of human evolution.

Originally, mutual benefits from the dimorphic partnership were the extension of the dominant partner's ability to survive and breed in return for protection and secondary breeding rights for the submissive

one; but rapidly expanding abilities to select subtleties of cooperative interaction were incorporated. With further development of political interaction and the emergence and refinement of the capacity of submissive individuals to select dominant ones (similar to female selection in sexual dimorphisms) complex assortative selection began to take place. At this point, the coupling of so-called "relational genes" would be the focus of genetic selection: one from each dimorphic pair. In a group of individuals, the two which had the best genetic fit, resulting in cooperative interactional success in that particular social setting, would be selected. These couplet genes, which find expression and selection success only when interacting with each other in relationships between dominant-submissive dimorphic pairs, could be seen as truly "social" genes.

The rudiments of culture arose in small, subsistence kinship groups in which prescribed, cooperative behavior developed. There was selection pressure on the couplet, relational genes in favor of the cooperative execution of this early cultural behavior. The organization of repeatable cultural behavior past a threshold of complexity and flexibility was made possible by the dawn of the ability to translate the behavioral content of these couplet genes into rudimentary, linguistic conceptions. The couplet genes, as it were, began precipitating out as cultural conceptions.

Coincident with the appearance of this powerful knowledge of how to cooperate productively, came the obvious, selective advantage of obedience to it. Thus, these earliest of conceptions had tremendous selective pressure on them to immediately assume a commanding, authoritative presence. In order to accomplish this, these conceptual entities,, having just precipitated out from the evolved dominance-submissive relationship, immediately turned around and took root in the cultivated soil of the dominant aspect of the dimorphism in the form of personified, religious imperatives.

The dominant mode thus was split into a portion which had taken on the celestial light of linguistic conceptualization on the one hand, and the original dominance entity, which continued in dimorphic relation to the submissive mode, on the other.

When these gods adorned themselves with the robes of evolved dominance, the quality which gave them substance was that of motivated intelligence: the ancient drive to extend their dominion in order to perpetuate their existence. In effect, religious conception became both the medium and the substance through which, and in relation to which, the couplet genes explosively flowered. The gods were the medium of the evolved dominance-submissive relationship in that they were personifications of prescribed ways of relating, which constituted early culture. However, they were also in substantial relationship to "earthly" social interactions in that they had inherited the intent to mold these relationships to extend their own domination.

A second dimorphism thus appeared in the mental sphere between these religious entities and the original dominant-submissive dimorphism. It was as if the relational ether of the dominance-submissive relationship itself had frozen its vast, interactional knowledge crystallizing into a third, dynamic, dominant being. In language, conception, and religion, the relational, couplet genes obtained an integrity and liberation from the bondage of mere behavioral interaction between individuals.

Again, the process of selection inclusion caused selection for the capacity to select between this new

dimorphism: the gods on the one hand and the original dominant-submissive dimorphism on the other. Gods were selected who, in turn, would select social relationships that were most adaptive to rapidly evolving social realities. As this form of evolution accelerated, the ancient, dominant-submissive dimorphism became rapidly anachronistic and, thus, was suppressed and repressed. Thus the first elements of Freudian dynamic topography took form: the imperative, conceptual world of superego, which is a modern, psychic derivative of religion, and the repressed behavioral world of the id. The punitive, retributional emotions associated with the psychoanalytic "preoedipal superego" correspond to the harsh, primitive interactions possible in the dominance-submissive dimorphism within the id. The more complex, triadic emotion of guilt originated with fear of retribution from the gods for social transgression, and developed in tandem with a socialized rage in response to ever more subtle transgressions by others. Similarly, triadic manifestations of narcissistic gratification evolved also as emotional concomitant of reciprocal altruism.

As man entered his modern phase, a final integration took place as a result of the dynamic interaction of the gods and the dominance-submission dimorphism: religion spawned the superego, the internalized, emotional receptacle of societal demands on the individual. Individuals were selected who could successfully integrate the drives inherent in dominance and submission (repressed into id) with the demands of superego. Synthetic, intrapsychic entities were evolved: the self (a synthesis of superego and the submissive pole of the id) and ego (a synthesis of superego and the dominant pole of the id). Both sexuality and aggression were neutralized in the ego and self, leaving the distillate of pure energy and form. The ego could gently dominate the self in the production of rational behavior which integrated reality factors with both superego and id. Psychopathology results when the delicate constructs of ego and self break down, unleashing intense, self-reinforced, intrapsychic interactions between mental constructs originally evolved for interpersonal or religious interaction with complete reciprocal inhibition.

It is my intention in this paper to speculate about several key elements in the topological transformations which occurred in the evolution of the human brain. First, the centrality of the core construct of the dominance-submission interaction. The idea that the dominance and submission modes could interact as a bipotential dimorphism in the mental sphere and thus develop an ability to select each other by means of so called selection inclusion is a theory that would not only explain the multiple, dynamic intentionality seen in the modern mind but also the explosive rate of its evolution. Relational genes, controlling the behavioral interaction from each half of this dimorphism, and finding expression in linguistic conceptions and dynamic, intrapsychic structures, provides the genetic replicator. The idea that religion emerged as a development of the evolved dominance mode by means of the dawning of the conceptualization of culture dignifies religion with a substantial reality denied to it by both Freud and Marx. Far from being an artifact of the oedipal complex, religion gave birth to the oedipal complex and remains wholly separate from it. Seen in this way, even in its distilled, modern form, religion truly has a separate locus of intentionality and a responsive life of its own both for society and the individual.

1. Preskorn SH: The future and psychopharmacology: potentials and needs. Psychiatric Annals 1990;20:625-633

2. For ASCAP Newsletter Volume 4 (Jan through Dec, 1991) please send $18 (or equivalent) for the 12 issues. Make checks or money orders out to "Department of Psychiatry and Behavioral Sciences, UTMB.

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

4. Karpas A: Origin and spread of AIDS. Nature 1990;348:578.

5. The first part of this exchange by Dr. Price was published in a mid-1990 issue of ASCAP (1990;3:July:1-12): METAPHORS OF SUBMISSION: An answer to the question "Do depressed patients get their own way?" followed by an prompt response by Axel Randrup and Grethe Sorenson two issues later (1990;3:Sept:5).

6. Sorenson G: Stereotyped behaviour, hyperaggressiveness and "tyrannic" hierarchy induced in bank voles (Clethrionomys glareolus) by a restricted cage milieu. Progress in Neuro-psychopharmacology and Biological Psychiatry 1987; 11:9-21.

7. Leshner AI: The hormonal responses to competition and their behavioural significance. In B.B. Svare, Ed. (1983) Hormones and Aggressive Behavior. NY: Plenum Press.

8. Price JS and Sloman L: Depression as yielding behavior: an animal model based on Schjelderup-Ebbe's pecking order. Ethology and Sociobiology 1987;8:85S-98S.

9. Weisfeld GE (1980) Dominance Relations NY: Garland, Social dominance and human motivation. In D.R. Omark et al (Eds.)

10. Trivers TL: The evolution of reciprocal altruism. Quarterly Review of Biology 1971;46:35-57.

11. Weisfeld GE and Linkey HE (1985) Power. Dominance and Nonverbal Behavior NY: Springer-Verlag. Dominance displays as indicators of a social success motive. In J. Dovidio and S. Ellyson (Eds.)