For evolutionary psychiatrists, psychologists and others interested in sociophysiological Integration

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"[Ejvolution ... gives you a sense of time and place, allowing you to see yourself as part of a great journey. And likewise for the brain sciences. In this revolution, we have given up the idea that there is a soul separate from our minds and bodies." Ramachandran, V.S., Blakeslee, Sandra*(P4)

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The Across-Species Comparisons and Psychopathology (ASCAP) Newsletter is a function of The ASCAP Society & of The Psychotherapy Section of the World Psychiatric Association

The Across-Species Comparisons and Psychopathology Society Executive Council:

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Leon Sloman -1995-1996
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ASCAP Society Mission Statement:

The ASCAP Society represents a group of people who view forms of psychopathology in the context of evolutionary biology and who wish to mobilize members and resources of various disciplines 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 behaviorthat 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 Aims:

♦A free exchange of letters, notes, articles, essays or ideas in brief format.

♦Elaboration of others' ideas.

♦Keeping up with productions, events, other news.

♦Proposals for new initiatives, joint research endeav ors, etc.

WPA Psychotherapy Section Officers:

Chairman: Russell Gardner, Jr. (USA) **Co-Chairman:** G Frank Koerselman (Netherlands) **Just Past Chairman:** John S. Price (UK) **Secretary:** Mark Erickson (USA) **Committee Members Without Portfolio:**

Maria Ammon (Germany)
Piero De Giacomo (Italy)
Axel Schulze (Germany)
Undesignated as yet

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The World PsychiatricAssociation is an organization of psychiatric societies aimed at advancing psychiatric and mental health education, research, clinical care and public policy. The basic members of the WPA are 110 national psychiatric societies, representing more than 140,000 psychiatrists worldwide.

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ADDRESSED TO & FROM ...

Talking with HagopAkiskol

Your editor-in-chief with laptop on lap in Hotel Acropolis House, Athens, has just been working on new arrangements for *ASCAP's* masthead. Fresh from the World Psychiatric Association (WPA) meeting just completed in Hamburg, Germany, he appreciates the considerable honor at being elected Chairman of the WPA Psychotherapy Section (drafted business meeting minutes are elsewhere in the issue).

The three psychotherapy section symposia went extremely well with the conclusion of the final one a triumphal comment by discussant Hagop Akiskol who said amongst other complimentary things, "The millenium belongs to you!" (meaning what can be called in shorthand the ASCAP approach to clinical matters). How fitting that I now view the Acropolis from my window, high point of a previous millenium!

Hagop added that he also feels the millenium belongs to "temperament," the importance of which has already been communicated to this and other audiences (that afternoon I tried to hear him but could not as the room in which he presented was filled to overflowing). He, the second speaker, had trouble entering the room and for me a non-speaker, the feat was impossible! I left hearing him plead with the AV technical staff that they must expedite things.

Concretely, however, Dr. Akiskol is the Editor-in-Chief of *The Journal of Affective Disorders.* He was critical of us for publishing in "an obscure un-indexable publication" (the one you are reading at this moment) feeling that we should be spreading our message widely, much more widely. *The ASCAP Newsletter* should be a refereed journal with evolution in the name, he opined.

Many ASCAPians, however, do not express happiness about a dramatic change of mission such as that. A relatively small group brainstorming and then putting forth well considered articles and other publications in already established journals seems the better route to greater notoriety. Moveover, forme personally, I retired from UTMB with the idea of writing books not negotiating with publishers about producing ing a new journal in an evergrowing crowd of new ever more specialized publications. The beauty of *The ASCAP Newsletter* in my eyes is exactly its behind the scenes work, functioning as a place for early drafts and debates, rather than the "finished truth" of a refereed journal. Yet, Hagop's fundamental point is an excellent one: we need to get published much much more: scientific articles, articles for op ed pages, books that enter the popular and scientific domains.

Hagop and I talked later. In his formal discussant remarks, he explicitly asked that we send articles to his journal stating that he would assure a sympathetic look at them. He noted that there is a subscribership of 2500 including many libraries so that there would be many readers. And he put action to his words: he took for further review the manuscript of Peter Rohde presented at the third symposium. John Price and I are composing a manuscript for him and we encourage others to do likewise.

The address is:

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Russell Gardner, Jr.
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Annual Business Meeting of the ASCAP Society

Mark Erickson chaired the meeting. Other members present in addition to the recorder were Ivor Jones, Ferdo Knobloch, John :rice, Antonia Price, Leon Sloman, Axel Schultze, Eva Maria Schultze, Detlev Ploog, Peter Rohde, Jennifer Rohde, Piero De Giacomo, Antonieta Santoni Rugui, Mauricio Cortina, Barbara Lenkerd, Russell Gardner, Sue Gardner, Frank

Koerselman, Anne Koerselman-Muller, Marco Bacciagaluppi, L. Bertolucci, and Margerete Scherff.

Next year's ASCAP annual meeting will be associated with the Human Behavior and Evolution Society (HBES); our group will meet during the day prior to HBES's opening reception on Wednesday evening. This will likely be June 7 (officially decided as such), but sources close to the decision-makers suggest it will be a week later because the earlier date may coincide with the final week of various campuses. Put the date down as tentative, therefore, and await future announcements.

Definite, however, is that the location will be Amhearst, Massachusetts, and the date likely June 7 although from sources close to the HBES decision makers, this is not yet a fixed date, and may be delayed a week because the earlier date may coincide with the final week of various university programs. Please put the date as tentative, therefore, and watch for future announcements.

The new president is Ivor Jones from Australia. Former Professor and Chairman of the Department of Psychiatry in Hobart, Tasmania, he has published extensively on across-species comparisons and psychopathology, notably highlighting that alpha sugar gliders, a marsupial in Australia, show a defeated depression-like state upon introduction into the cage of other sugar gliders, where the hierarchy has already been established.

Linda Mealey was this year's **Beck award chairperson.** She has indicated intererest in again carrying out this job but only if the group is willing to brainstorm for how to elicit greater interest and more high quality contributions to choose among. This year no prize was given because the committee found no contributions to be deserving. Dr. Jones indicated that he would be in touch with Dr. Mealey to ascertain how this might be best accomplished. She was designated the tentative committee chairperson again this year pending Dr. Jones's confirmation. He indicated that he planned to obtain a laptop computer in order to stay in optimal email connections.

For the rest of the day, this year's chairman, Mark Erickson, chaired the lively informal scientific meeting that ensued, lasting until will after the 5 p.m. scheduled meeeting, details of which will be separately reported. He did this despite being just removed from a ten hourtime zone removal from his native Alaska. The group thanked him for his attentiveness and interest over the year.

Reference for Head Quote

*In Ramachandran, V.S., Blakeslee, Sandra: *Phantoms in the Brain: Probing the Mysteries of the Human Mind.* New York, NY: William Morrow, 1998, p.157.

ABSTRACT for MacLean **Festschrift, July 16-17,1999. This was inadvertantly omitted from the July issue.**

Weisfeld, Glenn E.: Neural and Functional Aspects of Pride and Shame.

Abstract: Motivated behaviors evolved earlier than complex cognitive capacities. The brainstem, basal ganglia, and limbic system antedated expansion of the neocortex, as MacLean emphasized. This view is compatable with a functional, ethological perspective. Natural selection acts most directly on behavior. Action evolved first, and was only guided by sensory stimuli, learning and cognition.

Analysis of the neural basis of emotion has been advanced recently by LeDoux and Panksepp. LeDoux traced the neural pathway for the rat's response to fear stimuli. In simplest, most archaic form, a mammal responds to species-typical signs of danger by freezing. Neural impulses travel from sensory receptors to thalamus to amygdala to midbrain. This same pathway mediates a conditioned fear response, say to a tone paired with shock. The response occurs even without neocortex, which merely refines responsiveness to stimuli. In its absence the rat freezes even in reaction to tones different from the warning one. Additional components of fear are evoked through the amygdala also. The hypothalamus directs visceral adjustments via the sympathetic division and pituitary.

Emotional expressions are coordinated throught the midbrain. Other emotions too seem to be elicited by sensory input passing through thalamus to various limbic structures and on to the hypothalamus and midbrain.

Ethologists such as Barkow, Mazur, McGuire, and Darwin himself have proposed that the emotion of pride and shame evolved from dominance behavior in other species. Do neuroscience data support this interpretation? According to Panksepp, the route for dominance aggression passes from sensory receptors to thalamus to amygdala to hypothalamus to midbrain. The route parallels that for fear, but is separate.

If pride/shame evolved from dominance aggression, then its neural mediators should be intimately connected with those for dominance. This seems to be true. The structure most specifically related with pride and shame is the orbrtofrontal cortex (OFC). The OFC receives multimodal sensory input via the thalamus. The OFC sends output to the amygdala, hypothalamus, and midbrain. Like the neocortex, it provides a less direct but more precise pathway for modifying emotional reactivity. However, as MacLean emphasized, the OFC is limbic in cytoarchitec-ture, connnections and, ontogeny. Further, it is affectively sensitive, as stimulation studies reveal.

If pride and shame evolved from dominance aggression, then the functions of the OFC should be similar to those of the amygdala. OFC and amygdalar lesions in monkeys often result in reduced aggressiveness and lower rank. Psychomotor epilepsy, involving the amygdala, can result in the self-reports of various affects, including "guilt," "shame," and "troubled conscience." Likewise, people with bilateral OFC lesions typically act shamelessly.

How then do these two structures differ? OFC lesions in monkeys often result in behavior that is inappropriate for the animal's rank. A dominant animal may defer to a subordinate; a subordinate may attack a superior. Thus, the OFC may mediate learning about cues or individuals associated with dominance behavior, much as the auditory neocortex helps identify tones associated with pain. An OFC-lesioned animal might avoid dominance encounters out of inability to compete effectively. People with bilateral OFC lesions seem unconcerned with their social standing and reputation. Phineas Gage was described as lacking deference for others. Such patients are boorish and impolite, as though insensitive to learned cues about dominance, notably how to protect and advance one's standing by the values that guide human behavior. These patients neglect their occupations, the highly specialized paths to social behavior.

Thus, learned dominance cues may register in the OFC. These cues are much more complex in humans; we compete for dominance by many criteria, and communicate adjustments in dominance verbally as well as nonvertoally. Moreover, dominance considerations color virtually any motivated act. We do not just lunge for a piece of bread; we ask politely. We engage in elaborate strategies to advance our social standing and to avoid losing face. This would explain the finding that OFC lesions result in more impulsive behavior; the patient has been freed from these constraints imposed by conscience. This is not just because of the deficit in long-term planning that occurs because the OFC normally buffers the dorsolateral prefrontal cortex from distraction so the latter can formulate sequential plans.

The OFC adds a new layer of emotionality—not rationality—to human behavior. Pride and shame are constant modifiers of our voluntary behavior. When we eschew committing an antisocial act or perform an altruistic deed, we are driven by a distinct emotion, ratherthan acting purely rationally. When we engage in long-term planning in anticipation of some distant payoff in pride and position, we are again acting on an emotion. There is no adaptive value in pursuing rationality perse.

The misconception that rationality controls emotion has contributed to neglect of the basic universal emotion of pride and shame. The burgeoning of the prefrontal cortex in hominids perhaps reflected the need to anticipate others' approval or disapproval of our contemplated actions, ie, anticipate pride and shame, in all settings of social life.

Article:

by Russell Gardner, Jr.

Section on Psychotherapy of World Psychiatric Association Hamburg, Germany, August 10, 1999

Individuals present: John S. Price, Chair. Marco Bacciagaluppi, Mark Erickson, Russell Gardner, Jr., Peter Rohde, Axel Schulze, Eva Maria Schulze, Hermes A. Kick, Piero De Giacomo, Maria Ammon, Gabriella von Bulow, Use Burbiei, Ferdo Knobloch, M. Mezzich, Leon Sloman, Fernando Contreras-Femandez and Antonietta Santoni Rugui; recorder was Russell Gardner Jr in the absence of Mauricio Cortina who could not be present.

Dr. Price called the meeting to order at 8 a.m.

1. **Minutes of the previous meeting** were read by Dr. Price and were unanimously approved by those present.

2. **Committee membership and officers. Resig nations and commendations.**

Dr. Price announced that **Dr. Cortina** is stepping down from his post as secretary. He officially thanked him for his role in organizing a symposium in Washington, D.C., between world congresses (May, 1998); another such version was presented at the WPA during the concurrent meeting. Many section participants attended and it was an excellent meeting. Dr. Price expressed the section's gratitude and hoped that Dr. Cortina would continue to be active in various ways.

During the past year former treasurer **Dr. Marco Bacciagaluppi** transferred duties to **Russell Gardner, Jr.** in view of the fact that the newly instituted dues structure was actuated via ***The ASCAP*** *Newsletter* which he manages. WPA section dues of $15 were added to the other costs of the newsletter ($35/year). Dr. Gardner therefore recently functioned in the double role of Section Co-Chairman and Treasurer. Dr. Price expressed the thanks of the group for the attention and efforts of Dr. Bacciagaluppi especially in view of the empty treasury until the new dues structure was instituted. Dr. Bacciagaiuppi expressed that he was not a candidate for officer at this time because of enhanced duties as head of an Italian Psychoanalytic Institute (he is also a member of the American Academy of Psychoanalysis). (Note added after the meeting from Dr. Gardner is that the current balance for the section funds is $210 computed prior to the calculations from new members.)

Other former committee members were not present at the meeting. Dr. Knobloch described that Dr. Yamaguchi from Japan had been ill and therefore did not respond to messages. He stated that he is well now and should be in touch.

Ferdo Knobloch has now resigned from the committee in his role as Past-President (having given way to the then new president Dr. Price at the Madrid Conference three years ago). Dr. Price thanked him for his extensive role as committee officer and member which stemmed from 1967 (the limit of membership is 9 years but he was very important forthe committee for a long time). He continues to perform arrangements on the website for the meeting in connection with the medical school at the University of British Columbia, as follows: www.psychiatrv.ubc.ca/vVPA/ psychother.htm For information to be placed here, he should be emailed at knobloch@unixg.ubc.ca.

Finally, **Dr. Price** himself announced that he was leaving the post of president but would be pleased to continue on the committee as Past-President if elected.

3. **Committee membership and officers. Slate of candidates.** Dr. Price explained that eight members are possible: chair, co-chair, secretary, and four members at large, with no more than two from one country. The treasurer role may be assumed by existing members and is not obligatory in a formal way.

The following were nominated as officers and members of the Section Executive Committee:

Chairman: Russell Gardner, Jr. (US) **Co-Chairman:** G. Frank Koerselman (Netherlands) **Secretary:** Mark Erickson (US) **Past-Chairman:** John S. Price (England) **Committee members without portfolio:**

Piero De Giacomo (Italy)
Axel Schulze (Germany)
Maria Ammon (Germany)

M. Mezzick (Germany)
Hermes Kick (Germany)

In view of WPA rules that stipulate only two members per country, Drs. Mezzick and Kick removed their names from the nomination. The remaining were elected unanimously.

The group agreed also that one member (of the eight) be left unappointed as that would give Dr. Gardner leeway to appoint someone whose membership might be helpful in future meetings, for instance, perhaps someone from Japan to help in planning for the next WPA Section meeting at the next world congress in Yokohama, August 24-29,2002.

4. Chairman's report on meeting of section chairmen. He attended this meeting on 9 Aug.

There are 52 sections and he observed to the group that when it came time for him to speak, he opined that given the importance of psychotherapy to psychiatry it should take up much more activity than that indicated by the single committee. Indeed, it should be at least ten. (As an aside to the section assembled, however, Dr. Price noted that this would enhance splitting of psychotherapists into groups which would be a pity; the better way to go would be to embrace psychotherapists of various persuasions. The section expressed some wish that more active advocacy of the section be conveyed to the assembled group but Dr. Price noted that there were many alphas amongst the chairs and that 52 sections had to be gotten through.) He also reported that the former Chairman of Sections, Dr. A. Okasha, is now designated to be the President-Elect of the WPA and Dr. George N. Christodoulou from Athens will be the new Chairman of Sections. Dr. Price reported that the sections are encouraged to draft consensus statements that might be sponsored by the entire WPA.

5. Psychotherapy Section events since the last meeting in 1996 (Madrid) (with commentary from those attending the section meeting).

Dr. Price reported that it pleased him to have the new association with *The ASCAP Newsletter.* This had meant that the section has a lengthy monthly newsletter that has impressed the WPA Executive Committee. With this as a brainstorming forum in which it is pleasant for people to participate, good progress in the integrative task of the section might take place. In contrast to most publications, the opportunity, indeed invitation, to respond always exists, and one's contribution is less likely to be a stone thrown in the pond with no ripples.

Responses: At his request, Dr. Gardner described *The ASCAP Newsletter,* it is a 30-35 page monthly publication with a format of original articles that are accepted with essentially no modification except grammatical, a to-and-from section of letters and short pieces, and abstracts mostly from recent literature on the whole range of sociophysiological integration. Well into its 12th volume, the August issue just put forth numbers #141 in total (the first issue was put out December, 1987). Some copies which included subscription forms were distributed to those previously unfamiliar with the newsletter and several people immediately made application to section membership via newsletter subscription.

Ferdo Knobloch who remains in charge of the section website noted that it - in addition to *The ASCAP Newsletter*- might be a place for information exchange. He could be emailed such information which then can be placed on the site (see Page 2 of this newsletter issue).

Marco Bacciagaluppi noted that Hagop Akiskol who was section discussant criticized the newsletter as it was read by few and that it should change to a

refereed journal. Russell Gardner responded that he was not interested in a refereed journal as already the newsletter stretched his capacities. He took very positively the welcomed challenge from Dr. Akiskol that included the very public comment that The new millenium belongs to you (and to temperament)!" Russell Gardner feels that we should be submitting many articles to many other publications; the more that are considered, the more the point of view will be familiar and in the future acceptable. Also popular books need to present the point of view.

In other conversation with Dr. Akiskol, R. Gardner learned that the *Journal of Affective Disorders* that Hagop Akiskol edits is highly interested in itself publishing deserving manuscripts from our area that deal with affective illness. He actively encourages it. Moreover it has 2500 subscribers so that publications in it will be widely read. Indeed he is ambitious for his journal. Dr. Gardner will assure that contact points are published in the ASCAP Newsletter (see page 4 this issue). Dr. Bacciagaluppi noted that the *Journal of the American Academy of Psychoanalysis* is similarly receptive. He has been guest editor in the past and is friendly with the editor.

Afterthought includes the University of Chicago publication *Perspectives in Biology and Medicine.* The current president of the ASCAP Society, Ivor Jones, has published in these pages.

Maria Ammon noted that she is Editor of *Dynamic Psychiatry,* a European journal and that it too would welcome contributions from individuals from the WPA Psychotherapy Section.

Since she and others attending the section were new to those already assembled, a relatively short autobiography/curriculum vitae of each might be sent to Dr. Gardner for inclusion in future issues of the newsletter along with descriptions of groups to which they belong (they were discussed at the meeting but the recorder's notes are incomplete).

Dr. Price expressed his opinion that evolutionary biology has great value forthe current problems stemming from fiscal constraints in the practice of psychotherapy. Thus, psychiatrists have difficulty in making time for carrying out psychotherapy. Some people designated as psychotherapists in fact do not have specific training in the discipline. For instance, the patient is referred to such personnel but then the "psychotherapist" turns out to be a nurse or other untrained persons. Contrariwise, he feels that the psychiatrist should continue to do it. Waiting lists are very long which makes it even more important that the general psychiatrist be able to do brief psychotherapy. At minimum, having psychotherapeutic skills enhances compliance in pharmacotherapy.

Responses: Dr. Bacciagaluppi noted that Dr. Price has published these thoughts more extensively in the pages of *ASCAP* and that this might form the draft of a consensus statement coming from the division. Dr. Gardner suggested statements from the section might be a fruitful means of altering opinion on psychotherapeutic issues.

Dr. Price noted that a regional congress meeting sponsored by the section occurred in May of last year in Washington was organized by M. Cortina as already discussed. Additionally he noted that this raises the issue that part of our responsibilities include sponsoring congresses and programs in existing congresses.

The way this is done goes as follows: a proposal — usually in conjunction with another organization — needs approval at three levels: first it is made in collaboration with the Chairman of the Section (now Dr. Gardner) who after approval will put it to the Chairman of Sections. This authority will, after consideration, relay it to the WPA Executive Committee. The results of this are that one gains access to the logo but no funds from the WPA itself.

Responses: Some candidate associated organizations include The International Association of Psychotherapists and the American Academy of Psychoanalysis.

Ferdo Knobloch gave as a historical note that when he was Section Chairthey had cosponsored with the Canadian Psychiatric Association an International Symposium on Non-Verbal Aspects of Psychotherapy.

Maria Ammon noted that a World Congress of Psychotherapy will be held in Munich March 13-17, 2001.

Piero de Giacomo mentioned the Paris meeting of the European Association on the topic of "Rethinking Psychiatry."

Drs. Price and Gardner wondered what might be some themes of the coming time? Price noted that Integrative Psychotherapy is a term that reflects the work and contributions of his predecessor, Ferdo Knobloch; Dr. Price himself took this as a theme of his as well. In his opinion there needs to be integration of various disciplines as well as psychiatrists. Dr. Price opined that an enemy is splitting. Many psychotherapy groups have belief differences and split into subgroups. We need to counter that.

Responses: Marco Bacciagaluppi noted that we should have various approaches in the section and noted that there were at the present congress a number of symposia on psychotherapy of various kinds (repeated titles in the Young Psychiatrist series read "Psychotherapy of X"). We should try to connect with other sections who are sponsoring such endeavors.

Leon Sloman and Piero De Giacomo highlighted that written psychotherapy might have its own domain. De Giacomo noted that in a section on eating disorders, the therapists don't have the patient even speak but writes out thing. Results were good even better than CBT. Price has written on the same topic. Bcciagaluppi noted that Price's approach provided a unifying scheme. Dr. Price responded that it fits especially with IPT.

Gardner and Sloman both suggested that the newsletter might be used for section reports or position paper drafts. Price emphasized the Executive Council wish for consensus statements from the sections and encouraged that such be developed. We were asked to approve a position statement on guidelines for psychotherapy that was composed by someone else and with which he officially expressed section disagreement. To this point we haven't yet done a consensus statement. We should develop such prior to the Yokahoma meeting. Bacciagaluppi suggested that Price has written a preliminary position statement that should be regarded as a draft to be reacted to by the section members. Price described his draft briefly noting that all psychiatrist need some degree of psychotherapy skills, even to deploy pharmacotherapy to assure compliance. Another function for the general psychiatrist would involve brief psychotherapy. Then a third level involving long term problems should be managed by the psychotherapist specialist.

Maria Ammon noted that the German therapists present today represent various directions. She strongly agreed that the section should be integrational in its intent. Hermes Kick pointed out that theories are synthesis with ethical bases that need to be seen as such. He suggested there is a need to articulate the theory behind various approaches. Drs. Ammon, Kick, Burbiel and Knobloch indicated interest in comprising a subgroup on integration.

Leon Sloman suggested that to enrich the psychotherapy context, members could present a case with the expectation that other members of the section feel invited to comment. People present were interested and indicated willingness to participate.

M. Mezzich noted that psychotherapy of psychosis is a continuing issue for some specialists; the topic seemed appropriate for another section subgroup.

Marco Bacciagaluppi suggested a focus on meetings that happen earlier than the Japan meeting in 2002. Comment ensuring noted meetings are occurring in Rome and Scandinavia. Also MB indicated that he is working on raising funds so that a section meeting might occur on the Italian Riviera in conjunction with the nonFreudian Italian psychoanalytic group that he heads. The projected date is June, 2000.

There being no further business, John Price presented the next section chairman with the gavel. In response Dr. Gardner thanked him for his excellent leadership which was endorsed by applause from the assembled group. The meeting adjourned at 9:30 a.m.

Article:

by Russell Gardner, Jr.

New Psychotherapy Section Chairman Remarks

I feel honored that the Psychotherapy Section elected me its chairman for the next three years. I am aware that I follow in the steps of Ferdo Knobloch who championed integrative components of psychotherapy and most recently John Price who in addition asks searching questions of job descriptions in these days of reduced time for psychotherapy on the part of psychiatrists. Economic issues are forcing the new value of "relationshipless" psychiatry (in the wry words of Karen Wagner from UTMB in Galveston).

John's proposal both acknowledges the hard reality of the fiscal restraints that require in many places that specialist psychotherapists only are needed for the more complex patients but also advocates fundamental training that the general psychiatrist should possess for core practice even if the person dispenses medication and little else. Possession of such core skill enhances medication usage and reduces the patient's frustration at system-wide restrictions. Please reread his proposal as a drafted consensus statement for the section to offer to the next levels of the WPA. Perhaps we should print the two parts as a whole and redistribute it as a part of a future mailing. Let me know if people desire that.

We need to be an active section. John Price mentioned in his remarks to the other section chairmen that of the 52 sections the WPA now has, there should be at least ten devoted to psychotherapy. But then he also remarked our greatest enemy is splitting and becoming fractious contentious subgroups unable to agree on details. This happens regularly amongst groups who represent various forms of psychotherapy. He and I assert that we should work together as a formidable group to effect our messages, only one section, but a mighty one, more like the united Roman Empire than the preceeding fractious Greek city states always raiding one another (you can tell I'm visiting Greece as I write this).

If I can behave as the Delphic oracle, I suggest that we be highly active, including highly interactive, and that we publish our messages in many venues eventually (see elsewhere this issue the challenges of Hagop Akiskol) The role of the newsletter should continue as a resource for best thinking via being the forum for brainstorming and working out early drafts with interesting debates. But it must not stop there. We must flood the market with interesting well written books, the scientific literature with well considered theoretic and data-based articles, and the popular press with articulate new ideas. Now let me discuss my thematic addition.

If integration and role differentiation have been themes of my immediate predecessors, my suggested addition focuses on the basics of psychotherapy. What fundamental components of human communication constitute psychotherapeutic ones? Can we dissect what we do in psychotherapy in terms of components uniquely human and those we share with other animals? I would say "back to basics" but we can't go back because such basics are newto our thinking, encumbered as we have been by nonphysiological models of the brain evident in the imagery and metaphor of Freud on the one hand (energy is a 19th century machine metaphor, for instance, rather than one reflecting present understandings of biology). And on the other hand the presumed "theory-less" thinking of those reacting to Freud has not been theory-less at all but often focused on what drug fits the empiric descriptions of mental illness. Not that I'm against the practicalities of what Freud the pioneer had to offer nor the benefits of medications that are helping millions. Rather we should be moving towards theory that fits what we know of the nervous system and our realities of being intensely bonded and otherwise connected with other humans both uniquely as humans and as less uniquely as primates, mammals, vertebrates, and multicellular animals. I strongly feel that theory must involve sociophysiology. We need to reduce psychotherapy to its fundamentals without diminishing its human impact. To wish to reduce something conceptually does not mean destroying it, but to see how it works that we might deploy its actions even better.

Please read Frank Koerselman's statement on psychotherapy in the current issue. This is the written version of his thoughtful remarks at the first symposium of the Hamburg meeting. As you will see he attempts to focus on the fundamentals of psychotherapy. Next issue (October) I will respond in debate format — but hedonic mode—to points he makes in an effort to model on the part of your chairman and co-chairman a debate on the important issues of the age, in this case the core features of psychotherapy, in a way that will hopefully make the section's connection with The ASCAP Society a creative one. We've talked on this and I believe jointly feel it to be an adventure. What better—to work on fundamentals—than a section aware of evolutionary factors in the communication of our species? I hope that we can achieve an alphabet forthe activity that will eventuate overtime into still another consensus statement from our section that we can also proffer to the WPA more generally. In the meantime, I plan to forward in hedonic mode my reactions to Frank's paper hoping that it will be experienced by all as fun, as a playful tossing of ideas in the air. Perhaps the aim of agreement and consensus will not be realized. It may very well not given the contentious history of our activity. This would be alright too, just so we feel the process to be a fruitful one. My personal conviction holds all of our activities to be reconsidered especially with respect to their alphabets. Such intellectual group processes as this, I contend, are most likely to accomplish this.

Under John Price's leadership, there were three symposia at the Hamburg meeting. These were well placed in the program and reasonably well attended with active participation. I felt personally highly benefited from information acquired in each and hope that we can continue this in the new millenium when we meet in Yokohama, Japan, in 2002. Two work groups were already forming as we met in Hamburg, one on integrative issues and another on psychotherapy for psychosis I hope that these will provide words on their affairs in the pages of ASCAP or on the web-site that Ferdo Knobloch is continuing to work with (or both). The web-site address now posted on ourtitle page (page 2) is www.psychiatry.ubc.ca/WPA/psychother.htm and his email address for placing your comments on it is knobloch@unixg.ubc.ca

Not that people are planning to wait for Japan! As you will see from the minutes, a number of other meetings are occurring before then and participants in the business meetings seemed very interested in providing organizational structure as well as formal contributions to those meetings.

The leadership of the WPA has been impressed with our section in part because it produces a many-page newsletter each month; we send a significant number of copies to the various WPA officials. Of course, other facets of ASCAP concerns less immediately involved with psychotherapy need to be attended to as well; I and my co-editor, John Price, intend to not neglect these. On the other hand, we need to keep psychotherapy strongly in the forefront, asking in a continuing probing fashion, what is it? what are its core ingredients? its alphabet? how do we most accurately measure such components, effects both good and bad on communicational microlevels as well as gross outcomes? Much research has already been done. What makes such effort worthwhile and less worthwhile?

Are the metaphors and analogies to medications prevalent in psychotherapy research accurate ones? Does the evolution of communication, including that unique to humans but also that in common with other animals, shed an additional light on it? Do unconscious social and communicational mechanisms need to be specifically adumbrated and measured for an adequate basic science to be put forth? Peter Rohde noted at the Hamburg meeting that we take such attributes asterritoriality and social rank for granted in the same way as breathing until called to our attention. We must call such factors to the attention of our field at large. If these are important, and I believe they are, they need more than casual attention. Formal instruction, codification, more specific hypotheses are needed.

In summary then, I hope that the next three years will be active ones. Where better than the World Psychiatric Association to put the present precarious status of psychotherapy in the forefront of thinking? Practitioners know its importance. Researchers have found it problematic to study? We may have some answers for both phenomena. I anticipate an enjoyable time as our minds encounter each other in the next years!

ARTICLE:

by John Edser

Flawed Gene-Centrism Theory of Dawkins, Hamilton & Wilson

Howard Bloom asked on email: Poyou have a form of genetic analysis that explains social behavior better than neoParwinism? If so, tell us - don't hide your light under a bushel. *Do* you know *of dear experimental* results that falsify Hamilton's work? Have you identified errors in the *mathematical foundations* of this *subject?*

The answer is yes, yes, and yes. In my opinion, NeoDarwiniam observations can be explained by classical Darwinism. This alone represents "individual selection logic" that is presumably new within NeoDarwinism. The single gene suppositions of so called "individual selection" totally misrepresents individual selection's evolutionary position and logic, confusing this very important issue and the resultant attempt to apply Darwinism as the biological root to the psychological sciences.

Howard makes the same epistemological error that V.C. Wynne Edwards made with his first book *Animal Dispersion In Relation To Animal Behavior* first published in 1962. That error is that the selectee is confused with the selector. This is a bit like the shopkeeper paying you for the goods you have purchased and not you paying him. Wynne Edwards did correct this error with last book on this subject where he agrees the unit selected (selectee) is the individual, but the selector is now the group.

Group selection requires a grouped selectee (that being selected). A grouped selector is NOT group selection. A grouped selector is totally complimentary to the Darwinian individual as the selectee. In its early days it was known as the Baldwin effect or Lloyd Morgan's organic selection. Here an individual or groups of the same species, exerts a selective force on individual members for individually mutual, but not equal, Darwinian gain (fertile organisms' output per life span within a population). Sexual selection is an example. Such selection is subservient to natural selection, and Darwinian natural selection remains the final filter, with the elective buck stopping firmly, there.

The gene centric school of selection which includes Dawkins, Hamilton, and Wilson, misuse Fisher's early *models* of how genes are selected. Fisher assumed that single genes are selected and epistasis (meaning that more than one locus codes for any one pheno-type) was only additive between genes in the genome.

Because gene/gene interaction in the genome was only assumed to be additive, each gene could be regarded as an independent defacto unit of selection. The selective worth of any individual organism was then the simple sum of the coefficients of selection of the alleles at each locus. In essence, the organism became a population of independently selected genes, allowing individual gene selection to be "equated" with individual organism selection, integrating Mendel's genes into Darwinism.

Fine as a *model.* A model is a simplification of an existing theory that is created to test the parent theory, not to test the model. Certain aspects of the theory are set to zero in the model to make predictions easier for the parent theory. In this way, Newtonian physics today is a model of Einsteinian physics where time dilation and mass increase with acceleration are set to zero. Originally Newton did not set these to zero, but assumed they did not exist. Thus, anybody today who insists that Newton's physics is unrefuted, misuses it as a model of Einsteinian physics.

This is exactly what is happening today with the use of Fisher's gene-centric model of selection. Darwin's unit of selection assumption remains unrefuted within selection theory but gene-centric models insist that they have refuted it, whereas Fisher's model was a simplification of the Darwinian thesis in the first place.

Darwin's original assumption of the unit selected was implicitly the fertile organism. Fertile organisms maximized the reproduction of fertile organisms over the parental fertile organism's life span in a single

population of similar fertile organisms. Selection resulted via the default comparisons of the numbers of fertile organisms within a population of same.

Fisher's model removed the unit "fertile organism" and replaced it with "the gene" and this remains as such to the present day, allowing the gene pool assumption which provides the basis of population genetics etc to exist. Today this gene centric assumption is said to represent the individual unit of selection assumed by Darwin.

It does *not,* it is a simplification of the Darwinian assumption. In fact, it's an oversimplification of the Darwinian assumption. Hamilton, Dawkins, Wilson etc. are all guilty of misusing Fisher's gene-centric model which totally misrepresents the Darwinian position of "individual fertile organism fitness", since selected epistasis is not the simple sum of gene/ gene interaction within any genome.

This simple truth can be measured by anyone. Human height polygenes or skin color polygenes do work in a simple additive way to produce their anatomical phenotypes. But such phenotypes are not selected in a simple additive way and do not represent even the way most phenotypes are non addi-tively coded for as simple structures.

Selection is on action not structure, so that if you are just a little bit too short to reach the food you starve and it's an all or nothing for phenotype response that is selected along with the genes that coded for it. Even in bacteria, complex gene associations e.g. operons unite different genes at different loci in a totally non additive way.

If epistasis is non additive, then genes cannot be selected individually, cannot be given individual selective coefficients or even be considered as interchangeable units within a gene pool. Suggesting their mean fitness can be used here may confound the issue even more, because mean selective worth of such genes in a population are never selected for, even if they can be calculated. Mean selective worth of a gene is just an aid to try to understand how organisms are selected. It does not tell how individual genes are selected in competition to an organism supposition. This statistic can become just another misuse of a mathematical model relative to an biological theory.

Dawkins completed the revolt of Fisher's model against its parent Darwinian thesis, when he insisted that gene frequency change is not just a result of selection but is the actual cause of selection. Even if genes are the only units of coded information passed on over the generations, which I doubt, and evolution does then work via gene frequency changes, this does not mean that evolution works *for* gene frequency changes.

Dawkins *totally* reversed cause and effect within evolutionary theory with his continued misuse of Fisher's model. This provides the absurd situation that Fisher's model now challenges the parent organism thesis from which the model was derived as simplification! If this "gene centric" selection model refutes organism selection theory, then it also refutes itself, and that is a total absurdity.

The "unit of selection problem" within evolutionary theory today is a Mad Hatter's Tea Party but could have been totally avoided if strict scientific procedure had been adhered to, i.e., if the results of Fisher's model was reworked via the parent thesis to test that thesis. Instead the mode! has been trumpeted as thesis itself, which it can never be and never was, a thesis "in competition", to its parental organism thesis.

Fisher's model is now used under the guise of "selfish geneism" "kin selection" and single locus NeoDarwin-ism, that supposes a gene for x in a deme, e.g. the famous "gene for selfishness" competing for the "gene for altruism" at one locus. In analytical genetics, a single gene for x is assumed just for the gene, and is mostly just a negative correlation of the absence of the measured phenotype to a DNA sequence. It does not mean, and can never mean, that only one gene codes for one phenotype, so that a minimal level of epistasis must be assumed for *all* phenotypic characteristics of an organism. Thus selection theory must use synthetic genetics, which tries to put back genes into the organism, to suppose how they may work and are

selected and does not just take them out of the organism using the phenotype as a convenient pair of forceps. Here the focus is on the phenotype itself, not the genes, since only the phenotypes are ever selected. All DNA/RNA is totally protected from selection via the central dogma of biochemistry, anyway.

What is lost in this whole sad story is the way genes are really selected in nature. They are not individually selected but "gene *group* selected". Genes work in sets, can be viewed as sets on a chromosome, code for phenotypes in sets. They can therefore be viewed as selected in sets. Gene group selection is not the same as organism group selection. The selection of groups of genes is tied in to how how groups of genes code for any selected phenotype within one organism.

People like C. H. Waddington understood this phenomenon. A genetic effect is in reality a canalized genetic effect. Many hidden genes epistatically code fora phenotype and buffer it so that in fact it remains more stable than it should be. He even reworked all the basic population genetics equations for canalization.

Canalization has been totally neglected via gene-centric dominance for the last 40+ years. The predicted rates of selection are vastly quicker via canalization, than the plod of gene-centric predicted rates. Haldane's dilemma produced using gene centric assumptions, demonstrates the insecurity of the plodding rates of gene centric selection, requires lots of new genes to solve the dilemma which are not there, cannot predict the mass similarity between the genotypes of different species, nor provide the faster rates of selection required to solve the dilemma.

The response to this debacle is to make things even worse. When pressed, most theorists have "two bob each way" and suggest that "multi units of selection" exist. Such an assumption moves the science of evolutionary theory into the non science of non testability, where everybody is happily "correct," and we find out exactly nothing, because nothing can be tested to refutation.

Different levels of selection produce self exclusive units of selection that can be tested to refutation. Unless these suppositions are so tested, then evolutionary "science" will just remain chasing its own unit of selection tail.

Hamiltonian kin selection is calculated using genes replicated "Identical By Descent" (IBD) not just genes replicated. Genes replicated IBD, even if they are exactly the same DNA sequence, exponentially lose their relatedness with each organism generation. A gene in a parent has 50% chance of sending a replicate of itself into the next organism generation via the parents sexual gametes. Thus children are related 50% IBD to each parent. In turn, grandchildren are related to their grandparents by 25%, since a grandparents gene has a 25% possibility of being replicated into the children. Thus the IBD numerical series of relatedness changes from parents on down by:- .5, .25, .125, .0625, .03125, .015625, .0078125 etc.

For kin selection to work, any reproductive altruism must at *least be* equal in IBD relatedness. A grandparent working to bring up two grandchildren (2 X .25 = .5)is "equivalent" IBD to that grandparent working to bring up one of their own children (.5) Thus large population groups such as "Armenians" even if they appear to have "many genes in common" have few genes in common IBD and kin selection is necessarily restricted to immediate family. For kin selection to predict that helping a stranger is "selfish geneism" and that stranger was only related IBD by .0001 say, then 5000 of these strangers must be helped to be equivalent to helping just one of one's own offspring since 5000 X.0001 =.5

Trying to stretch "selfish genism" to groups of "Albanians" etc does not make any biological sense at all. The same IBD logic applies to all racism arguments proving that racism has no biological foundation and is a misused and misunderstood term.

Dawkins has often argued that genes non-IBD could be used to describe selfish geneism. He used the now famous "green beard effect" to show how this may work. A genes can tell if its replicate is in another body without calculating IBD probabilities if it can see some phenotype that represents itself in that other

body. The green beard would signal this "relatedness". The use of nonIBD however, does not need any green beards, since over 90% of the genes are the same DNA sequence in most animals. Thus rats will be predicted to be raised by humans since for the cost of raising one human, tens of thousands of rats can be raised with tens of thousands of extra copies of these 90% the same DNA sequences. This becomes a prediction of what Hamiltonian gene reproduction by proxy would predict via nonIBD. The fact that this is a totally silly prediction that refutes the theory, forces kin selection only to use genes IBD. Dawkins and Wilson must accept that their use of selfish geneism must compute relatedness IBD and not non-IBD, ortheir views are refuted. Genes IBD destroy all racial views and nepotistic gene centric views regarding organism groups.

More IBD Nails In Gene Centric Racial Coffins

On email, Irving Wolfson commented:

I am a little *skeptical* of Hamiltonian *mathematics which* postulate I should have equal interest in my *nieces and* nephews as in my grandchildren, both having an r=0.25. Any grandparent knows this is not true.

There are very good mathematical reasons why what Irving says is totally true. The missing link in Hamilton's argument is not any problem with the IBD relatedness calculation for r, but how this calculation is *applied* to the logic of Darwinian selection. Relatedness IBD is just the probability that any *one* gene replication will make it into the next generation with sex. Each IBD calculation is applied to each gene, quite separately. If I toss two pennies, the chance that any one of them will be heads is 50% for each penny. This is independent of how many pennies are in any one set. The chances of producing two heads from two pennies in a set, however, is only one chance within the four possibilities hh,ht,th and tt, or 25% with the chance of any single penny turning up a head within the set, unchanged at 50%.

The question is, are the pennies *selected* individually or in sets? If hh set is selected, then the chances of any head being in a hh set in the next set of tosses is only 25% even if the chances of finding one head remains at 50%. As you increase the numbers of pennies, the chances decrease dramatically for production of unique sets.

Like tossed pennies, gene sets have a different probability of finding themselves assets, within the next generation compared to just individual genes. Given enough pennies, the chance that the combinations tossed within each set will be the same will soon approach zero. Like all genomes within sexual species, large sets of tossed pennies will become unique but the chances any one penny will be heads or tails with each toss is never affected, so that single genes are always 50% related to the next generation.

When more than one gene codes for one phenotype, this is called epistasis. Only one gene produces one polypeptide and we can suppose there is no epistasis for this one polypeptide. However, polypeptides from different loci combine into sets called proteins e.g. hemoglobin. This hemoglobin is packed into a red blood cell which involves epistasis between the loci for hemoglobin and the loci for the membrane package.

Blood cells flow in arteries and veins so that epistasis now exists between the loci for blood cells and arteries and loci for blood cells and genes for hemoglobin. If epistasis is factored into inheritance, producing the selection of genes in groups, then heritable variability within the organism just explodes, while the chance is that any one gene group will be replicated IBD just shrivels up. Nothing alters from the individual gene perspective however. Like the single penny being tossed, SINGLE gene mathematics remains serenely oblivious to this maelstrom of probability and variability change that is the reality of nature.

Each of these different gene sets may involve different chromosome loci. Epistasis between loci for a complex phenotypes varies as 3^n where n is the number of loci involved. Starting from one locus and moving along the number of selectable genotype sets, like the sets of pennies, exponentially increases:- 3^1=3,3^2=9, 3^3=27, 3^4= 81, 3^5=243, 3^6=729, 3^7=2187, 3^8=6561

Thus any *phenotype selected* that is coded via a

combination of just eight loci could have 6,561 different *genotype* variants with epistasis! This will have correspondingly equally lowered any chances that any one gene set of these eight loci will be reproduced IBD into the next generation.

Consequently, the chances that a gene set is related IBD to your own kin, let alone any stranger, becomes very very much lower than the calculation of related-ness IBD for any one single gene. If epistasis is factored into relatedness, two important things happen.

Any racialism predicted via selfish gene *groups* becomes a total impossibility, because variability compounds with increasing epistasis. Now the DNA dependent variation that is available to selection massively increase. This epistatic heritable variability (EHV) becomes just too large, forcing EHV calculated IBD to become just too low i.e chances of getting any of your gene sets into your own offspring becomes too low.

The saving grace of this impossible situation, is simply the much glossed over fact that only phenotypes are ever selected and never the genotypes. Many different genotype combinations may produce the same phenotype. Human height and that much used index of racial hatred human skin color, are polygenetically inherited. Many epistatic loci code for these phenotypes, but they code for them in a simple additive way and this reduces to a minimum, the number of variable phenotypes available to selection. In fact these traits show almost perfect blending, inheritance hiding within themselves the Mendelian particulate inheritance patterns, i.e., the same phenotype is coded for by many different possible genotypes, reducing dramatically the number of differing phenotypes available to selection.

However it must be cautioned that anatomy is invisible to selection. Only action is visible and selectable. Thus for selection, the phenotype must do something to be selected and this process of doing, will be more complex than any static anatomy. This complexity is less likely allow any simple additive measure of one locus to another.

If you reduce the additive component of how these epistatic relationships work, then very quickly the number of differing phenotypes available to selection increases. With eight loci with no additive epistasis we return to the full compliment of 6,561 different phenotypes selectable. With total additive epistasis this drops to a mere handful of different selectable phenotypes distributed within a normal curve.

Thus, to return finally to Irving Wolfson's questioning of Hamiltonian kin selective logic, yes indeed IBD calculated r, relative to single genes is a very big oversimplification of what is really happening and only when you review the same calculations relative to genes in groups do you finally come to the conclusion that nieces and nephews are not equivalent to grand children, because the gene contexts are different in each case. Your children have a much greater chance of inheriting similar gene *sets* from yourself, than your nieces or nephews do.

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ARTICLE:

by G. Frank Koerselman

EVOLUTIONARY PSYCHOTHERAPY or Need to Restore Intentionality

Psychotherapy resembles a tree that has grown many different branches. One young and promising branch seems to be Evolutionary Psychotherapy. To evaluate its position and potential it is useful to consider what psychotherapy really encompasses. There is, of course, a wide range of definitions. It is not necessary to go into details now. Suffice it to choose a practical vantage point. One could say, then, that psychotherapy is *the application of systematic communicative techniques aimed at changing mental dysfunctions.* Central to this definition is the concept of mental functions. Cognitive science makes clear that any mental function plays its role in *information processing.*

Information processing encompasses many different steps. Most important are

Situation,
Interpretation,
Registration, and
Action.

Situation refers to any relevant input that, tested against memory content, gives rise to a signal in the form of emotion. From emotion springs the tendency to do something, to act or react. This sequence may be short-circuited, for instance via the spinal reflex arc, but even when the impulse reaches the brain, it can take the 'low' or immediate and the 'high' or conscious road, as Le Doux calls it.[1] So, 'emotion' may referto a sudden sensation or affect as well as to more stable or elaborate mood. In purely cognitive, planned action it is even possible that no emotion will be felt at all. Of essential importance is the *meaning* of the emotion: what significance does it render to the input-situation?

Cognition, emotion and action principally serve a certain goal. They aim at something, they are *about* something. This 'aboutness' is called *intentionality.*[2] Intentionality is a general feature of any normal biological function. Intentionality connects the organism to its environment. We see *something,* we eat, grasp, think or feel something. Intentionality is to be found at any biological level. Even lymphocytes, for instance, act purposefully in destroying bacteriae. They thus save the individual to live on in orderto transfer his genes into the community. Intentionality of mental functions essentially refers to meaning. Any situation can only become meaningful when connected to a motivation.

Intact intentionality is conditional to healthy adaptation. In disease the intentional relation between the organism and its environment is basically disturbed. Psychiatric disorders can be characterized by disrupted intentionality of mental functions. In some instances intentionality may be altogether lost, in other cases it will mainly be distorted. So, in schizophrenia nothing seems to elicit desire, happiness or sorrow. Instead, the patient is connected to the world by means of non-existent voices in which he doesn't recognize his own thoughts. Depressed patients often feel disconnected from their habitual surroundings, suffering most from their inability to feel anything. Patients with anxiety disorder on the other hand react with fear to situations that represent no real danger.

Sometimes environmental situations may be so overwhelming that even normal mental functions fall short in processing them. Life-threatening traumatic experiences may produce a state of numbness in which the affective link between subject and environment is broken. This may result in a posttraumatic stress disorder. In such a case loss of intentionality is the cause of a psychiatric disorder. In other cases, e.g., in schizophrenia, bipolar disorder and the like, the disease itself breaks down the ability to uphold an adequate cognitive, emotional, i.e. *intentional bond*

with one's situation. Here loss of intentionality is secondary to the disease process. In other words, it is a symptom rather than a cause. This may, of course, have consequences for treatment. In cases where disruption of intentionality (because of the impact or longevity of environmental factors) is primary, treatment may in principle be causative. In other instances treatment is mainly to be regarded as revalidation. In both conditions, however, systematic and well-directed communicative interventions aimed at restoring intentionality may be of particular importance. By definition such interventions would represent psychotherapy. The central goal of such a psychotherapy is restoration of intentionality. More specifically this means restoration of the meaning or significance of relevant situations. So, the question is now: how can we reconstruct meaning and significance?

Emotion may be regarded as the indicator of the quality of a given situation. Emotions help us recognize a situation as positive or negative. The decisive criterium in this respect is motivation, that is the meaningful interest we give to this situation. Depending on its interest the one situation may be much more urgent than a second one. What makes the difference? Here some principles apply:

- *Principle 1:* The quality of a situation is determined by the subject's *motivation.*
- *Principle 2:* Not all motivations are equally important. *Biological* motivations get priority. *Principle 3:* The importance of a biological motivation is determined by its contribution to the subject's *(inclusive) fitness.*

Generally people do not realise which motivations are biological. The urgency of a full bladder is self-evident but usually not extensively reflected on. Evolutionary fitness is not a conscious aim. Yet it represents hard-wired, genetically transmitted life-orientations. For the sake of transparency we can divide such orientations into three major *themes:*

1. *Self-preservation.* Self-preservation is principally a basic biological motivation. It steers people with the aid of painful and pleasurable 'somatic'sensations. Staying well and alive obviously is a necessary precondition to transmitting one's genes to next generations.
2. *Reproduction.* This theme comprises all sub-themes like sex, mating, giving birth etc.
3. *Territory.* One needs a place to procreate and care for children. Territory therefore is an essential requirement to implement any striving towards (inclusive) fitness. As a theme it can be divided into five subthemes:

   Territories have to be conquered on as well as defended against 'enemies' from outside. Living within a territory one also has to struggle for a position that will greaten the chances for strong offspring. So, hierarchy is a main sub-theme. To be safe within the territorial group requires firm bonds. Attachment and conformism fulfill this need.
   Raising offspring requires care from mother to infant and from fatherto mother. Reciprocal care guarantees within-territorial equilibrium. Assigning roles and tasks is a necessary precondition to raising offspring as well as to economic welfare.[3]

These themes bear some resemblance to the division of motivations as proposed by McGuire and Troisi.[4] They also comprise central themes like affiliation and rank as pointed out by Stevens & Price.[5] Other evolutionary themes could be mentioned as well. The selection is mainly guided by theoretical background and practical purpose: all three above-mentioned themes are relevantto evolution *and* are recognizable in anybody's daily life. From moment to moment these themes force people to some adaptational action. Such action may in principle be active or passive, aggressive or defensive. It may consist of fight or flight. Or it may be aimed at negotiation, at 'quid pro quo'. It may, in otherwords, be reciprocal. So, apart from themes we can discern three different *'modes':*

1. *Active, aggressive,*
2. *Passive, defensive,*
3. *Reciprocal.*

Together, theme and mode form an adaptational

'program'.

We may reasonably assume that such adaptational programs have been selected throughout evolution. Ultimately, succesful programs must have shaped relevant parts of our brains. They have become 'wired in'. Yet, it would be far too simple to propose a one-to-one relation between situation and program. The bewildering amount of challenges that even our earliest ancestors must have had to respond to presupposes at least some further principles:

- *Principle 4.* Evolutionary successful programs have survived.
- *Principle 5.* Several programs may fit to one situation.
- *Principle 6.* Some programs fit better than other ones.

From these principles we can understand that one situation is able to turn on different programs in different people. In some cases the activated program may obviously be out of scope, meaning that no one could ever expect it to enhance (inclusive) fitness. Such a program would represent a 'disturbance', 'disorder[1] or'disease'. In other cases the active program may just be adequate enough but not optimal. One would not be justified to call it a disorder but it wouldn't serve adaptation in the best way either. So, therapeutically it seems useful to identify which program is currently turned on. The question is: how can we know that?

Any program that is succesful in a given situation will result in a positive emotion. In the same way failure will produce negative emotion. The quality of the emotion gives us the cue which theme' is turned on. Let us consider an example:

Suppose that you try to open your car in the dark. Unfortunately you drop your keys. When you finally think you have found them you realise you put your hand in dog shit and soil yourself. Immediately you will have a strong emotion consisting of repulsion and fear of contagion. As soon as you can you will clean yourself as long as is needed to no longer smell anything, although it may take a long time before you are really sure that nothing is left.

Such a situation is easy to recognize. The activated theme is 'self-preservation' by eliminating contamination, and the mode is 'defence'. The transition from fearto relief represents the difference between failing and succeeding in preserving your health.

And yet, things may turn out to be a bit more complicated. Suppose that the negative feeling does not disappear after you have washed your hands over and over again. Could it be that we are dealing with the wrong theme and the wrong mode? Suppose again that you were not alone when the incident happened to you. Try to imagine the facial expression of the other person, whom you've been trying to impress all evening. No washing will clear you from the fear of having lost face to that person. So, in continuing to clean yourself from possible contamination without feeling better, you are in fact dealing with the wrong theme and the wrong mode. The correct theme would have been 'hierarchy' (or even mating and future 'reproduction' depending on who the other person was). A better reaction would have been to laugh or to scold at dog owners. The better 'mode', so to say, would have been 'aggression'. So, between situation and reaction you just activated the wrong program, and thus disrupted *intentionality.* Maybe something like this happened before when you were young, and your neuro-circuits were still developing. Could it be that you kept washing to remove contamination never to realize your fear of humiliation? Could you just have developed 'obsessive-compulsive disorder[1]?

So, if this were true, how should we have handled it therapeutically? Let us recapitulate the steps we followed in the above story. First of all we described a situation. Then we noticed your (re)action and put down what emotion you felt. From your emotion we tried to infer what evolutionary program you had turned on, and we concluded 'self preservation' had been your current motive. So we made clear the intentionality of your action at stake. And yet, we were wrong, because we believed you. We missed the point that you just couldn't stop what you were doing, because you could not get any relief. Your behaviour was just not intentional, because you lost the link between what

you were doing and your real motivation. After reviewing the facts (and discovering new ones) we had to conclude that your behaviour was steered by a different evolutionary program. That made it possible to reconnect your behaviour to a more relevant evolutionary motive, or, in other words, to establish a more meaningful intentionality. Evolutionary psychotherapy is *looking for the better program,* that is *finding the relevant evolutionary theme.*

But, one could ask, what difference does all of this make in comparison with the established psychothera-pies? The answer is: in many repects there are more similarities than differences, but there *is* indeed a difference and it is essential. Just like Interpersonal Psychotherapy (IPT), Evolutionary Psychotherapy chooses a *focus,* using a restricted set of themes, but, unlike IPT, the focus has to be *evolutionary relevant.* Just like Cognitive (Behavioral) Therapy (CT/ CBT), Evolutionary Psychotherapy corrects erroneous beliefs, but, unlike CBT, it aims at cognitive schemes that are pertinent to *evolutionary themes.* And, just like PsychodynamicTherapy, Evolutionary Psychotherapy pays attention to early life history and transferential interactions, but, unlike psychoanalysis, it will not lose *evolutionary meaning from* sight.

So, on the basis of a rapidly growing evolutionary psychobiology,[6] a new Evolutionary Psychotherapy can be established. When applied to mental health its aim should be *to reestablish the intentional bond between action and motive by identifying the relevant evolutionary theme.*

But much work has to be done. First of all, we will have to develop protocols of Evolutionary Psychotherapy. Secondly we should formulate our hypotheses in such a way that they are testable and falsifi-able. And finally, we will have to prove the efficacy of our approach. But the enterprise seems warranted. If we believe that no human being can be disconnected from his biological roots, and that it must make sense to reconnect biological intentionality.

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ARTICLE:

by Russell Gardner, Jr.

Axel Schultze's Psychotherapy Featured In Movie

At the Annual ASCAP Meeting, we stayed well after 5 pm to continue our discussions. Hospitality from the WPA Congress was most appreciated despite the fact we had to change venues from morning to afternoon. But just as our little group plugs adaptation, we did ourselves adapt most interestingly and pleasantly. There is certainly something to be said for an informal meeting: the day flowed like ice melting on the stove (to use a phrase from Robert Frost). With the right membership, the right numbers and the best kind of leadership (which we had from Mark Erickson).

During the day, I learned a psychotherapy tactic from Axel Schultze, that felt intuitively right and goes as follows: when a patient feels an identifiable anxiety or panic, Axel suggests to the person that he or she treat it like a little child and comfort it, give it warm attention and comfort, even hugging it. He finds this works. I liked it because it reframes in a story-like fashion the patient's concerns. The reframing happens naturally and without use of the technical term (even my word processing program doesn't like the formal word, giving it a red line underneath!) although the word does describe what happens. In any event, I thought how fortunate that Ferdo Knobloch has told Axel and Eva Maria about us and that they are now part of ASCAP.

Well, we returned home to the US after a pleasant Greek excursion (which I'll partly report on next issue as things I learned there pertained to issues brought up by Marco Bacciagaluppi's presentation in one of the psychotherapy section's symposia).

Then, trying to recapture our former diurnal rhythms we went to an movie that has become unexpectedly popular, featuring of all things, psychotherapy!! This is *Sixth Sense* that for three weeks running has been (at this writing) the most popular one in the USA.

The movie features a little boy who is mightily distressed. Parents were divorced. Mother is concerned but feels at a loss in how to deal with him. The actor, Bruce Willis, a popular action film hero, is in this movie the psychotherapist. Just *how* he is involved is a big deal forthe movie. Certainly it is more cinematic to do he does, see the kid in church, on the streets, in a streetcar, in the child's home, anywhere it seems, but an office — in contrast to most psychotherapists that I know. But the suspension of disbelief works well here and it turns out there's a reason for that — as you will see when you see the movie. I won't give away that part of the suspense (a surprise hits you at the end).

But pertaining to Axel's tactic done here, I now tell you more of the child's distress. He is upset because he constantly sees dead people, sometimes long dead and sometimes freshly so. Instead of schizophrenia as the psychotherapist had thought for awhile, the child seems to have a special talent. But not a pleasant or appreciated one. Rather he is very clearly scared and distressed, and also picked on by bullies.

Establishing a relationship presented a challenge, but one that the therapist overcame. Bruce Willis didn't abandon nor neglect the child though tempted to transfer care for personal reasons of his own. He was an effective ally, strong, warm, calm, knowledgable, honest, a good audience.

Then finally he tumbled to what tell the kid about these scary experiences: since these dead people seem to want your help, try to do that. Overcome your fear and assist. The child did and the result was a clinical improvement, greater assertiveness and (the plot thickened there), also some good deeds.

But note how the crucial intervention entailed Axel's suggestion. "Take your anxiety and treat it kindly." Anthropomorphize your parts—even those from MacLean's lower levels — and be parental to them. In the movie, the fears were rendered in actual form so that there are ghost movie components but how interesting to see how the author-director, M. Night Shyamalan, who played a pediatrician in the movie come up with the same idea that a practicing clinician in Baden-Baden, Germany, does in real life!

Article:

by James Brody

Twins Instruct On Thorny Questions: Essay Including Review of Nancy Segal's book, *Entwined Lives*

Nancy Segal's 16 chapter book is an important one. It addresses both the sameness and the differences of twins but without sliding into some of the most angry debates of this century—those in regard to genes and environments.

She quotes Martin Daly and Margo Wilson, two of modem evolutionary theories' most lucid thinkers, in her preface: The nature-nurture debate has been pronounced dead many times but it won't stay buried." Some of the problem may be that we are simply not used to the interactionist language that is needed to describe our development; Segal's book gives a needed introduction to that language while she also shares the life histories and courage of real people who also happen to be identical or fraternal twins.

Chapter Sequence

First, Nancy gives us the science, the basics and the advanced, of what is known of twins. And she does so in a way characteristic of her—very well informed, consistently open and consistently on topic. There are no co-authors, ghost writers, or "as told to" on this work; the words flow and spell "Nancy" in their rhythms and in their details just as if she were personally talking only to one of us.

As Hebb is said to have remarked once, behavior is 100% the result of heredity, behavior is 100% the result of environment. Segal provides a quick review of genotype-environment correlation and interaction — the concept that certain genotypes may be selectively found in certain environments, that genes interact with settings and changing the setting will change the output from a particular set of genes. Each step of biological development supplies material that is itself used recursively for each next step. Later, each of our momentary choices is influenced by the outcomes of prior selections, led by the mix of genes working in particular settings. Thus, it appears that both genes and people weave their own special order from the materials that are available.

Nancy moves us in succeeding chapters through the process of identifying twins, the biological scripts that form them, early vs. late splitters, and what is known so far about the developmental trajectories for intelligence, personality, and emotional disorders. There are issues for twin research of "same" vs. "different" which are no different from other definitions in biology —the more closely that we examine an event, the more we are struck by detail and variation.

The physical and behavioral similarities of twins reared apart that convince some of us and are challenges to others, come next. Mannerisms, beer choice, names of pets, even the content bad dreams—each identical twin pair has some of these similarities although the exact similarities differ across pairs of twins. With respect to more generalized traits, aside from whom we choose to marry, there appears to be a genetic loading for every human feature studied to date including religiosity and age at first intercourse. Even our dental histories, sports preferences, and the biological clocks on underlying physical ailments show genetic influences.

Next, there is a review of the special ties that exist between twins. Hamilton's model for altruism suggests that monozygotic twins (MZTs) should get along better than dizygotic twins (DZTs) or regular siblings and Nancy reports data from her own research consistent with these predictions. MZTs are usually more willing to earn points for each other in a game and more willing to help each other during games. MZTs are also noted for being less physically aggressive than DZTs during sequences of interactions. And just are there are special friendships between twins, there appears to be a greater sense of loss between twins,

especially identicals, when one of them is injured or dies than appears to exist between regular siblings.

There is a chapter on the behavioral variations in same age, unrelated, siblings who were adopted at the same time into the same home; Nancy did much of the key research on this topic herself and generally found these children to be no more similar than nonrelated children reared in different households. If having a common home was a significant determinant in the development of two children, then her subjects might have been more similar to each other. As Robert Plomin and others have noted, shared environment—the experiences that are common to siblings — contributes a very modest percentage of the variation in final outcomes in many measures for siblings, twins, and adopted children.

Nancy has a chapter on the complex effects of fertility drugs, twin athletic achievements, and even some consideration of nonhuman twins. She also devotes chapters to split careers, court and legal issues, and conjoined twins including one pair, Chang and Eng Bunker of North Carolina, who were joined at the sternum but married separate women (sisters!) and alternated dwellings and fathered 21 children. Little wonder the Bunkers were praised by neighbors for being both smart and hard working!

Other Sources

Segal's work is the one to read if you must choose between hers and the competing books on twins by William Wright *(Born That* Way)[1] or Lawrence Wright *(Twins).*[2] While the Wrights each tell their own story well, theirs is more formal, less detailed, and sometimes a bit more sensationalized. Of course, what's a little extra reading, money, and eyestrain when the subject matter is that of twins? You really should have all 3 books at your elbow because the Wrights have their own contributions.

Learning about Genes' Contribution

William Wright is particularly eloquent in his history of social learning theorists and intolerance by some scholars for information about genetic influences on human conduct. These divisions will continue and may represent little but territorial displays by older male hominids. The irony in such debates is that a percentage of us singletons—especially left handers' — may have started life as a twin and our companion failed to make the entire journey. Further, prenatal events — like other environmental influences—act to make twins different from each other rather than alike. Because we singletons did NOT share a womb, we may be more "twin"—a reflection of our genotype — than is true for most
identical twins who had more restricted maternal resources than we did.

Some people may be more comfortable with the similarities reported for twins in blood pressure or temperament and less so for identical preferences in toothpaste or names of children. Probably few of us have crossed the threshold of seeing the twins' findings as relevant to us personally; however, we do not have one set of rules for the development of twins and another for us singletons. Thus, some of our own choices and unusual behaviors probably had and have some degree of genetic influence.

Most of us also will need some time to understand the contradictions to our common sense that occur in outcomes from twins research:

— Monozygotic twins reared apart are almost similar to each other in cognitive ability as MZTs under the same roof.
— Genetic influence increases as we age ratherthan decreasing as it ought.
— MZTs reared apart are more similar to each other than DZTs reared together.
— DZTs are no more similar to each other than siblings born in different years.
— Finally, parental labeling of twins as MZTs or DZTs is less important for twin similarity than whether the twins are biologically MZT or DZT.

Parents respond to, rather than create, twins similarities and differences

While the traditional "story" is that our environment taught us what to do and how to grow, the more

accurate concept appears to be that our genetic foundations' have a major role in how we choose and construct our environments in the first place. Not everyone will care for this change. Some people seemed happierwith "environmental determinism" where we were "instructed" perhaps because none of us ever got exactly the same instructions.

She leans towards a selectionist model.[4, 5, 6] In passive selectionism, potentials exist and environment weeds among them as we mature. The richer portion of selectionism is that of "active Darwinism" wherein our tuned receptors lead us to build niches and careers that are specific to our individual talents. Paradoxically, a stronger genetic bias in our development implies GREATER, not less, importance for free will and self determination than is allowed under rigorous instructionist models.

Nancy's is one of several recent books that discuss the implications of nonshared environment. (Nonshared environment is the parts of our setting that we do NOT have in common with a sibling and include such things as the bullies and teachers that we had and our brother or sister did not, the income and stage of marriage for our parents, and even whether we each had an older or younger sibling.) There are other books on child rearing and nonshared environment. David Cohen *(Stranger in the Nest: Do Parents Really Shape Their Child's Personality, Intelligence, or Character?)*[7] and Judith Harris *(The Nurture Assumption)* [8] have also published on these concepts. (Again, if you have to make choices, go with Segal and with Cohen! If you can still only buy one, then borrow some money and buy three — Segal, Cohen, and Jonathan Weiner's *Time, Love, Memory,* which is about the other end of genetics research, that seen from studies of drosophila.[9] Weinertells a superb story about Thomas Hunt Morgan and Seymour Benzer and a troop of similar rebels who created the trail between Galton's observations of human familial similarities and modem information about genes and behavior. Benzer's discoveries with drosophila give fundamental support to the concept of "active Darwinism," that organisms choose settings that align with their genes. These three books by Segal, Cohen, and Weinertell complementary stories and should have been issued as a set.)

What to Do About Our Genes

Evolutionary psychology talks about a "universal human nature," but behavior genetics talks about individual differences that arise from genes.[10] This would be fine except so many of the HBES models talk about genes. I guess scientists are like ordinary folks—their outputs reflect talents that interacted with opportunities. Put John Tooby in a fly lab and he might still be infatuated with universal similarities. I, perhaps foolishly, yearn for times when, in Dobzhansky's words, human differences "can simply be accepted as differences and not as deficits."[1, p316]

Unless we know about genes and their capabilities in various niches, we will through ignorance let the suggestions they make to us in low distress settings become commands when economic and social conditions deteriorate. We kill whether or not we have an inkling about genes. Information about genes once rationalized killing in the name of eugenics, systematic murder will happen again under a different pretext whether about God, gods, or saving ourchildren. Ignorance about genes almost guarantees their unquestioned operation. We will make up stories later to justify what we did. We always have.

Nancy's book raises many provocative issues but without inflaming us, perhaps because her primary mission is to tell us about twins. She provides lots of good and possibly great information; at the same time she becomes an ideal ambassador between opposing and easily offended camps.

Thus, she opens with the notion of our choosing our settings rather than simply learning from them, she closes with the same theme with a wonderful piece of advice from Dan Freedman, "Follow your bliss."

A minor complaint: Nancy's notes are hard to use as presented. She has many excellent ones with references that are single spaced in small print across 48 pages. Unfortunately, these are coded in the back by chapter number and not page while the chapter pages are coded by chaptertitle but not chapter

number. Identifying one of the notes means flipping to the front of the chapterto retrieve the chapter number and then to the back.

Thanks to Nancy for previewing my remarks for accuracy; she also worked on my sentence structure without changing my opinions. Remarkable!

References:

1. Segal N L *Entwined Lives: Twins and What They Tell Us About Human Behavior.* NY: Dutton, 1999. 396 pp., 16 chapters and glossary.

2. Wright W: *Bom That Way: Genes, Behavior, Personality.* NY: Knopf, 1998

3. Wright L: *Twins: And What They Tell Us about Who We Are.* NY: Wiley, 1997

4. Gazzaniga M: *Nature's Mind.* NY: Basic Books, 1992

5. Plomin R: *Genetics and Experience.* Thousand Oaks, CA: Sage, 1994

6. Spoms O, Tononi G: *Selectionism and the Brain.* NY: Academic Press, 1994

7. Cohen D: *Stranger in the Nest: Do Parents Really Shape Their Child's Personality, Intelligence, or Character?* NY: Wiley, 1999.

8. Harris J: *The Nature Assumption: Why Children Turn Out the Way They Do.* NY: Free Press, 1998

9. Weiner J: *Time, Love, Memory: A Great Biologist and His Quest for the Origins of Behavior.* NY: Knopf, 1999

10. Bailey JM: Can behavior genetics contribute to evolutionary behavioral science? In Crawford C & Krebs D (Eds) *Handbook of Evolutionary Psychol ogy.* Mahwah, NJ: Erlbaum, 1998, pp. 211-234.

Wilson PJ: *The Domestication of the Human Species* New Haven, CT: Yale University Press, 1988, p.7

Extract: *The widest context for social science, which is also the boundary preserving the human being whole and entire before inquiry crumbles it into cells, impulses, and genes, is the probable fact of human evolution. Or, as Robert Young puts it: The point about evolutionary theory is that it is the central conception linking humanity and social theory to natural science."* [1] *The conceptual area covered by the theory of evolution is the world of the between.it is both the world of between the individual and his or her constitution and the world between the individual and the external environment. The process of evolution, natural selection, is the process that translates interaction between individuals into exchanges of genes; at the same time, it is the process that translates individual interactions into transactions with the environment. The forces of selection are the acts of individuals that elicit reactions from the environment and the acts of the environment that elicit reactions from individuals. As far as human beings are concerned these forces of evolution have become concentrated and have developed as culture, which has grown to be a larger and deeper buffer between individuals and between individuals and the environment.*

For much ofhominid evolution - that is, during the time when the genus Homo was coming into being - evolutionary selection and change was internal, biological, genetic bodily change, as when four-leggedness gave way to bipedalism or the cerebral cortex enlarged. But as the abilities these developments sponsored matured as language and toolmaking, culture evolved into that which came between the organism and the environment - a mediator, buffer, a barrier. Tools and language are still the principal means by which humanity makes active contact with the environment, but they have have also become the means by which culture itself is reproduced, furthered and developed, the means by which human productive capacities are both expressed and realized.

1. Young R: *Darwin's Metaphor: Nature's Place in Victorian Culture.* Cambridge, MA: Cambridge U Press, 1985.

ABSTRACTS & EXTRACTS ...

Kidd FL, Isaac JTR: Developmental and activity-dependent regulation of kainate receptors at thalamocortical synapses. *Nature*1999;400:569-573.

Abstract: Most of the fast excitatory synaptic transmission in the mammalian brain is mediated by ionotrophicglutamate receptors, of which there are three subtypes: AMPA (a-amino-3-hydroxyl-5-methyl-4-isoxazolepropionate), NMDA (*N*-methyl-D-aspartate) and kainate. Although kainate-receptor subunits (GluR5-7, KA1 and 2) are widely expressed in the mammalian central nervous system, little is known about their function. The development of pharmacological agents that distinguish between AMPA and kainate receptors has now allowed the functions of kainate receptors to be investigated. The modulation of synaptic transmission by kainate receptors and their synaptic action in a variety of brain regions have now been reported. The expression of kainate receptor subunits is developmentaly regulated but their role in plasticity and development is unknown. Here we show that developing thalamocortical synapses express postsynaptic kainate receptors as well as AMPA receptors; however, the two receptor subtypes do not co-localize. During the critical period for experience-dependent plasticity, the kainate-receptor contribution to transmission decreases; a similar decrease occurs when long-term potentiation is induced *in vitro.* This indicates that during development there is activity-dependent regulation of the expression of kainate receptors at thalamocortical synapses.

Harte J, Kinzig A, Green J: Self-similarity in the distribution and abundance of species. *Science* 1999;284:334-336.

Abstract: If the fraction of species in area *A* that are also found in one-half of that area is independent of A, the distribution of species is self-similar and a number of observed patterns in ecology, including the widely cited species-area relationship connecting species richness to censused area, follow. Self-similarity also leads to a species-abundance distribution, which deviates considerably from the commonly assumed lognor-mal distribution and predicts considerably more rare species than the latter. Because the abundance distribution is derived under the condition of self-similarity, it may be widely applicable beyond ecology.

Extract: We define self-similarity in conformity with the fractal literature: a pattern is self-similar if it does not vary with spatial scale. We impose self-similarity in the distribution of a species by assuming that if a species is known to be in a A rectangle, and nothing else about that species (such as its abundance) is known, then the6 probability that under bisection it will be found in at least a specific one of the two resulting A_i rectangles is a constant, a, that is independent of;. This implies that the fraction of those species found in Athat are also found in a specific one of the two A_{i+1} is the same constant a. The resulting spatial distribution of species is self-similar in the sense that the likelihood of occurrence in a half-patch under bisection is independent of spatial scale.

Blood A, Zatorre RJ, Bermudez P, Evans AC: Emotional responses to pleasant and unpleasant music correlate with activity in paralimbic brain regions. *Nature Neuroscience* 1999;2:382-387.

Abstract: Neural correlates of the often-powerful emotional response to music are poorly understood. Here we used positron emission tomography to examine cerebral blood flow (CBF) changes related to affective responses to music. Ten volunteers were scanned while listening to six versions of a novel music passage varying systematically in degree of dissonance. Reciprocal CBF covariations were observed in several distinct paralimbic and neocortical regions as a function of dissonance and of percevied pleasantness/ unpleasantness. The findings suggest that music may recruit neural mechanisms similarto those previously associated with pleasant/unpleasant emotional states, but different from those underlying other components of music perception, and other emotions such as fear.

Extract: Listeners who have been exposed to the Western tonal idiom typically respond readily to dissonance, even in the absence of formal musical training.... [L]esion and

Turner PE, Chao L: Prisoner's dilemma in an RNA virus. Natural 999;398:441-443.

Abstract: The evolution of competitive interactions among viruses was studied in RNA phage 6 at high and low multiplicities of infection (that is, at high and low ratios of infecting phage to host cells). At high multiplicities, many phage infect and reproduce in the same host cell, whereas at low multiplicities the viruses reproduce mainly as clones. An unexpected result of this study was that phage grown at high rates of co-infection increased in fitness initially, but then evolved lower fitness. Here we show that the fitness of the high-multiplicity phage relative to their ancestors generates a pay-off matrix conforming to the prisoner's dilemma strategy of game theory. In this strategy, defection (selfishness) evolves, despite the greater fitness pay-off that would result if all players wre to cooperate. Viral cooperation and defection can be defined as, respectively, the manufacturing and sequestering of diffusible (shared) intracellular products. Because the low-multiplicity phage did not evolve lowered fitness, we attribute the evolution of selfishness to the lack of clonal structure and the mixing of unrelated genotypes at high multiplicity.

Extract: Viral evolution offers a unique opportunity to study the prisoner's dilemma because co-infection of the same host cell by more than one virus creates conflicts similar to those assumed in game theory and ancestral genotypes can often be retrieved for reconstructing the pay-off matrix.

Nowak MA, Sigmund K: Phage-lift for game theory. *Nature* 1999;398:367-368.

Extract: A virus is a natural bom cheat that makes its living by exploiting the vital functions of a host cell. Small wonder, then, that viruses also exploit each other.... Evolutionary game theorists will see this paper [by Turner and Chao] as a landmark. Indeed, it will be hard to find players more primitive than phage 6 and its mutant clone H2, stubby chunks of RNA. ... In 1981, in a seminal paper by Axelrod and Hamilton, [the prisoner's dilemma] was applied to the evolution of cooperation in biological societies.... In the following years, both computer simulations and study of real-life occurrences were expanding areas of research, but... It proved much easier to do the simulations, and the empirical evidence lagged sadly behind.... The underlying problem is the bug-bear of evolutionary game theory: the currency for payoff values is Darwinian fitness, which is notoriously hard to measure.... With phages the job becomes doable. The two strategies are embodied in the usual type of 6 (the cooperator) and a mutant called H2 (the defector) which manufactures fewer of the intracellular products needed for replication of the phages. Turner and Chao measured the relative fitness of the two types in the in bacterial cultures by means of a genetic marker, cleverly exploiting the fact that the defector's fitness is greaterwhen they are rare.... The fitness of a H2-defector in a H2-infested cell turns out to be P = 0.83, and that of a 6-phage in such a cell is S = 0.65. This is precisely the rank ordering required for the prisoner's dilemma. ...

It should be noted, however, that the life cycle of phage 6 (reproducing in bacteria which eventually burst.and reentering new bacteria) marks it as an ideal candidate for a specific type of group selection - which can, more orthodoxly, be viewed as individual-based slection for the ability to build successful groups.

Silver LM: *Mouse Genetics: Concepts and Applications.* New York, NY: Oxford University Press, 1995, pp.11

Extract: [M]ice and humans (as well as all other placental mammals) are even more similar genetically than they were thought to be previously. An astounding finding has been that nearly all human genes have counterparts in the mouse genome... Thus, the cloning of a human gene usually leads directly to the cloning of a mouse homolog, which can be used for genetic, molecular, and biochemical studies that can then be extrapolated back to an understanding of the function of the human gene. In only a subset of cases are mammalian genes conserved within the genomes of *Drosophila* or *C. elegans*.... [T]hree types of information have been used to build phylogenetic trees for distantly related members of the animal kingdom -paleontological data based on radiodated fossil

remains, sequence comparisons of highly conserved proteins, and direct comparisons of the most highly conserved genomic sequences, namely the ribosomal genes. The most parsimonious model is one in which flies *(Drosophila)* and nematodes (C. *elegans)* diverged apart from the line leading to mammals just prior to the time of the earliest fossil records in the pre-Cambrian period which occurred 570 million years ago. The divergence of mice and people occurred relatively recently at 60 million years before present.... [H]umans and mice are ten times more closely related to each other than either is to flies or nematodes. Although the haploid chromosome number associated with different mammalian species varies tremendously, the haploid content of mammalian DNA remains relatively constant at approximately 3 billion basepairs. ... [T]he underlying genomic organization has also remained the same as well. Large genomic segments ... have been conserved virtually intact between mice, humans, and other mammals.... [A] rough replica of the human genome could be built by simply breaking the mouse genome into 130-170 pieces and then pasting them back together again in a new order.

Haworth K: Autism and the origins and development of language. *Language Origins Society (LOS) Forum.* Fall,1999;#28:17.

Extract: People are the linguistic animal. It's what we do. children spend the first few years of their lives with two primary learning objectives, the two L's, locomotion and language - getting around in the workd and interacting with those they meet there. But, we do not master linguistic skills to an equal degree of proficiency. This is a fact often overlooked in academic circles, obviously because we tend to be symbolic thinkers and simply don't see these... differences in thought processes.... Artists speak of themselves as visual thinkers, musicians are attuned to the auditory senses, and dancers and athletes to the kinetic - all involving a more direct perceptual imagery.... At extreme ends, [are] word people, philosphers., and ... [those who] *don't* spend their first years drdiven to communicate, those individuals designated as autistic.

Pagel M: The benefits of selective thinking, (review of Steams SC (Ed): *Evolution in Health and Disease,* Oxford U Press, 1999) *Science* **284;57.**

Extract: A persistent theme in much evolutionary medicine is that humans are fundamentally adapted to a hunter-gatherer lifestyle, the lifestyle we presumably led for the roughly 2.5 million years leading up to the dawn of agriculture about 10,000 years ago. Many of our modern ills are claimed to arise from this Paleolithic "environment of evolutionary adaptedness" (EEA) and our modem circumstances. A pechant for potato chips, for example, may derive from humans having evolved in environments that were poor in salt. The increasing occurrence of reproductive cancers in women is attributed to cultural changes that date to the origin of agricultural subsistence practices.

In a refreshing treatment, Strassman and Dunbar expose some amusing shortcomings of the EEA concept. One is that most of our genes are far older than the Stone Age. Another is that bipedalism, which long antedates the Stone Age. As for women's reproductive health, Strassman and Dunbar point out that many women in traditional agricultural societies have not changed the timing or number of pregnancies (compared to women in contemporary forager populations, which are used as surrogates for pre-agricultural conditions) and do not suffer from increased incidences of cancer. Thus, it is not the transition to agriculture that matters. As alternative sources of disease from maladaption, they suggest more recent changes, such as demographic transition (to the growth rates and age structure of developed societies), air pollution, and loss of kin support. Indeed, there is scant reason to think there ever was a single EEA. Human populations have long been adapted to a range of physical environments, practices, and behaviors; one might even say that adaptability (both genetic and cultural) has been the hallmark of our species.

Wood B, Collard M: The human genus. *Science* 1999; 284:65.

Abstract: A general problem in biology is how to incorporate information about evoutioanry history and adaptation into taxomony. The problem is exemplified in attempts to define our own genus, *Homo.* Here conven-

tional criteria for allocating fossil species to *Homo* are reviewed and are found to be either inappropriate or inoperable. We present a revised definition, based on verifiable criteria, for *Homo* and conclude that two species, *Homo habilis* and *Homo rudolfensis,* do not belong in the genus. The earliest taxon to satisfy the criteria is *Homo ergaster,* or early African *Homo erectus,* which currently appears in the fossil record at about 1.9 million years ago.

Extract: fAl genus is a species or group of species of common ancestry that occupies an ecological situation, or adaptive zone, that is different from that occupied by the species of another group....

[A] fossil species should be included in Homoonly if... (i) it is more closely related to *H. sapiens* than to that of the astralopiths, (ii) has...body mass more similar to *H. sapiens...*(iii)...body proportions that match those of *H. sapiens...* (iv)...a post-cranial skeleton...consistent with ...obligate bipedalism ... (v) [modern] teeth and jaws...(vi)...evidence for..extended period of growth and development.

Peterson AT.Soberon J, Sanchez-Cordero V: conservation of ecological niches overtime. *Science* 1999;285:1265-1267

Abstract: Theory predicts low niche differentiation between species over evolutionary time scales, but little empirical evidence is available. Reciprocal geographic predictions based on ecological niche models of sister taxon pairs of birds, mammals, and butterflies in southern Mexico indicate niche conservativism over several million years of independent evolution between putative sister taxon pairs) but little conservatism at the level of families. Niche conservatism over such time scales indicates that speciation takes place in geographic, not ecological, dimensions and that ecological differences evolve later.

Extract: [O]ur results suggest that ecological niches evolve little at or around the time of the speciation event. Rather, ecological niche differences appear to accumulate later, overthe time scale of familial relationships.

Miyashita-Lin EM, Hevner R, Wassarman KM, Martinez S, Rubenstein JLR: Early neocortical regionalization in the absence of thalamic innerva-tion. *Science* 1999;285:906-909.

Abstract: There is a long-standing controversy regarding the mechanisms that generate the functional subdivisions of the cerebral neocortex. One model proposes that thalamic axonal input specifies these subdivisions; the competing model postulates that patterning mechanisms intrinsic to the dorsal telencephalon geneate neocortical regions. *Gbx-2* mutant mice, whose thalamic differentiation is disrupted, were investigated. Despite the lack of cortical innervation by thalamic axons, neocortical region-specific gene expression *(Cadherin-6, EphA-7, ld-2,* and *RZR-beta)* developed normally. This provides evidence that patterning mechanisms intrinsic to the neocortex specify the basic organization of its functional subdivisions.

Zheng B, Larkin DW, Albrecht U, Sun ZS, Sage M, Eichele G, Lee CC, Bradley A: The *mPer2* gene encodes a functional component of the mammalian circadian clock *Nature* 1999;400:169-173.

Abstract: Circadian rhythms are driven by endogenous biological clocks that regulate many biochemical, physiological and behavioural processes in a wide range of life forms. In mammals, there is a master circadian clock in the suprachiasmatic nucleus of the anterior hypothala-mus. Three putative mammalian homologues *(mPeri, mPer2 andmPer3)* of the Drosophila circadian clock gene *pen'od(per)* have been identified. The *mPer* genes share a conserved PAS domain (a dimerization domain found in Per, Arnt and Sim) and show a circadian expression pattern in the suprachiasmatic nucleus. To assess the *in vivo* function of *mPer2,* we generated and characterized a deletion mutation in the PAS domain of the mouse *mPer2* gene. Here we show that mice homozygous for this mutation display a shorter circadian period followed by a loss of circadian rhythmicity in constant darkness. The mutation also diminishes the oscillating expression of both *mPeri* and *mPer2* in the suprachiasmiatic nucleus, indicating that *mPer2* may regulate *mPer1in vivo.* These data provide evidence that an *mPer* gene functions in the circadian clock, and define *mPer2* as a component of the mammalian circadian oscillator.

Thomas EM: *The Hidden Life of Dogs.* Boston, MA: Houghton Mifflin, 1993, pp. 36-37

Extract: The more I thought about it, the more the ancient landed gentry of Europe came to seem like wolves, with one pair, the dominant male and female, owning a territory and the castles upon it and hunting the deerfor miles around. Dominance and ownership were surely very closely tied.

This obviously is true of wolves. For them the ownership of a den is crucial, since without a sheltering den a pack disintegrates. Adult wolves don't need dens; adults can stand terrible exposure. But their infants cannot. Like human infants, wolf pups can barely keep themselves warm, let alone survive in an Artie winter. ... [I]n any group of wolves, no matter who is pregnant, the dominant female gets to give birth inside the den. Thus ownership and dominance are life itself to wolves

In... lonely silence, underthe radiant Artie sun, the five adult wolves [observed by the author on Baffin Island] assumed their responsibilities with competence and skill, so seasoned by hard work and so accustoned to one another that they interacted rarely, if at all. There were no dominance displays among these lonely toilers — in the way of all close families, they well knew who was who without reminding one another. And anyway, like a hard-working farm family or a lonely band of hunter-gatherers, the wolves had little time for anything but winning their livelihood from an unforgiving world....

[F]our of them at any given time would almost be hunting faraway, while the fifth stayed at the den to babysit, often so tired that he or she would spend the entire time sleeping high on a ridge, out of reach of the pestering youngsters. ...

Because there is no darkness in high summer..., I could watch around the clock, and once watched a tired wolf sleep for eighteen hours straight.... After his first nine hours of motionless sleep, he raised his head, sighed, opened and shut his mouth to settle his tongue, and went back to sleep for nine more hours.

George MS, Nahas Z, Lamarov M, Bohning DE, Kellner C: How knowledge of regional brain dysfunction in depression will enable new somatic treatments in the next millenium. *CNS Spectrums* 1999; 4:53-61. Extract: Psychiatry has lagged far behind the rest of medicine, largely because of the inability to noninvasively access its main organ of study-the brain.,,, [T]he discipline of infectious diseases can describe ailments based on hard and known patho-physiology, from the causative agent and mechanisms of attack, to body defenses at a cellular and genetic level, to protein release and disease cascade. On the other hand, psychiatry... is organized around disease clusters... like classifying infectious disease patients due to productive or nonproductive cough or high vs lowgrade fevers.... There is still little understanding of disease pathogenesis or even regional neuroanatomic involvement....

Below we discuss some of the exciting new advances in functional neuroimaging and some of the more interesting and evolving somatic treatments of the "the depressions." ... Below we discuss the exciting new advances in functional neuroimaging and some of the more interesting and evolving somatic treatments... [T]here have been some remarkable imaging studies that show clear differences in regional brain activity in different subsets of the depressions. For example, late onset depression is associated with more white matter disease than depression that occurs early in life. Resting brain scans have been shown to distinguish patients with bipolar from unipolar depression and have demonstrated which depressed patients will respond to sleep deprivation, fluoxetine,... ECT, or transcranial stimulation. Moreover, imaging studies in patients with long-remitted depression can even distinguish those that will suffer a relapse with a pharmacological depletion paradigm....

One can envision a day when a depressed patient may have a resting and an activated brain scan for diagnosis. There would then be a host of anatomically discrete options for correcting the dysfunctional circuits both to treat the immediate disease state and to strengthen the circuitry so that relapse may be prevented.