

ASCAP

Volume 8, No 3. (Cumulative #88)

March 1995

"All the learned studies of war which crowd the world's library shelves have three shortcomings: they ignore the unconscious, they rely too heavily on rational explanations of national conduct, and they attach too little importance to human biology."
Anthony Stevens¹

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

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

ADDRESSED TO & FROM...

PSALIC ROLES

What an interesting set of papers you sent me! It will be interesting to see how the term 'psalic', that is now some eleven years old, catches on. [Editor's Note: *Psalic refers to Programmed Spacing And Linkages In Conspicifics.*] The general concept, which I take to be communicative behavior defining or seeking to define social roles, is relevant to my amateurish investigation of the responses to dance and drill.

I paid no attention to leadership and followership: one of the pseudo-explanations for military drill is that it prepares men to obey. At least I judged that to be a pseudo-explanation. It was not part of my own recollection of response to the exercise; and in many dance situations in small communities there is no clear leader, what matters is the shared euphoria.

Your comparisons of manic behavior and leadership were very persuasive; bystanders' discomfort at such behavior because they are not ready to accept the implied social roles matches my memory of the sadnesses and awkwardnesses of a person I knew with mania. At the same time she was conscious of the inappropriateness of her behavior too (at least sometimes), a sort of double consciousness: trying to restrain her excessive exhilaration and extravagant plans, etc., and then yielding to them.

I do think that wavering back and forth between psalic roles is the stuff of human intercourse. Some moments and some encounters are more important than others; roles do attach themselves to particular personalities most of the time or at critical moments. But periods of relaxation and dropping the mask also are surely normal? Playing a very different role as a sort of relief?

For me the whole question of the role of communicative behavior in evolution and then in human history is particularly fascinating. As I said in the chapter I read in Ann Arbor, I have more or less convinced myself that changes in patterns of communication are the organizing forces behind the course of human history. A dimension of this I have not thought about is the changing character of the messages that pass: the evolution of language, for instance, to pre-set out reactions to the world around us in changing ways. I have thought only crudely of distance and density of contact, and the polar responses: either repel and disregard the new, or borrow and adapt it for our uses. I had never before recognized animal roots - back to the reptilian brain, etc. Nor imagined that psychiatric disorders could be seen as inappropriate responses to social environs ~ at least in part. So I am in your debt and thank you for expanding my mind. I do not expect to do anything more with speculative

history of protohumanity, but your ideas seem to fit smoothly with my hypothesis about the role of dancing in expanding the social in-group among our ancestors. For if my guess is right, it does indeed count as one of your psalics: a "*primitive communicational state mediated by deeply homologous neural structures*" - that is, if I understand what that last clause means and if my sympathetic and parasympathetic nervous systems and pituitary hormones etc. count as "*deeply homologous*".

William McNeill
Colebrook CT, USA

REACTION

ASCAP always brightens the month with new ideas. Volume 7, Number 12 was no exception. Bailey and Roswell have charted exciting new ground while beginning to bring precision and order to the process of studying links between paleopsychopathology and contemporary observations. Their revival of the concept of "mismatch" is, in itself, a worthy contribution. To apply this to an intimate study of anorexia (which is, essentially, a syndrome bound to industrial societies) sets a fine standard. The hypothesis of reproduction suppression is compelling. The only cautionary note I would strike are the risks of basing phylogenetic and phenotypic analysis - the epigenetic agenda - on categories of psychiatric classification. The authors know this I am sure. Still, I would

mention Hudson and Pope's AJP article "Affective Spectrum Disorder".¹ The darwinian machine can roll only on linnaean wheels! I have elsewhere discussed this point in some detail.²³

There is in Bailey and Roswell's article the beginnings of a new level for analysis of psychopathological syndromes. There is also a means by which to start teasing out phenotypic components in more detail and not merely the old nature-nurture tarpit. Their mode of discriminating mismatch is excellent. I am reminded of several points E.O. Wilson made when he read an early draft of my paper not the least of which was his coinage of the title term "evolutionary epidemiology" itself! He also drew to my attention the highly useful concepts "range of phenotypic reaction" and "ideal (as opposed to real) phenotype". The first is a technical term used by geneticists to denote the degree a genome can accommodate environmental flux before differential selection begins. The second term is little used but quite useful. The real phenotype arises in the environment of ontological adjustment whereas the ideal phenotype is that which would be optimally adapted to the environment of evolutionary adaptation. The ideal/real phenotype concept accounts for the remarkable fact that even a gene 100% penetrant retains an aspect of environmental expression. This is equal to the difference between the real and ideal phenotypes. Obviously, Bailey and Roswell are uncovering this in all but name as they sift through anorexia and its clinical

anthropology. Their work is as delightful as it is ingenious.

I also want to remind readers of the 18th Meeting of the European Sociobiological Society, "The Darwinian Heritage and Sociobiology", 3-6 August, 1995, fittingly at Darwin's own Christ's College, Cambridge. The local organizer is R. M. Allott, 5 Fitzgerald Park, Seaford, East Sussex BN25 1AX, UK. (Tel/Fax: 44 323 492300; Email: rmallott@percep.demon.co.uk.) I highly recommend the society, the theme and the venue. Cambridge is near its best in August.

Daniel Wilson
Indian Hill OH, USA

TASSTHEORY

Many thanks for the enclosed copies of ASCAP which I found interesting and, despite my reservations about the "scientific acceptability" of some of the language in which some of the contributions are couched, I also find refreshingly open-minded, unlike so many mainstream journals.

You asked if ASCAP could publish my two earlier conference papers on emotions. I would be happy for this and enclose the two manuscripts. The one called "Why there are eight primary emotions" in fact provides the answer to the paper by Ortony & Turner (which it cites). Perhaps it could be presented as a response to them. The paper called "Ethology, emotion and the neuroses" may be of particular interest to psychiatric readers. *[Editor's Note: These will occupy future issues.]*

I have the ASCAP with your summary of TASS theory. I think it is a fair summary and am grateful to you for it. I recognise the importance of publicising one's ideas as you point out *vis-a-vis* Michael Chance (whom I know and admire and to whom I gave a version of my emotion theory quite a long time ago).

Finally, I include an old paper of mine on attachment processes. It describes an approach in terms of a physiological-behavioural orientation system derived from my neuronal modeling theory of imprinting which is consistent with Bowlby's goal-steering approach (but developed independently and about the same time). I have tried to get this recognised and discussed in the attachment literature with no real success. I am enclosing it now because it is another example of the "scientific" approach to phenomena of interest to psychiatry using concepts and language that belong entirely to biology and physiology. It avoids those highly abstract ill-defined ones so frequently coined and freely used in the commerce of psychoanalysis and some psychiatry, a commerce in which I therefore have great difficulty in engaging.

Anyway, once again thank you; perhaps ASCAP will help me engage in fruitful discussion.

Eric Salzen
Aberdeen, SCOTLAND

SHIVER STORY

It has always been hard for me (and I suspect this is true for other therapists) to convince clients that

they do not have to make the same responses to situations that they were forced to make as children. This is true for a variety of reasons, including the likelihood that the childhood response has become a habit. Another reason is that it is difficult for them to understand that they can change and to learn how to change.

The "shiver" metaphor seems to be an effective way to get the message across in a way that clients can understand and learn to develop their own more appropriate response. So far I have used it with two clients. One was a childhood victim of physical and sexual abuse who had a tendency to almost physically and visibly hide in a corner when confronted in any manner. Just by starting to pay attention to and respond differently to cues, she has been making very good progress on changing her responses and even becoming assertive at times.

The other is a client with a tendency to find and become involved with alcoholics. Six months of work on this issue in a variety of ways hadn't yielded much change, but within two weeks after my telling her this story she was able to make two men go away.

My experiences with this story have raised for me the speculation that the story has the ability to act on physical and unconscious responses. It seems to exert its influence on cognitive, behavioral, and unconscious levels. The issues it raises certainly need more research, but I also think that this research would be quite

productive.

Thomas Bell
Nashville TN, USA

APOLOGIES

Sincere apologies for omitting a portion of John Birtchnell's article "A rather long response to Mike Waller", Volume 8, No 1 (Cumulative #86). The first paragraph of page 15 of your January ASCAP should read as follows:

"In his last paragraph, Mike seems to equate negative relating to emotional disturbance and asks "Why are we not all paragons of calm, energetic happiness:" I would not consider that negative relating has very much to do with emotional disturbance. At the LSE conference last June, I was much impressed by Randy Nesse's idea of the positive function of many of the physical symptoms, such as fever, diarrhoea, vomiting and coughing, for which doctors try to treat us. I feel the same way about emotions. I am sure I have said this before, but it is worth repeating. I consider that happiness is our response to attaining a desired state of relatedness; depression is our response to failing to attain one or losing one; anxiety is the fear that we may not attain one or that we may lose one; and anger is a determination to stop someone taking one away from us or to retrieve one that has been taken off us. These emotional responses greatly increase our efficiency in attaining and maintaining our states of relatedness and doctors are all too ready to medicalise them and suppress them. We need the entire range of emotions and it would be quite maladaptive

for us to remain eternally calm and eternally happy. As someone else said at the LSE conference, sometimes adaptive mechanisms don't work properly, and I think this applies to the emotions. Snake phobia and spider phobia, which are normally quite adaptive, are sometimes excessive and have to be treated; but it is better to treat them by cognitive re-adjustment than by suppression by drugs. Sometimes, too, the mechanism for triggering depression (which is normally quite adaptive) is too sensitive and we become too frequently or too deeply depressed. Perhaps I should add, as a postscript, that the emotional responses I have described do not just guide us through the successes and failures of relating. They guide us through all kinds of successes and failures."

Editor's Note: While the Newsletter is thoroughly reviewed by several proof readers before going to press, inevitably there will be mistakes. While we sincerely regret any confusion and frustration caused, may we venture to remind readers that one way of ensuring accuracy would be for contributors to send a diskette with the article in ASCII or preferably, WordPerfect, format along with the hard copy. Diskettes are always returned, and it makes the task of entering data greatly less arduous and error-prone.

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ARTICLE: Reprise: William McNeill and the communicative state of muscular synchronization

Historian William McNeill (WM) provided a highly creative plenary address to the HBES conference in June, 1994. He has long been impressed with the communicative effects of drill and dance movements: people like it and get along with each other better because of it. He notes that chimps don't have synchronized movements and, citing Goodall, noted that they don't tolerate groups of greater than 16 males: troupes fission when the maximum tolerated is reached and in subsequent conflict, group size helps victory prevail. With synchronization, he suspects, grouped movements of humans made increasing group size possible thereby providing numerical advantage for group conflict.

This presentation and the prospect of a new book by Professor McNeill were very pleasing to me. In 1989, in The ASCAP Newsletter I discussed Marc Galanter's book on cults and included a quotation and discussion of McNeill's observation, as follows:

"[Expressions of alpha psalic occur normally in leaders functioning well in synchronization with their followers. Such individuals may at times be characterized as "charismatic." But... I would like to lump what [Galanter] called charismatic groups with an even more general set, of individuals exhibiting Alpha Reciprocal (AR) psalic. Other people expressing AR psalic may include persons undergoing hypnosis or, more longitudinally and psychiatrically, patients with histrionic personality disorders who are typically suggestible. Cult members, charismatic group members or/and other individuals may express a built-in response to stimuli provided by alpha persons. Alpha-reciprocal psalic, therefore, is the phenotypic expression of a genetically determined basic plan preset in the organism for such response (as well as co-response with others whose AR psalics have also been stimulated). Indeed, William McNeill in his quotation below points out that leaders may be near or far but are still responded to powerfully. Some effective leaders are not charismatic. Some may be harshly dominant; others may be low

key but neither especially likeable nor manifestly commanding.

"[In his review of Galanter] Mark Silk asks about why do some and not others get involved in cults? The answer here is because people have different thresholds for whatever stimulates AR psalic in each one. A particular developmental history and recent experience may shape such responses. Note here that population of AR psalic frees one from the thorny problem of having to define the state only with reference to the stimulus (alpha leader physically present). Many kinds of stimuli from many forms of leader seem to work including ministers on television, orders from headquarters, written exhortations. Perhaps one could say that the system can be fooled - parallel to electrical stimuli applied to visual tract-neurons creating visual sensation or Lorenz's "imprinting" his goslings into thinking he was their mother.

"This is not to say that I'm completely satisfied with my own term in that it doesn't capture the interaction among group members. Some very interesting comments on this stem from the following comment on warfare, provided by historian William McNeill who provides another description of what sounds like AR psalic.¹ He refers almost belatedly to the leader, and emphasizes much more communication with peers and the role of body sensations. His observations stem in part from his own perceptions as a soldier (see footnote reproduced as text at the end of this citation):

"..[S]uch drill, repeated day in and day out, had an... important dimension which the Prince of Orange and his fellows probably understood very dimly if at all. For when a group of men move their arm and leg muscles in unison for prolonged periods of time, a primitive and very powerful social bond wells up among them. This probably results from the fact that movement of the large muscles in unison rouses echoes of the most primitive level of sociality known

to humankind. Perhaps even before our pre-human ancestors could talk, they danced around campfires, rehearsing what they had done in the hunt and what they were going to do next time. Such rhythmic movements created an intense fellow feeling that allowed even poorly armed protohumans to attack and kill big game, outstripping far more formidable rivals through efficient cooperation. By virtue of the dance, supplemented and eventually controlled by voice signals and commands, our ancestors elevated themselves to the pinnacle of the food chain, becoming the most formidable of predators.

Military drill, as developed by Maurice of Nassau and thousands of European drillmasters after him, tapped this primitive reservoir of sociality directly. Drill, dull and repetitious though it may seem, readily welded a miscellaneous collection of men, recruited often from the dregs of civil society, into a coherent community, obedient to orders even in extreme situations when life and limb were in obvious and immediate jeopardy. Hunting bands had depended for their survival on being able to sustain obedience and cooperation in the face of imminent peril. Presumably, therefore, natural selection across unnumbered generations had raised human aptitude for such behavior to a high level; and these aptitudes continued (and continue) to lurk near the surface of our subconscious psyche.

"The armies of ancient Greece and Rome had also drawn on this instinctual reservoir to bind their citizen soldiers together. The peculiar intensity of city-state political life depended in no small degree on this phenomenon. So when Maurice of Nassau looked back to the practices of the Roman legions and modified their pattern of drill to fit the hand-weapons of his day, he was grafting his management of armed force upon an ancient and well-tested European tradition.

"The new drill therefore drew upon literary tradition to exploit very powerful human susceptibilities. Military units became a specialized sort of community, within which new, standardized face-to-face relationships provided a passable substitute for the customary patterns of traditional social groupings - the very

groupings which were everywhere dissolving or were at least called into question by the spread of impersonal market relations. Hence, the artificial community of well-drilled platoons and companies could and did very swiftly replace the customary hierarchies of prowess and status that had given European society its form and its capacity for local self-defense in the days when knighthood had been in flower....

"The feats of arms that European armies routinely performed, once drill had become soldiers' daily experience, were in fact quite extraordinary. Being heirs of the European past, we are likely to take their acts for granted and lose sight of the sense of wonder they properly deserve.... Consider how amazing it was for men to form themselves into opposing ranks a few score yards apart and fire muskets at one another, keeping up while comrades were falling dead or wounded all around. Yet European armies of the eighteenth century did it as a matter of course.

"Equally remarkable was the way in which army units obeyed the will of invisible superiors with about equal precision, whether they were located over the nearest hill crest or half a globe away. Many thousands of men who had no obvious personal stake in fighting one another and did have very obvious personal reasons for wishing to be out of the other fellows' line of fire nevertheless did what they were commanded to do - routinely. ...

"The creation of such a new Leviathan - half inadvertently perhaps -- was certainly one of the major achievements of the seventeenth century, as remarkable in its way as the birth of modern science or any of the other breakthroughs of that age."

[Dr. McNeill's Footnote]: "I am not aware of any really perceptive discussion of the psychological and sociological effects of close-order drill on human beings in general or within European armies in particular. My remarks are derived from reflections on personal experience - and surprise at my own response to drill during World War II." [End of footnote]

'Did the phenomena that WM traces out as important in modern warfare truly emerge for the first time in our prehuman ancestors? Were there basic plans that ancestors to the pre-humans possessed that the pre-humans built upon? Do we see traces of this in studies of non-human primates, as with Jane Goodall's chimps who got together in a group to wage war? What about the state induced by the howling signal of canines? To what extent, eventually, will we determine neuronal networks or other cellular arrangements that subserve such basic plans? At what point in vertebrate or prevertebrate evolution did they first emerge? How? What were the first versions and what functions did such versions subserve? Bone and cartilage elements may have first served sensory functions in prevertebrates,² lignin is a structural element in land plants, but may originally have been antimicrobial in early plants.³

"Let me summarize my points about the state that Marc Galanter has observed and learned about in his

clinical observations of religious cults, what his reviewer would prefer to call charismatic groups, and what WM associated with large muscles moving in unison. I - in the interests of discussing basic plans - am calling the state experienced by these persons in such groups alpha-reciprocal psalic. That is, I suggest that Silk was correct in suggesting some "lumping" of categories, but I also suggest that the lumping should be even more extensive than his, and that reduction to cellular-molecular levels be not less but even more. We should postulate that evolutionary conserved neural circuits are active when psalics behaviorally characterize the individual. Research questions hinge around how conserved: are basic plans in question in only humans, only primates, only mammals, only vertebrates, only animals? How/when did they emerge from still more basic plans? We need comparative research studies on both molecular and behavioral levels."

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ARTICLE: A preview of McGuire and Troisi's Evolutionary Psychiatry

by K Bailey

Among my many memorable events at the ISHE conference in Toronto this past August, was the opportunity to meet Michael McGuire in person. During our conversation, I inquired about his book in progress, and requested a pre-publication copy. He kindly assented, and a copy was expeditiously forwarded. Evolutionary Psychiatry is co-authored with Alfonso Troisi of the University of Rome, and will be published by Harvard University Press. This is certain to be a pathbreaking work in psychiatry and will re-define the broader field of psychopathology along evolutionary lines. Along with The Dawn of Darwinian Medicine by Nesse and Williams,¹ Evolutionary Psychiatry will help usher in a new era of evolutionary health science in the realms of both physical and mental pathology.

The work of several ASCAP members is prominently featured in the book, and names like M. R. A.

Chance, Russ Gardner, Paul Gilbert, John Price, and Leon Sloman are frequently cited. McGuire and Troisi devote an entire chapter to the evolutionary analysis of depression, and they carefully point out that their models build on prevailing ones developed by Price,² Price and Sloman,³ Price, Sloman, Gardner, Gilbert and Rohde,⁴ Gilbert,⁵ and various others. Moreover, they recognize that "Price (1967) was the first psychiatrist to offer an in-depth evolutionary explanation of a disorder-related feeling state when he suggested that depression could be understood as a response to a decline in one's position in a status hierarchy" (p. 251 of draft). Clearly, this is not only a book perfectly designed for the ASCAP members, but is, to a significant degree, one *about* a good number of us.

Evolutionary Psychiatry is comprised of fifteen chapters divided into three parts. Part I, BACK-

GROUND, includes four chapters devoted to conceptual issues, definitions, disorder classification, and distinctions between biological goals, behavior systems, algorithms, functional behavior, and the environment. Part II, EVOLUTIONARY MODELS AND PSYCHIATRIC DISORDERS, is the heart of the book and begins with a chapter outlining the authors' theory of behavior and its implications for re-defining and re-classifying disorders. Part II also includes eight other chapters on the following topics: trait/state signaling and recognition, integration/dysregulation of behavioral/cognitive/physiological systems, emotions/feelings/affects, regulation-dysregulation theory and disorders, life history strategies and personality disorders, information processing and psychopathology, and evolutionary models of depression. Part III, INTERVENTIONS, includes two chapters, one on evolutionary interventions, and the other on conclusions/implications. Overall, the book is nicely arranged and its central themes unfold in a logical, orderly manner.

In Part I, McGuire and Troisi argue that psychiatry is in a state of confusion due to lack of a theory of behavior, over-emphasis on signs and symptoms, and over-estimation of the role of proximate causes in disorder etiology. Evolutionary biology offers a solution to the problem by providing a general framework that incorporates prevailing models, offers a means of rejecting low-probability explanations and non-relevant data, and encourages the generation of novel causal explanations and therapeutic interventions. Further, the evolutionary approach naturally leads to integration of important matters that have been ignored or given short shrift by traditionalists: adaptation, function, ultimate causation, reciprocity, biology-culture interactions, cost-benefit calculations, and so forth. Because of allegiance to the medical model and failure to think evolutionary, psychiatry has developed a system of classification and nosology that has questionable

validity and rests on the mistaken assumption that accepted diagnostic categories exist as separate entities in nature.

As an alternative, McGuire and Troisi introduce the concept of *functional classification of disorders*, which focuses on theory-driven, detailed behavioral analyses that serve as the basis for identification and evaluation of evolved, goal-directed systems in disorder maintenance/etiology. Disordered behavior typically reflects *suboptimum functioning* of the various goal-directed behavioral systems due to one or more of the following conditions: atypical use of internal resources, system dysregulation, adverse environments, and/or trait variation due to genes, environment, or their interaction. To quote: "Compromised functional capacities are a feature of literally all disorders, and the evolutionary approach to explaining the causes of disorders commences with functional analysis" (p. 70, draft).

Chapter 4 rounds out Part I, and sets the stage for subsequent analyses by carefully distinguishing between biological goals, behavior systems, algorithms, and functional behavior. We are first reminded that *Homo sapiens* is a goal-directed species, and that our motivation to achieve high-priority goals is both intense and continuous throughout life. McGuire and Troisi divide biological goals into those that are *primary* and *derivative*. The primary goals emanate from evolved motivational systems that direct primate behavior and also behavior of many avian species; they fall into four fundamental classes of impulses associated with survival, reproduction, helping kin, and trading favors with nonkin. These are seen as rather abstract, overarching categories that are important theoretically, but of limited value in predicting the details of individual behavior. By contrast, the derivative goals or person-specific ways that people survive, reproduce, and relate with kin

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and nonkin are helpful in making specific predictions. For example, all people are motivated to survive, but individual differences are seen in the means by which they strive to survive (seeking interpersonal proximity, identifying and seeking safe environments, resource identification/acquisition/protection, defense against attack, and so forth). Only a few persons with disorders have reduced motivation, but considerable variation exists in relative success in pursuing derivative goals. Persons are "locked into" their social environments as perpetual goal-seekers, and persons with disorders have great difficulty in satisfying biological goals without incurring negative cost-benefit outcomes.

In the model developed, behavior systems and algorithms are two intermediary systems that connect derivative goals to functional behaviors. Behavior systems are defined as *evolved structural systems that initially select, organize, and prioritize goal-relevant information*, whereas algorithms are *complexes of physiological and psychological mechanisms that interpret information and mediate behavior*. Thus, in between the biological goal (e.g., parenting offspring) and the emission of functional behaviors associated with that goal (e.g., supporting one's spouse and his/her parenting skills), are species-typical behavior systems that specialize in translating motives into overt behavior, and algorithms, or packages of internal cognitively-based mechanisms, that carry out cost-benefit assessments, construct "causal explanations", develop models of self, events, and others, and so forth.

Behavior systems provide the physiological and psychological substrata for behavior, and algorithms, among other things, help to supply a system of meanings that gives coherence and continuity to human action. McGuire and Troisi point out that certain disorders and features of disorders are manifestations of dysfunctional behavior systems (e.g., widespread systemic dysregulation following loss of a mate), and algorithm dysfunctionality is a feature of disorders as well. Once the book is available, readers may consult chapter 4 for an intriguing discussion of ADHD that explicates how behavior systems and algorithms play off of each other in the

genesis and maintenance of psychopathology.

Part II applies the model to psychiatric disorders in a manner that is both broad and deep. In chapter 5, we learn that factors contributing to disorders include ultimately caused behaviors, trait variation, atypical genetic effects, developmental disruptions, adverse rearing environments, chance events, suboptimal functional capacities, suboptimal goal achievement, dysfunctional behavior systems and associated algorithms, and adverse social environments in adulthood. Perhaps better than anywhere else, the point is made that disorders are truly *multiply-caused*, and the question of whether a given disorder is adaptive, maladaptive, or some combination of the two is also addressed in detail.

In chapter 6, trait and state signaling are discussed, and the key concepts addressed are *signaling, communicating, and recognizing*. The working assumption is that communication provides the primary information for understanding others, disorder diagnosis, and intervention assessment. Disorder-related communications fall into three categories including signaling traits associated with disorders (e.g., excessive meticulousness, aggressiveness, or pessimism), signaling trait complexes classified as disorders (e.g., histrionic personality, hypochondria, or antisocial personality) and atypical signaling states (e.g., schizophrenic "word salad" or gaze avoidance in autistics). *Deception* of self and others is discussed in detail, with emphasis on disorders involving large elements of deception: e.g., factitious disorder, somatization disorders, factitious child abuse/neglect, Munchausen syndrome, malingering, sociopathy, compensation neurosis, and so forth.

Due to my interest in kinship theory, chapter 7, "Trait and State Recognition", was particularly edifying. The counterpart to signaling is *recognition*, which involves the selection, organization, and interpretation of information. Psychopathology is largely the mismanagement and distortion of communication and information-processing, and McGuire and Troisi do an excellent job putting it all in the evolutionary context. Each species preferentially responds to both

internal and external sources of information, and creates its own individual yet species-typical *Umwelt*. Selection has favored quick and accurate recognition of biologically relevant external information (e.g., identification of potential predators), and a similar logic applies to internal information (e.g., correctly sensing, accessing and interpreting feelings, memories and motives). The more accurately the individual processes internal and external information, the more likely biological goals can be met and functional behavior maximized. In the McGuire-Troisi model, information-processing is largely a matter of how algorithms interpret and manage information that has already been selected, organized and prioritized by particular behavior systems (emotions, aggression, helping kin, and so forth).

Kin-selection theory tells us that specific behavior systems and algorithm functions will be associated with kin recognition and investment. Although processes of species recognition range from imprinting during critical moments of development to relationships that involve learning and proximity over extended periods of time, in each instance a relationship is effected that embodies special feelings, preferences, special touching and proximity rules, and special patterns of resource sharing and altruism. Recognition biases our investment in others and recognition of "my kind" is likely to set the help-kin behavior system into motion. McGuire and Troisi discuss these matters at great length, and show us how recognition is implicated in interpersonal deception, empathy, relations between recognition processes and primate social cognition, and introspection and self-deception. This creative exposition is followed by a discussion of disorders from the standpoints of suboptimal recognition, distorted recognition styles, and various other kinds of atypical/maladaptive recognition.

Chapter 8 brings earlier chapters together in a detailed statement of how the various behavioral, cognitive and physiological mechanisms integrate and disintegrate in disordered conditions. Single mechanism explanations are eschewed and emphasis is instead placed on behavioral clusters that are multiply-caused and the consequences of trait

variation, deviant learning processes, and/or aspects of the social environment. These factors may result in suboptimal and/or mechanism dysregulation that plays a role (although often a secondary one) in the genesis and maintenance of psychopathology. Again we see that both normality and abnormality are largely consequences of the degree to which behavior systems, algorithms, and functional capacities are sequenced and integrated; when one is functioning optimally the smooth integration of the various system components is barely noticeable, but their separate identities tend to emerge in states of disintegration and disordered conditions. Integration of subsystems is never perfect, but the fewer the systems that are dysfunctional or dysregulated, the better the clinical prognosis.

Chapter 9 deals with emotions, feelings and affects, and how they fit into the larger model of behavior systems, algorithms and functional behaviors. Price's² theory of depression as a feeling state associated with decline in perceived status is discussed, as is Plutchik's⁶ evolutionary theory of emotions, and Nesse's⁷ evolutionary framework for the emotions. Following Nesse, we learn that feelings inform an organism as to how well fitness-enhancing strategies are working; that is, unpleasant feelings signal us that things are not going well and modification of strategies is needed, and pleasant feelings tell us the opposite. This view is convincing and reminiscent of Herrnstein's notion⁸ that organisms find pleasure in emitting survival-related behaviors or Barash's⁹ dictum that acting in fitness-enhancing ways is perceived as "sweet". McGuire and Troisi add that emotions often play a more central role in immediate experience than do cognitions; indeed, emotions may command us at a given moment and "regressively" override the cognitive sphere.¹⁰

In the McGuire-Troisi model, the emotions are associated with behavioral systems, whereas feelings and affects are among the various algorithm functions. Feelings are defined as somatic states that are subject to awareness in both normal and disordered persons, and affects are seen as signals that may be recognized by others even when not recognized by the sender. In anxiety, for example, internal

or external information (e.g., chest pain or threat from another) initiates the prioritization and organization of information by specific behavior systems, and emotions are part of this process. Once prioritization and organization are initiated, algorithms are responsible for interpretation of information, cost-benefit assessments, and the mediation of feelings and affects through influence on physiological and psychological mechanisms. In disordered conditions, dysregulation may occur in behavior systems and their associated emotions, in algorithmic misinterpretations in feelings/affects, in the persistence of intense, undesired feelings, in feeling decoupling (e.g., dissociation), and feeling discontinuation (e.g., repression). The relevance of this line of argument for depression, anxiety, mania, paranoid feelings, and so forth, is made abundantly clear throughout chapter 9.

To understand abnormality one must first understand normality and optimality, and the Regulation-Dysregulation Theory of Disorders helps us do just that. The term *regulation* references the optimal behavior system/algorithm/physiological state of the individual, and in the optimal state one feels well, has ample energy, thinks clearly, and is successful in pursuing biological goals. *Dysregulation* represents a significant deviation from optimality that is characterized by negative feelings, suboptimal behavior system/algorithm/functional behavior relations, and decreased capacity to pursue biological goals. Human beings are social creatures and dysregulation in the social sphere is especially problematic and pathology-inducing. We know, for example, that prolonged social deprivation in infants results in failure to thrive and even death, and, moreover, that unsatisfactory social relations with kin and nonkin are associated with immunosuppression, physical disease, and a plethora of psychological disorders.¹¹ The important point here is that we are designed evolutionary for optimality, or at least "normality", and pathology represents a failure to achieve the species default condition due to genetic trait variation, adverse environments, or some combination of the two. Regulation in the social sphere is particularly crucial, and when the individual's social life suffers from dysregulation and disruption, the psychiatrist's

role is clear: re-establish social homeostasis at all costs.

The notion of *life-history strategies* is introduced in chapter 11, and is very creatively applied to an in-depth evolutionary analysis of the personality disorders. The question of whether some personality disorders are adaptive is addressed, and the roles of assortative mating, gender differences, and cultural factors in Axis II disorders receive attention as well. Also, numerous other disorders are characterized in terms of their deviant life history strategies, skewed resource allocation programs, and dysfunctional behavior systems: dysthymia, suicide, somatoform disorders, addictive disorders, chronic schizophrenia, anorexia nervosa, child abuse, and many others. The life history strategy appears to be an excellent way to characterize chronic patterns of internal dysregulation, maladaptive and idiosyncratic goal-seeking, and undesirable social behavior.

In chapter 12, "Information Processing", the authors put their model in the larger context of evolutionary information processing, and a creative spin is put on several concepts including information filtering, causal thinking, scenario development, behavioral strategies, and strategy monitoring. A direct quote captures the approach: "... the brain has evolved with specific capacities to process information and mediate behavior for achieving goals; and behavior systems, algorithms, and mechanisms are the key infra structural systems responsible for goal-related information processing" (p. 347, draft). Suboptimal information processing plays a large role in psychiatric disorders, in the forms of incomplete, over-elaborate, rigid/repetitive, and unrealistic scenarios/strategies, inappropriate causal imputations, and dysregulated behavior systems and algorithms.

Part II concludes with an excellent overview of evolutionary models of depression, including those of ASCAP members, various others, and the authors' own model. Space does not allow review of the chapter here, but I can tantalize readers by saying that it is a "must read" for the evolutionary psychopathologist. Part III will contain two chapters, one on "Evolutionary Interventions" (chapter 14) and a final

one on "Conclusions and Implications" (chapter 15). Chapter 15 was still in preparation at this writing. The chapter on interventions ranges from pre-conception genetic counseling through interventions to improve intra-uterine and early developmental environments, and on to behavioral, psychotherapeutic, and patient management approaches in current child/adult environments. We also learn that behavior systems are extremely difficult to alter and are not usually the target of interventions, but algorithms are more easily modified in the direction of healthier causal attribution, scenario construction, and strategy development. Psychopharmacological interventions are often helpful, but their effects are complex, often poorly understood, and usually involve trade-offs in terms of side-effects. Drug therapies, ECT, and other conventional methods are typically targeted at DSM-defined disorders, but McGuire and Troisi urge us more toward focus on dysfunctional/dysregulated systems, capacity limitations, and suboptimal strategies for seeking biological goals. This is a novel and refreshing point of view, and one that I hope has broad impact on the full panoply of helping professions. Chapter 15 provides us with the tools to make the transition from our current atheoretical, signs-symptoms, disorder-based,

medical orientation to psychopathology and its amelioration, to a dynamic, evolutionary-oriented, multi-componential approach that takes into account human nature, human sociality, and the vicissitudes of the environment.

I have outlined the McGuire-Troisi conceptual model, but have not discussed specific disorders in any detail. For that, you must await the book. Suffice it to say, however, that this is a pathbreaking and discipline-defining work that represents a large step toward a time when evolutionary psychiatry will *be* psychiatry.

Update

Dr. McGuire recently informed me that the published book will be slightly different from the draft pre-viewed here. The final version will have ten or eleven chapters, clinical cases will be introduced early in the text, and the relation between sexual selection and psychopathology will be addressed in greater detail. The projected publication date is late 1995 or early 1996.

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ARTICLE: **Sociophysiology at a scientific meeting**

by R Gardner

Stage setting. I write this while on vacation in Mexico with my new laptop computer, a wonderful machine which records my experiences almost as they happen. The vacation's timing and location stem from its being interwoven with the annual meeting of the American College of Psychiatry (A.C.P.). I have the good fortune to be a Fellow of this group, and have learned from the presentations of the meeting. In moments not at the meeting - Leon Sloman will be glad to know this - I have worked on my chapter for the book he is planning on the relationship of depression to a deeply inherited involuntary subordinate strategy (ISS). My contribution relates to alpha state as a desired outcome of therapeutic intervention for people who are depressed and demoralized.

Partly as a consequence I have also found myself musing in a way that my wife, Suzie, calls people-watching, but I feel more is involved: the process has involved inference, hypothesis-making, experiment-designing and thinking of psychiatry's basic science — so I am dignifying it sociophysiology and am writing some of it down.

More context: I am inescapably a psychiatrist and immensely like the work I do but have been distressed as a medical educator for two decades because by my criteria, psychiatry has no Harveian basic science, no systematic understanding of how the body works normally but goes awry in the disorders with which we deal in psychiatry. For doing

better our clinical work, I want what internal medicine has already, has had since 1628 when Thomas Harvey published his novel theory of circulation. When one knows how blood is normally made and circulated, the fatigue and paleness of anemia has more functional meaning. Likewise, orthopedics has great knowledge of normal bone structure when fractures need repair. As yet psychiatry and its related disciplines have no comparable anatomy and physiology and doesn't seem to consider that it needs these. Of course the brain's involved, but how, in what parts? How do we think of behavior as physiological? What in the brain, exactly, is broken - to use Nancy Andreason's felicitous phrase¹ - in depression, demoralization, mania or psychosis - and how does it operate normally when not broken?

I borrow top-down and bottom-up from Patricia Churchland to refer to studies linking behavior to body (*top-down*) and body to behavior (*bottom-up*).² Usually we deal in *top-up* phraseology when dealing with patients psychotherapeutically (the unfortunate term psyche means soul which in turn implies disconnection from the body - this is okay for those who feel their soul only to be disturbed, but I desire a connection with the rest of medicine). Psychiatrist-turned-neurobiologist Eric Kandel usually deals with *bottom-down* issues in his research on simple creatures like the sea hare. To his credit, Kandel has not lost sight of his roots and regularly addresses clinicians with how his information on these creatures has at least remote relevance for normal behavior and for practice. When he does this, he is thinking *bottom-up* in a salutary manner.

So to follow are ways to consider the dimensions of normal human behavior and its underlying biology - normal biology from which so-called mental illness perhaps deviates. I will consider leadership biology with considerations that involve comparisons (how are we the same as other animals?) and contrasts (how are we different?). I argue in my chapter for Leon that being distinctively human is therapeutically helpful if we work with our patients to cultivate features that stem from our large brain - note Thomas Bell's approval of the "shiver" story in the letters section. But for this different essay, let us

return to the A.C.P.

Leadership biology. The A.C.P president this year, Paul Fink, is a Philadelphia psychiatrist of whom I am very fond. He loves opera, is flamboyant, dramatic, and as we-all experienced him this meeting, holds assiduously to conference time schedules, not hesitating to cut off even prestigious psychiatrists in mid-sentence when master of ceremonies. But he does so with such good humor and works so clearly in the interests of the group and schedule that I sensed no resentment in the frustrated speakers. He exhibits being naturally in charge, laughs easily, gives generously of his time, is well cognizant of the rules of the game, is very happy, reveling in his success and in his role.

Upon first arrival at the big room of the meeting, Paul yelled my name across it - I and Suzie happened to be the only ones there just yet. He generally speaks more loudly than others and moves more quickly, but does all this within the well laid out context of his leadership here and elsewhere; he is a former president of the much larger American Psychiatric Association (A.P.A.). His presidential address here - as it had before with the larger group in this era of cut-backs - cautioned us as psychiatric clinicians to face realities, to work readily in other settings, to be - he said it repeatedly - a team leader, exemplifying as he did so how to go about that. Above all, he admonished us to adhere continually to high standards of care for our individual patients.

Paul exemplifies leadership in his behavior. But if we think only on the behavioral level - describing his behaviors like people-watchers, we would not be thinking sociophysiology. Rather we would be thinking *top-up* only, not the *top-down* needed as well. Correlated with distinctive behaviors, we need to think of what goes on in the body, not only the good energy and stamina of his obviously healthy blood (he exudes ruddy good health), but how do his brain cells pace his behavior and stimulate the particular communicational thrust of his activities?

So as he spoke, I wished for a miniature device on

his head that would register what was going on within it -- some measurement, for instance, of how much oxygen was currently used in his various brain components. What brain areas are selectively more engaged when he is actively leading versus when he follows? Or how does his brain activity contrast or compare to that of non-leaders? Actually, from what we know already about such studies done in the laboratory setting, we can guess some of it.³

We can assume, that is, that when he examines something he sees, his visual cortex would enliven the mythical miniature imaging device. When he talks on something, his Broca's area might glow; when that something is close to his heart, his limbic system may show vivid color. As he plans vigorously, his left lateral frontal cortex would light up the imaging device's computer screen.⁴ Since Paul enjoys the drama, music and pageantry of it all, his right cortex fore and aft likely catches and expresses the non-verbal story line. At one point in the overall proceedings when the room lights didn't go up as he requested (in his usual imperious manner), he threatened to have a temper tantrum - but he didn't - indeed he was laughing at himself. *Partly* he was self-mocking - I think he *does* have temper when less constrained by an audience. We envision that when he restrained himself from that outburst, the inhibiting cells of his orbital frontal cortex just above his eyes were surely very active.

We first learned of the importance of these cells a century and half ago when another effective leader suffered damage to his frontal lobes.⁵ The famous railroad foreman, Phineas Gage, was studied by his doctor, John Harlow, in 1848 after sustaining a penetrating injury by an iron rod arrowed through his anterior skull as he leaned over an explosive charge while tamping it with a pointed iron. Gage survived physically quite well for over a decade (as did the lobotomized psychiatric patients of the 1940s), but after this event, Gage could be in charge of animals only, specifically horses, and far away from Vermont; he lived for years in Chile. From the time of the accident, he began to swear incessantly. He could no longer plan. He became socially irresponsible.

His lesion could be more specifically located be-

cause his skull and the rod that damaged his brain were exhumed by Dr. Hariow's influence after his burial. They were then preserved at Harvard and Hanna Damascio from Iowa, who is an expert on brain imaging, recently led a team that measured bony landmarks to discover where the old injury must have been located (answer: anterior frontal cortex on both sides - not one side only).⁶ Antonio Damascio's new book, Descartes' Error, covers the Damascio idea - articulated now in a number of fora - that sociopathy has a discoverable pathogenesis.⁷

Comparison to other species with hope for no offense. But thinking of all this imaging work on normal cortex leaves unsolved how Paul's brain is *distinctively* active when he's *in charge* - I mean, might there be some pacemaker, some neural generator of additional muscular activity, of particular sensitivity to those whom he must admonish, of neurons that somehow register the whole sweep of the social setting? Many leaders in charge are louder, dominating, expectant that what they say will happen (remember Paul wanting the lights up?), as if some kind of volume control has been turned up and stays there.

When finally discovered, I doubt such a core pace-making, volume control structure (if this is the best descriptor) will be in cerebral cortex, the newest of expansive brain tissue and greatly larger in the human compared to other primates? Rather might such brain centers have been there long before the human brain expanded? Not that it wouldn't have been revised and reshaped with natural selection, but the cortex portion of this mammalian organ is expanded especially, several-fold larger than the brains of our closest relatives in other species, the gorillas, chimpanzees, and orangutans, and larger than the pre-hominids of three million years ago who could nevertheless walk bipedally. Not only the great apes and other primates exhibit dominance behaviors, as we all so know, but so do cattle, wolves, rats, mice, lizards, fish and insects.

Suzie and I especially considered the cattle when we found ourselves watching a bullfight while in Acapulco. We watched the youthful bullfighters who weren't very good according to Salvadore

Hernandez, our tour guide and excellent leader of the little group that went to the Acapulco ring from our hotel. The obvious dependency of the first fighter, a blond youth, over his deficient performance reminded me of the lonely boy on a country estate in Norway whose only friends were barnyard chickens. With their help however, with the help of the observations he made on them, Thorlief Schjelderup-Ebbe went on later to achieve international fame for his discovery of the famous peck order which first called the attention of the twentieth-century mind to pervasive social rank hierarchies in creatures throughout the animal world.⁸

Now I the conference-attender, friend of Paul and part of Paul's group, must worry. I risk political incorrectness. Fred Goodwin compared the problems of the inner city to those of animal populations and was blasted from his leadership position for allegations of insensitivity to minority problems: the disadvantaged people about whom he spoke interpreted his statement as just another assertion that they were only animals, insultingly nonhuman. Of course, I know Paul to be sophisticated and that he may understand that I am not trivializing his work as leader if I compare it to the dominance behaviors of chickens, fish and insects. But I do not want to appear disrespectful to someone I admire and respect. I want when he reads this that he (and others) not be enraged but rather feel admired. Another leader named Paul, ASCAPian Paul Gilbert, points out that deserving admiration constitutes an important part of human alpha status.⁹ He calls it Social Attention Holding Potential (SAHP), which is distinctly more than Resource Holding Potential (RHP), a concept initially used to measure fighting or territory-holding capability in non-human animals. The RHP concept was used first in dung beetles who win on the basis of size only. Humans win on the basis of size, too, but of groups, not individuals only. They have their distinctive, cortically flavored forms of leadership, making them worthy to be called that, not competitive dominance or sexual competition only.

But the extensive representation of parallel behaviors throughout the animal kingdom may tell us something useful and important. That some animals

compete successfully against others of the same species seems to have been so useful that natural selection hasn't had to "reinvent" it. To be reinvented (convergent evolution), there would have had to be atrophy of the function at points in the long history of living animals. I know of no living animal species in which it is absent. Instead much behavior in animals has involved sexual selection and male-male competition: even parthenogenetic lizards have courtship behavior patterns. Dinosaurs competed with each other such that some of them (*pachycephalosaur*) developed incredibly thick skulls (approximately a foot in thickness) to protect their walnut sized brains against battering ram tactics against each other; *rams* themselves - sources of the metaphor- are large-brained and subtle by comparison despite their great curving horns. I remember from the creeks of my childhood marveling at the close contact between the darning needle insects who flew extraordinarily close together; I assumed then that it had something to do with mating. Now I learn that the male was sticking close to the female in order to have been the last to have copulated with her during her fertile period; the last to do this, it turns out, is the one to fertilize her; indeed, their penises feature brushes that sweep out the sperm from the just previous mate. What a lot of behavior for very little brains!

So any potential pacemakers for leadership in Paul's brain are probably buried deeply and do not need to be very large. The mythical device to measure its activity would surely have to be specifically aimed and to be especially sensitive, not overwhelmed by, and somehow separable from, all the stuff going on above it, perhaps in some location concerning which we have little present idea how it functions, like the *red nucleus* in the *midbrain*. Or maybe in the *hypothalamus*. I know of no evidence that the *red nucleus* is involved - it somehow is an intermediary way station between *cortex* and *cerebellum*.¹⁰ But then the *cerebellum* is increasingly seen as involved with contralateral cerebral function. Lesions in the cerebellum can apparently cause what looks like damage to the frontal cortex on the other side.¹¹ This underlines that we should think of functional systems in the brain, not places and locations only.

But persisting in place imagery anyway, and liking color to boot, perhaps another colored nucleus, the blue one that makes norepinephrine, could be a candidate (*locus coeruleus*). Japanese investigators have discovered that an antidepressant medication, desipramine, causes neuron components in this nucleus to sprout and they additionally found that the depressed person has fewer such. Perhaps this structure - known for mediating flight, fight and freeze reactions to danger - also has a leadership pacemaker role; among surely many functions. Certainly the blue place resides in a primitive part of the brain (in the *pons* just up from the *medulla oblongata* with its even more primitive taste and respiratory functions). We know that it somehow is close to a pacemaker for REM sleep, which features the vivid participatory stories we each experience and call dreams.

The situation is surely complicated by the fact that dominance and winning at sexual competition doesn't equal human leadership (although some dominance features are clearly evident in part of Paul Fink's behavior). And, our tour guide, Salvadore, told us of his sixteen grandchildren and six great-grandchildren. In the business of perpetuating his genes, he has done well. Additionally, I know Paul to be contentedly married and highly invested in the family he has founded.

Not only his family: Paul is also caring, companionable, sensitive to the entire group of the meeting, eager to do the group's will, able to keep track of the individuality of innumerable people he has led in this and in the immensely larger A.P.A. organization as well. If a leadership pacemaker is small and buried, hard to discern with our mythical device, the other brain components recruited to carry out the tasks are surely massive and complicated. We should not forget the size of the human brain and the general consensus that the larger size indicates a *social* brain: it means the increased information processing has payoff in increasing subtlety that outweighs the cost we humans bear of cephalopelvic disproportion.

We know with certainty that much of cortex has to do with language and other means of communication as

well (witness the right side of Paul's brain mediating his appreciation of opera). For Paul, his popularity and leadership is a compound of many things: his grinning "plus face" described by ethologist Gail Zivin, his ability to make allies (far outdoing the chimpanzees of de Waal's *Chimpanzee Politics*¹²), his dominance (done in the service of the group and serving to maintain group coherence and agenda), and his enormous capacity for hard work: talking, planning, thinking, writing, speaking, listening to what people have to say, absorbing enormous quantities of information. He displays much more than a thick skull, massive horns or a carefully designed brush. He makes us proud of our enlarged human brain.

Audienceship biology. As did Paul's audience make us proud of that organ. Nearly all of the many psychiatrists and spouses in the audience are leaders; they usually have their own versions of Paul's mythical pacemaker operative in non-Acapulco settings. Many former A.C.P. presidents who can be as unabashed and active as Paul were quietly attentive as he and the others spoke, not having to say a thing, not more active at the moment, clapping perhaps as a point or presentation caused their approval. The grouping reflected the atmosphere of Michael Chance's hedonic setting, relaxed, collegial, pleasant, good humored. We hobnobbed without much condescension and with overall good feeling. Certainly I felt that way and I believe others did too; all certainly seemed to feel good (as leaders usually do in the leadership role - feeling good seems to be a payoff for all the trouble); one interesting thing about Chance's hedonic setting is that instead of only one individual being in charge to therefore feel good, *all* win and get prizes, as seems to be generally possible in well protected, well parented, well audienced youth).

A dear departed leader was remembered: Carolyn Robinowitz, a major leader in psychiatry herself, presented a tribute to Danny X. Freedman during the meeting, as this Olympian figure - the editor for many years of the Archives of General Psychiatry, one of the two premier journals of our field - died last year. The other major journal, The American

Journal of Psychiatry, is now edited by the extraordinary Nancy Andreason, who like Carolyn Robinowitz, has demonstrated that leadership is hardly a male domain only. She was at the A.C.P. too, introducing Carol Tamminga, a woman scientist who was groomed by Danny X. at the University of Chicago.

Danny X. was extraordinarily accomplished and honored during his lifetime, beginning or inspiring investigations of the brain of the kind to which I indirectly referred in talking of Paul's brain. Many of the current major investigators recall having felt enormously helped by him. From my notes, I have that Carolyn said of him, "People who knew him spoke of his capacity to cause you to believe that you were his only child." This was true of me as the following story will reveal; my paper on evolutionary origins of manic-depressive disorder was under review at the Archives when he was president of the A.P.A..¹³ He and I had corresponded about the manuscript (I had known him before as well). One of his prerogatives as President was to influence the program committee to choose renowned neuroanatomist and theorist Paul MacLean as a featured speaker. I went to this lecture of course, as both were heroes of mine (no surprise to readers of The ASCAP Newsletter!). In this room with hundreds of people, both were on the podium and I was in the audience a third of the way back, surely insignificant I assumed; but as Paul MacLean showed slides on how defeated lizards turn sick and die, Danny X. caught my eye in the audience and winked, to my surprise, amazement and gratitude.

Carolyn went on: "He was charismatic, authoritarian, narcissistic, and cunningly effective; he could be very deferential and kind. Children connected with him immediately as he seemed unusually able to relate on their level; he was not condescending to them, but he could be esoteric and abstruse to people with responsibility insufficiently met; he had imperious expectations. This may have increased over his last year." Carolyn speculated that he perhaps knew something of his mortality but also knew that there was so much more to do. She continued, "He knew more of the staff of the people with whom he worked than did the people them-

selves; he knew the families of everyone and showed great interest. He took childlike delight in being honored by the pope. Danny ordered many pictures of the event. He said, "Who would think a little Jewish boy from Crawfordsville, Indiana, would get to shake hands with the pope?"

How interesting to think of one of the foremost leaders of American psychiatry as forever a child, pleased by the doings of children, of being pleased with himself by honor from the pope, of revealing thereby something of his story line, of his version of what the other Danny Freedman calls the internal working model: that constellation of childhood events and impressions that influences one in considering how life ought to be lived. In Danny X.'s case he wished to do well, to have achieved beyond his origins.

But the other facet of his childlike features relates to another feature of human sociophysiology: our enormous receptivity to the stories of others, like children always. We all know of our neotenus physical features: e.g., human adults look like the offspring of chimpanzees. Compared to adults, we have underdeveloped chins and brows. We also possess childlike pleasures and delights. We love the stories of our youth in their new versions at the professional meetings of our maturity. The A.C.P. audience delighted in the presentation of Nada Stotland. She debated the positive side of "Resolved: That It Is Desirable and Cost Effective for Psychiatrists to Provide Psychotherapy" but spoofed the entire process with a series of slides, as follows (envision the questions flashed up one at a time, with pauses as we laughed together in unison to her hilarious commentary, initially caught off guard then enjoying immensely her development of her story line):

- *"Do we all really disagree?"*
- *"Who can tell the best jokes?"*
- *"Do the jokes have to be relevant?"*
- *"Showing slides proves my talk is scientific." (She showed a series of undecipherable slides resembling those meant seriously shown the first day of the meeting.)*

- "If you're scientific you're right."
- "Are slides really scientific if you can understand them?"
- "I don't answer questions; I ask them."

The entire group howled with laughter. We had been primed by the somewhat joking, mock battling, but also quite serious demeanor of the other debaters, headed by the redoubtable Robert Michels, another major leader in American psychiatry. But his friend Gary Tucker from University of Washington held his own as had psychologist John Clarkin from New York. Indeed, prior to her presentation, some of us wondered what could Nada do; she was known to us but somewhat less so than Michels and Tucker; what *could she* do after the verbal pyrotechnics preceding her? So some of her success was the surprise she sprung, some of it her irreverence, certainly all of this set the stage for our reception of her message about the teaching of medical students: "Why should they be deprived of learning about interpersonal expertise?" - a point she made powerfully and well.

But overall - the major point here - we delighted in her story and her superb way of telling it. Laughter bonded the group; we were together with her. As we know laughter can bond the group by being in unison against the enemy,¹⁴ by producing mocking laughter very painful when one happens unfortunately to be recipient of it, as on the school ground when the bully and his friends do it, or if one is psychotic and the voices others can't hear nevertheless sound this painful signal. Of course Nada had her enemies too: ignorance, stupidity and the perpetrators of such, and she bonded us against such aliens. So we were like *human* children with Nada and what an interesting idea it is that our big social brain purposefully keeps us children even though we carry out mature tasks. Staying forever youthful catapults us into still greater maturity.

As an audience we also influence the speaker. Nada told us that she didn't know how her slides would be received. She may have worried ahead of time but was clearly fueled by her success. She, leader for the moment, *followed* the audience. Paul Fink too wanted to satisfy the group. As audience members

we are not slavish followers but think our own thoughts and feel secure that our own opinions can be heard at least in some form, if not via individual comments in public or private, then by applause or laughter. We as humans can be in charge in many ways. I for instance pounded on my machine taking notes, newly respectful of the skills of court reporters, but grateful for this little black box that follows my orders so assiduously. John Birtchnell, in his various works on relating points out how part of the human capacity entails being able to personalize more than pets, even inanimate objects: we can appreciate being "lower" - to use his phraseology -- to the traffic light, taking orders from it - as well as being "upper" to and commanding of such machines as the radio, computer or automobile.¹⁵

Leadership biology as potentially helpful in understanding disease. Well, to return to earlier dissatisfactions and discontents, what diseases might be informed by more knowledge of leadership biology as anemia and polycythemia are informed by knowledge of blood structure and physiology? Mania is one as I wrote for the Archives in Danny X.'s presidential year.

At another point of Carolyn Robinowitz's narrative of Danny X. she told of late night phone exchanges over politics after Danny moved from Chicago to the west coast. She would call at 5 in the morning and catch him before he went to bed. He and she seemed to need remarkably little sleep, but here's my focus from this anecdote: as Carolyn told of her early rising, she said to the group in a mildly defensive tone, "No, I'm not manic, I just get up at 5 in the morning." Why did she have to apologize? Because we all know intuitively there are relationships between leadership and mania and who wants to be thought of as having a dread medical condition? As mentioned earlier, Carolyn Robinowitz is an extraordinary leader in her own right. She has been a director of the American Board of Neurology and Psychiatry. She has been deputy medical director of the A.P.A.; she is currently President of the Association of Academic Psychiatry. I am sure she is a future president of the A.P.A. and A.C.P. She is energetic, forthright, happy, forward-seeing and planful, demonstrating many of the attributes that Paul Fink and

Danny Freedman also demonstrate.

The fact is that manics and high profile leaders share many attributes in common - needing less sleep is just one of the attributes. This is *not* to call leadership mania: on the contrary, manics don't do what Paul Fink, Nancy Andreason, Danny X., Nada Stodland and Carolyn Robinowitz do matter-of-factly: these real-life leaders get things done. Ann Roe, biographer of creative people, says:

*"[Y]ou've also got to have ideas, and you've got to persuade people that your ideas are important and to see them into reality ...the excitement and elation is in the creative power. It's bringing things to pass."*¹⁶

I now quote from my own as yet unpublished manuscript, Biology of Leadership: Tales of Tinkering (Chapter 1):

"When people display a manic state, they presume personal leadership which they don't in fact have. They seem convinced they are in charge and behave accordingly, heedless of reality, especially given that by definition circumstances have them as patients, an opposite extreme from leadership.... Something I ... call alpha psalic has... normal functions in the realm of social relations: it provides people with motivation, direction and persistence to foster getting done what needs to get done. It misfires in mania. There is a medical condition called polycythemia in which there are excess blood elements and the patient is sick as a result. Mania is like that - too much of a good thing."

(The following stems from chapter 9 after describing the dominating, high profile characteristics of Lyndon Johnson and noting their resemblances to mania):

"But I have not called [LBJ] manic: he was not. He was successful, never hospitalized for mental illness, never treated, never saw a psychiatrist, at least to available knowledge. If he had, I suspect that would have come to light as his zealous biographers would have latched enthusiastically onto that possibility. This doesn't mean that latter day observers have not labeled him as manic and depressive, but to my mind this is unfortunate post-hoc labeling. Another patient I

have known when psychotic declaimed her intent to be the first woman president. If Lyndon Johnson had that ambition early on, he kept it private and secret. She was delusional and worried about the FBI. He became president and used the FBI to his own ends."

In short, the sociophysiology of The American College of Psychiatrists, like many professional meetings, involved leadership physiology in its normal highly adaptive form. True, we examined the maladaptive form as well. Two newer leaders in the A.C.P., Charles Nemeroff and Larry Inderbitzin from Emory University, led the discussion of a manic patient interviewed by Charles Bowden from San Antonio. The patient was prototypic: expansive, demonstrating pressure of speech, would-be dominance, and grandiosity. Dr. Bowden interviewed him with superb audienceship to the patient - extensively hearing him out - but while exhibiting implicit power and authority at the same time. Some of our group saw the patient as potentially violent if he didn't get his way; but Charles's interview never led him anywhere near such an unfortunate direction. I remembered Leon Sloman's point made recently in ASCAP that handling the manic involves a low key but definite dominance - best described as authority perhaps. But it must be done correctly to exhibit the full workings of the human brain and Charles carried that off superbly.

In summary, sociophysiology represents the top-down bottom-up study of normal communication which should help us understand the pathophysiology of the illnesses of the specialty as implementing the circle metaphor of the blood vessels helped with cardiovascular disease. Should the specialty be renamed Sociophysiological Medicine in parallel with Internal Medicine and for getting rid of the Cartesian soul disconnected from the body? Developing that miniature device for the leaders' head might be a first step in the endeavor, for assessing and characterizing one of perhaps many psalics (Propensity States Antedating Language in Conspecifics - which is another acronym for psalic).¹⁶

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ABSTRACTS & EXTRACTS

Safire W: On language.

Petronis A & Kennedy JL: Unstable genes - unstable mind?

Shaywitz BA, Shaywitz SE, Pugh KR, Todd Constable R, Skudlarski P, Fletcher JM, Shankweiler DP, Katz L & Gore JC: Sex differences in the functional organization of the brain for language.

Davis M, Hitchcock JM, Bowers MB, Berridge CW, Melia KR & Roth RH: Stress-induced activation of prefrontal cortex dopamine turnover: Blockade by lesions of the amygdala.

Botez-Marquard T, Leveille J and Botez MI: Neuropsychological functioning in unilateral cerebellar damage.

Safire W: On language. The New York Times Magazine. Sunday, Sept 25, 1994, p.22.

Extract: "O.J. was so graceful, so ingratiating," Robert Lipsyte wrote ... "that it was easy to forget how he got there, a ghetto gang leader, a high school, junior college, major college *Alpha male* who had learned to knock down anything in his way."

Gary Muldoon writes ...: "*Alpha*? The reference is unclear to me. First thought - fraternity -- nah. In 'Brave New World', there are people, with Alphas on the top - could be." Nah. The fairly frequent phrase *Alpha male* - 135 entries in Nexis, 134 in Dialog - though not in dictionaries yet, nor even in the Bamhart New-Words Concordance, is from ethology. No, not *ethnology*, the branch of anthropology that compares cultures: *ethology*, the study of animal behavior. In two words, an *alpha male* is "top dog"; to ethologists it is "the dog at the top of the troop's dominance hierarchy." "An *Alpha male*," says Dr Katherine Houpt, director of the Animal Behavior

Clinic at Cornell University, a high human among ethologists, "is the top rank in the hierarchy. From *Alpha* as the first letter in the Greek alphabet, this term is usually used of the top male in wolf packs, the one that gets to breed and to aggress and has first access to scarce resources like food and the best place to sleep."

Alpha male is the second contribution of ethology to pop psychology and politics. The first was *pecking order*, a discovery of the Norwegian zoologist Thorlief Schjelerup-Ebbe, who called it *hackordning*, "peck order". In the social order of chickens, the one at the top is the hen that pecks but is never pecked in return; the novelist Aldous Huxley picked this up in his "Point Counter Point", and it was adopted in political analysis in 1954 by the Alsop Brothers.

Petronis A & Kennedy JL: Unstable genes - unstable mind? Am J Psychiatry 1995;152:164-172.

Abstract: *Objective*: Over the past 3 years, reports of DNA alteration in myotonic dystrophy, fragile X syndrome (types A and E), Kennedy's disease, Huntington's disease, spinocerebellar ataxia type 1, and dentatorubral-pallidoluysian atrophy have identified a new class of human mutation, referred to as trinucleotide repeat amplification. All available evidence suggests that this unstable trinucleotide repeat DNA is the biological basis of the clinical phenomenon of genetic anticipation. Two components of anticipation, greater severity and earlier age at onset in subsequent generations, have been widely observed in schizophrenia and bipolar affective disorder. Thus, a reanalysis of the genetics of major psychosis from the perspective of unstable DNA is of significant interest. *Method*: The authors reviewed the available literature on anticipation and related phenomena in major psychosis and reevaluated the family, twin, and adoption study data. *Results*: The unstable DNA concept competes well with the traditional multifactorial polygenic theory; many deviations from a single gene mode of inherit-

ance in psychiatric twin and family studies, which previously served as strong proof for more than one etiologic gene, can be easily explained by the non-Mendelian behavior of unstable DNA. In addition, this new paradigm provides a simple explanation for unclear issues in the genetics of major psychosis, such as the identical rate of psychosis in the offspring of discordant monozygotic twins. *Conclusions:* The major advantage of the unstable DNA hypothesis over the multifactorial polygenic theory lies in the possibility of falsifying the unstable DNA hypothesis by two independent laboratory strategies: a classical linkage analysis and a set of novel methods for the direct detection of unstable DNA sites.

Shaywitz BA, Shaywitz SE, Pugh KR, Todd Constable R, Skudlarski P, Fulbright RK, Bronen RA, Fletcher JM, Shankweiler DP, Katz L & Gore JC: Sex differences in the functional organization of the brain for language. Nature 1995;373:607-609.

A much debated question is whether sex differences exist in the functional organization of the brain for language. A long-held hypothesis posits that language functions are more likely to be highly lateralized in males and to be represented in both cerebral hemispheres in females, but attempts to demonstrate this have been inconclusive. Here we use echo-planar functional magnetic resonance imaging to study 38 right-handed subjects (19 males and 19 females) during orthographic (letter recognition), phonological (rhyme) and semantic (semantic category) tasks. During phonological tasks, brain activation in males is lateralized to the left inferior frontal gyrus regions; in females the pattern of activation is very different, engaging more diffuse neural systems that involve both the left and right inferior frontal gyrus. Our data provide clear evidence for a sex difference in the functional organization of the brain for language and indicate that these variations exist at the level of phonological processing.

Davis M, Hitchcock JM, Bowers MB, Berridge

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Stress consistently has been found to activate peripheral and central catecholamine systems. Dopamine (DA) turnover in the prefrontal cortex is especially sensitive to stress produced by relatively mild footshock, conditioned fear, or exposure to a novel cage. Because lesions of the central nucleus of the amygdala block the effects of both stress and fear in many experimental paradigms, the present study evaluated whether such lesions would block stress-induced increases in prefrontal dopamine turnover using either mild footshock or novelty as stressors. In Experiment 1 electrolytic lesions of the central nucleus of the amygdala attenuated the increase in the dopamine metabolite homovanillic acid (HVA) in the prefrontal cortex evaluated in post-mortem tissue normally produced by footshock. In Experiment 2 similar lesions attenuated the increase in dopamine turnover in the prefrontal cortex using a different stressor, novelty, and a different measure of dopamine turnover, DOPAC/DA ratios. These data provide further evidence for the critical role of the amygdala in stress.

Botez-Marquard T, Leveille J & Botez MI: Neuropsychological functioning in unilateral cerebellar damage. Can J Neurol Sci 1994;21:353-357.

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