

# ASCAP

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November, 1999

"[T]he ordinary thoughtful person is not aware that the tendency toward a struggle for existence is balanced by the strong influence of the cooperative urge."  
Warder Clyde Allee<sup>1</sup> (page 5)

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

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

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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 behavior that have evolved over millions of years and that have resulted in psychopathologically related states. We are interested in the integration of various methods of study ranging from cellular processes to individuals in groups.

***The ASCAP Newsletter 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 endeavors, etc.



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The World Psychiatric Association 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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**Remember: Subscribe or Re-Subscribe**

As the end of the year approaches, remember to resubscribe to our newsletter which means that you are also a member of The Across-Species Comparisons and Psycho-pathology (ASCAP) Society and the Psychotherapy Section of the World Psychiatric Association of which this newsletter is the official newsletter. Cost is \$55. If you decide to not join the WPA Psychotherapy Section, then the cost minus the \$15 dues = \$40. Concretely you will receive 12 issues of the 13th volume of the Newsletter January through December, 2000.

Dr. Price and I are under discussion about the possibility of regional editors in various parts of the world. Dr. Victor P. Samohvaiov, of Crimea, for instance, has been proposed as an Eastern European Regional Editor. When we derive a plan we will present it to The ASCAP Society Executive Committee and the governing committee of the WPA Psychotherapy Section.

Russell Gardner, Jr.  
Editor-in-Chief  
John S. Price  
Associate Editor

**Imperial Animal & Next Year's ASCAP Meeting**

Got a nice note from Lionel Tiger. I went back to his (and Fox's) *The Imperial Animal* and looked it over again. What a debt the evolutionary psychologists owe to those two.

And yes, they did meet at a zoo. It's in the introduction of *The Imperial Animal*. I'd seen it there. Not only that, but Tiger reminded me that another man was there, at the London Zoo, a man who more or less brought Fox and Tiger together. His name was Forge.

How can I get information on next year's ASCAP meeting? Where, when? Will it be in conjunction with the HBES meeting? I'd like to go -need to know ahead about dates.

David Evans  
evans@brookings.net

**Next year's ASCAP Meeting**

Yes, during the day of Wednesday, June 7, 1999, just before the HBES Evening Reception, in Amherst, MA. Mark your calendars and plan to come.

**Reduce Jargon**

I was delighted to be able to address your group, who seem to be taking my critique-formally an outsider-ratherwell. I'm not sure how to explain my exuberance that day, but I suppose I had waited for years to be able to say what I said.

I really feel the jargon is the main problem, because it may hide ignorance as much as it conveys concepts that the field needs to express itself. It is a problem because it does not open you to outsiders.

Hagop  
Akiskol  
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**New York Academy of Sciences Conference Program on: Evolutionary Theory and Psychopathology**

Program & Registration Information

A symposium sponsored by the New York City Chapter of the Association for the Advancement of Philosophy and Psychiatry

Date: November 13, 1999

Site: Cathedral House, Church of St. John the Divine, 1047 Amsterdam Avenue at 112th St., NYC

A recent explosion of interest in hereditary determinants of mental processes and the application of evolutionary theory to psychology has given new meaning to older Darwinian views of human nature. It has once again become fashionable to invoke the survival value of both cognitive and behavioral traits in order to explain their origin and function.

This outlook has produced novel approaches to the study of psycho-pathology. The latest theoretical advances in evolutionary theory, developmental neuroscience, population genetics and DNA biochemistry are being applied systematically to the study of depression, schizophrenia, anxiety disorders and the addictions. Technical innovations in the laboratory as well as concepts like kin selection, heterochrony, random drift and strange attractors are moving research forward at a rapid clip.

However, many questions remain. Some are strictly matters of scientific fact. It is difficult to devise empirical tests for adaptationist perspectives on psychopathology. Moreover, we still have no general agreement on the degree to which human behavioral traits are inherited. Do genes really exert the most crucial influence on normal and abnormal human psychology? Even if they do, phenomena like stimulus-transcription coupling, which may allow learned changes in brain physiology to feed back on gene expression, raise doubts that DNA's effects on the mind are unidirectional.

Further questions raise troubling philosophical and social issues. Not only does the paradigm of Lamarckian cultural transmission continue to challenge the most overarching claims of genetic reductionism. In addition, it is possible that cultural biases, rooted in the competitive ideology of our market-driven economy, are actually fueling our current fascination with the inherited aspects of mental illness. One may then ask where such biases could lead to a dark new version of Nazi eugenics, perhaps, or to a bright future of cures for madness through gene therapy. Might there be an ethically fertile and intriguing spectrum of possibilities between these two extreme forecasts?

The NYCAAPP conference planned for November 13, 1999 at St. John the Divine Cathedral in New York City will bring together clinicians, researchers and philosophers

interested in evolutionary theory, its application to mental illness, and the resulting implications for scientific epistemology, philosophy of mind, biomedical ethics, and clinical practice.

Program: Session I: Forms of Psychopathology I  
Bruce Levine, NYU, Moderator

9:00 AM  
Matthew Avila:  
Maryland Psychiatric Research Ctr  
Compensatory reproductive fitness among relatives of schizophrenic patients

9:20 AM  
Beth Kirsner, Aurelio J. Figueredo:  
University of Arizona  
The Mathematics of Melancholy:  
An Evolutionary Economic Model of Depression

9:40 AM  
Beth Kirsner, Aurelio J. Figueredo:  
University of Arizona  
Effect of Depression on Perceived Mate Value & Mating Opportunities

10:00 AM  
James Brody  
Evol. Psychology Forum Online  
Evolutionary Psychology and Complexity Theory: Mania, ADHD, OCD, and Dysthymia

10:20 AM  
Christian Perring  
Dowling College  
Evolutionary Psychology, Antisocial Behavior, and Mental Disorder

10:40 AM  
Audience and Panel of Presenters  
Questions and Answers

11:00 AM  
Break  
Session II: Forms of Psycho-pathology II NassirGhaemi, Harvard, Moderator

11:10AM **Keynote address**  
Paul Watson and Paul Andrews  
University of New Mexico Unipolar Depression as an Evolutionary Adaptation for Changing the Social Niche

12:00 Noon  
Audience and Keynote Speaker  
Questions and Answers

12:10 PM  
Lunch Break

Session III: Therapeutics James Phillips, Yale, Moderator 1:00 PM  
James Brody  
Evol. Psychology Forum Online  
Active Darwinism and Psychotherapy

1:20 PM  
Hugh Polk  
East Side Institute  
Contrasts between social therapy and evolutionary theory

1:40 PM  
Nicholas Humphrey London  
School of Economics Great Expectations

2:00 PM  
Audience and Panel of Presenters  
Questions and Answers

2:20 PM  
Break

Session IV: Theoretical & Meta-  
Theoretical Foundations  
Jennifer Radden, U Mass, Moderat.

2:30 PM Ladislav Kovac Comenius  
University Evolutionary Primacy of  
Emotions

2:50 PM  
Oscar Villarroya  
Universitat Autònoma de Barcelona  
Bounded Functionality

3:10 PM  
James Brody  
Evol. Psychology Forum Online  
Raise the Stakes

3:30 PM  
Patricia Greenspan University  
of Maryland Good  
Evolutionary Reasons

3:50 PM  
John Sadler  
University of Texas in Dallas  
Ontological Reduction & Integration  
in Psychiatric Genetics Research

4:10 PM  
Donald Mender  
NYCAAPP Program Comm. Chair  
Wave genetics and the semiology  
of Culture

4:30 PM  
Audience and Panel of Presenters  
Questions and Answers  
5:00 Adjournal

**Registration Instructions:**

The registration fees follow: \$50.00  
non-members of AAPP \$35.00  
members of AAPP \$15.00  
residents & students \$0.00  
symposium presenters

Send NYCAAPP a check for the  
applicable fee made out to "Asso-  
ciation for the Advancement of  
Philosophy and Psychiatry"  
(AAPP) along with name, postal  
and email addresses, and phone  
and fax numbers. Mail these  
materials by regular post to:

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For information about the national  
AAPP organization, visit the web-  
site at [www.swmed.edu/  
home\\_pages/aapp/](http://www.swmed.edu/home_pages/aapp/)

**Frozen meat presents challenge**

The largest mammal we have now  
in the north is the moose of which I  
have killed several under severe  
winter conditions or was in on the  
taking with natives. One is anxious  
to get the hide off and cut up the  
carcass into pieces that can be  
handled before it freezes rock hard.  
Natives, experienced in winter  
living, had that concern. Once  
frozen, chunks of meat-ice are  
very difficult to render into smaller,  
usable pieces. A steel crosscut  
saw will do, and I used such daily  
for months to saw my daily meat  
off moose and caribou carcasses.  
Freezing a mammoth carcass *in  
situ* would make recovery of the  
precious subcutaneous fat as well  
as the meat very difficult indeed.  
Steel axes are almost useless on  
hard frozen meat; stone axes  
shatter. Fires melt meat, but it  
takes a lot of wood - and time - to  
do it. However, the skin removed

(no big deal! and quickly done too)  
then thrown over the ribs, skin-side  
out, would make a very small, but  
probably adequate igloo for 3-5  
people (wooly mammoths were not  
that big). The skin, meat side out,  
would quickly freeze *in situ*.

There are tales of hunters killing  
moose then crawling inside to  
survive a blizzard. However, unless  
there is an opening maintained  
large enough for the hunter to crawl  
out, the hunter would be imprisoned  
beyond hope of rescue, as the  
carcass would freeze about him  
rock-hard. A snow cave is safer,  
easier to create and effective!

Val Geist  
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**Address for J.R. Skoyles**

Dr. Skoyles whose article is on  
page 14-15 has requested his  
addresses be listed.

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**Reference for head quote on title  
page:**

1. W. C. Allugatkin, Lee Alan:  
*Cooperation Among Animals: An  
Evolutionary Perspective*. New  
York, NY: Oxford University Press,  
1997, p. 8.

## A question about the niche change model of unipolar depression followed by addressing this query

In the original niche change model manuscript, still under revision, I (Paul Watson) talked about "dissolution of selfhood" as being one of the "freeing" effects of depression. (Anhedonia is another, and perhaps the causal foundation for the dissolution phenomenon.) The idea here is that depression makes one's personality and values more labile, thereby making a larger universe of alternative niches more plausible. The point is that many niche changes, to be successful, might require one not only to break certain social contracts, but also eventually to adopt quite different norms of conduct that make one optimally functional in a new niche.

By extension, I wonder whether the emotional flattening of major depression, perhaps as part of this dissolution of selfhood, tends to reduce one's feelings of commitment to ethical and religious precepts that tend to form the foundation of status quo contracts and the felt obligation to (1) make good on their terms and (2) form new contracts that impose similar basic constraints as the original ones.

Do you think that depressives tend to be freed in this way? Are they less bound by the codes and precepts of their religion or ethical system than before? Are they less bothered by what would they would have considered immoral or, perhaps more to scale, "sub-moral" behavior than before they were depressed?

And to extend the question, is there anything special about unipolar depression here, compared to other "psychopathologies." That is, within the time frame of their "illness" and perhaps sometimes beyond, are depressives regularly more subject to stable dissolution and subsequent facultative reformulation of ethico-religious concern and precepts compared to neurotics, bipolars, schizophrenics... you name it? In other words, could this be a domain of special design in unipolar depression?

(Note: For context, an abstract of the Watson & Andrews "niche change model" is available at: <http://biology001.unm.edu/~pwatson/dp1.htm>)

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([http://biology001.unm.edu/~pwatson/pjw\\_cv.htm](http://biology001.unm.edu/~pwatson/pjw_cv.htm))

I (Andy Thomson) was about to write you when your message arrived. I had just finished Chapter 9 in David Buss's textbook on evolutionary psychology, the chapter about reciprocal altruism, kin altruism, and friendship. I thought you would find it interesting, not so much about the first two areas, which are familiar to you, but the part on friendships. It has relevance to your work on depression, status quo contracts, and niche change within relationships.

Let me address the questions you raised in your e-mail.

I think the idea of dissolution of selfhood as one of the freeing aspects of depression, and the greater lability of personality and values has merit. "Freeing" may not be a good choice of word however since it implies ease. As you know, it is anything but easy. I would talk about "ripping" or "tearing" or something else that conveys the horrendous pain.

Also, that selfhood does not stand alone. It is connected to people in the present and the past. Those ethical and religious precepts which may be part of the foundation of status quo contracts are tied up in relationships. My values, although they may have become abstract in my mind, are at their core attached to people and experiences with those people. Breaking or changing those attachments, in the present, and tearing away from past internalized

relationships, is excruciating. There is also intense conflict about it, which I address at the end.

I think the emotional flattening of major depression (your idea of minor depression being covert is crucial here) is a way of honest signalling. The emotional flattening is expressed in our faces.

The feeling of reduced commitment to ethical and religious precepts may reflect the hopelessness of depression. And, depressives are not always freed, less bound by the codes, or less bothered by behavior they would have previously considered wrong. I have seen depression lead to cynicism and nihilism. The patient will act in ways previously prohibited and thought to be wrong. The patient may now do it, but still feels guilty, justifying it out of cynicism or, more frequently, nihilism. "What the hell, I'm beyond redemption."

[But sometimes the guilt may be a self-deception. They are acting in different ways and reaping the benefits, but publicly/consciously saying they have sinned.]

In depression religious feelings often increase in a negative way, with internal attacks on the self: feelings of unworthiness, sinfulness, straying from goodness. Freud thought some of these internal attacks were really attacks on old internalized relationships (See Mourning and Melancholia). These internal attacks and their effects may facilitate Price and Gardner's involuntary subordinate strategy.

The work I did in Kuwait after the war was full of this. Many depressives were more religious. Women, who were previously very westernized, returned full blown, chador and all, to Islam. "The Iraqi invasion occurred because we strayed too far from the faith." Other depressives became less religious.

Depression can be part of other psychopathologies (neurosis, schizophrenia, bipolar, character disorder), but I view the mechanism(s) of depression as the same as the one in pure unipolar depression.

The toughest part of your job seems to me to incorpo-

rate your ideas into the inherent conflicted nature of the mind. The brain/mind that becomes depressed is not a monolithic structure involved in this misery. Then is not one negotiator at the table, representing the depressive, trying to get others to change the contacts. It is as if there are several negotiators representing the patient in these negotiations and that contributes to the suffering.

Part of the self might want to change the contract, another part may not. I have a patient now with his first major depression. He is 45, a once successful health care provider. The managed care changes have led to his losing two jobs and taking big cuts in pay. He's had to go back to a large hospital, at the bottom rung. Clearly his loss of status is crucial to his depression.

But he is also in turmoil, trying to renegotiate his relationship with his wife and family. Part of him wants to be let off the hook, told to take time off and go fishing til something at his previous level returns. Another part of him wants to take revenge on the people destroying his career. Another part of him wants to succeed at the new position but is frightened of showing ineptitude in front of younger staff (males). Part of him wants the old ways, part of him does not.

Another patient, a depressed woman is struggling with whether to stay in her unhappy marriage for the sake of the children, versus marry her lover with whom she shares a lot. There is intense conflict at the core of her depression. Stay with husband/tradition/her religious upbringing and cope silently [preserve long term situation, inclusive fitness via children] vs start something new [short term it is and looks good] which may lead to happiness long term, maybe some new children [lover has none and wants them], but violates all her upbringing and religious past (family of origin relations).

There are few evolutionary thinkers who address this core baseline conflict of the mind. Nesse and Lloyd's paper in *The Adapted Mind* is very important. They address the question about why natural selection would create a mind that is in constant conflict. They think it is a way to keep constantly debating short vs long term relatedness. It is a compelling discussion

and incorporates the important ideas of self-deception and deception as underlying the mind's defense mechanisms and constant conflicted nature.

Attached in a Word file is Christopher Badcock's latest. He takes some of Haig and Keveme's work on imprinted genes and intragenomic conflict and applies it to the mind. There is evidence that maternal genes create the cortex and higher functions and that paternal genes create the limbic/emotional brain. The different interests of the maternal and paternal genome create a war within the mind. It is Freud's old ego vs id conflict, only now between the interests of maternal genes (ego - Nesse's long term relations in my view) and paternal genes (id - Nesse's short term related-ness/satisfaction - impulses).

In my opinion, your ideas on depression have to take the fundamental conflicted nature of the mind into account.

Keep me posted. Glad to help in any way.

**Wade N: Number of human genes is put at 140,000, a significant gain: *New York Times*. Sept 23,1999, page A17.**

**Extract:** The new estimate, by Incyte Pharmaceuticals of Palo Alto, Calif.,... is a sharp upward revision and one that points up how much there is to learn about human genetic programming.

The *C. elegans* roundworm was thought to have about 12,000 genes until shortly before its genome was sequenced last year, when it turned out to have 19,099 genes. ...

Many biologists use the figure of 100,000 human genes, a round number that implies the exact total could be somewhat more or less. ...

One reason for the wide uncertainty over the number of human genes is that there is no certain way of telling where on a sequence of DNA a gene starts.

In making the new estimate, Incyte scientists depended on the fact that while biologists cannot

recognize where the genes lie on DNA, human cells can. The cell's machinery transcribes genes into active copies known as messenger RNA. These cellular messages can be captured and analyzed before they are naturally degraded.

By decoding the heads and tails of as many messages as they could find, Incyte biologists figured that the total number of different genes in the full human DNA, or genome, was 130,000. Using an independent method, based on a feature known as CG islands that occur in about half of known genes, Incyte calculated 143,000 genes in every cell of the human body. Putting the two estimates together produced the figure of 140,000.

[J. Craig] Venter said that no region of the human genome decoded so far contained as many genes as the Incyte estimate implied. His [own] earlier estimate of 70,000, he said, assumes that human cells have three billion units of DNA. If the human genome is 25% larger than this, as Celera's recent work on the fruit fly genome suggests may be the case, Dr. Venter said he would raise his estimate of the number of human genes by 25 percent.

**Lopez, Barry: *Crow and Weasel*. (Children's book) North Point Press, 1990:**

**Extract:** Remember only this one thing," said Badger. "The stories people tell have a way of taking care of them. If stories come to you, care for them. And learn to give them away when they are needed. Sometimes a person needs a story more than food to stay alive. That is why we put these stories in each other's memory. This is how people care for themselves."

## The Man behind the Curtain: Rank and Deception

"Pay no attention to the man behind the curtain."<sup>1</sup>

The first time I saw *The Wizard of Oz* in a theater I must have been about 6 years old, and the most lasting impression I had from the experience was first the excitement I felt about going to NYC on a subway with my mother, a real treat for me, and then the fear that stayed with me for weeks of witches and hurricanes. I was still at an age when I thought my parents were God, and that adults always told the truth. It would never have occurred to me that the wizard through clever deception had ascended the throne of Emerald City, and it would never have entered my mind that he was sending Dorothy and her companions to their probable death when he sent them to recover the broom of the Wicked Witch of the West. I was looking at the human hierarchy from the bottom, still unaware of the role deception plays in one's climb up its ladder.

As adults we recognize the human social hierarchy of which we are all a part. We see the manipulations and maneuverings of our fellow primates and view deceit as a character flaw, yet there are certain aspects of human and perhaps animal society in which deception has found a comfortable niche and even an acceptable role. In its broadest sense, deception hides the truth, or what is known or perceived as truth, from the seeker. Deception may be either deliberate or inadvertent. The deceiver may tell you what he thinks you want to believe, what he wants you to believe, or what he himself is deceived into believing. Why do we believe him? We believe because we trust him. We believe because we want to believe. We believe because we have no choice. We, primates, have joined together in co-dependent coalition. With the exception of a few aberrant loners, we need each other. In needing each other, we must trust each other.

Trust is the backbone of social units. Ever since we first stepped out of the forest onto the savannah, we needed to trust each other. Though there is no hominid

cross-species evidence to support it, and it would be almost impossible to discern this kind of behavior from fossil or even archeological evidence, at some point in the evolution of the human social unit, one among us must have stayed awake at night to guard our sleeping band from predators. The grasslands offered little natural cover and protection when we were most vulnerable, so it seems plausible, and perhaps even probable, that our hominid ancestors invented the sentinel. The closest evidence would be among nomadic tribesmen who stand watch over herd animals, or the Sumatran natives who sit up all night to guard their fields from corn-stealing elephants.

The sentinel is not unique to humans though, for the crow and raven have those who perform this duty for their flock or nestmate.<sup>2</sup> The next time you see a crow eating carrion beside the road, look up on the lightpost or standing tree and you will see the sentinel. If you approach too closely, he will distract you from the feeding bird by beating his wings and screaming a fearful song.

### The Sentinel

As if preparing for flight,  
spread wings fluttered  
feigning indignation,  
the sentinel sang a song  
of cautious caws,  
A ruse that I might think him just another crow.

The sentinel's job is so essential to the well-being of the troop that failure in his duty is punishable with death. A. Hyatt Verrill says that crows hold "court" and that *"One naturalist who managed to approach near enough to one of these crows' courts to watch the proceedings, reported that when his presence was finally detected, the indignant crows adjourned court instantly, and hurling themselves upon the sentries, tore them to pieces as a penalty for their carelessness in allowing a human being to draw near."*<sup>3</sup> Any who depend on the services of a sentinel are placing their

very lives in his care. They put their faith in his powers of observation and his ability to perceive a threat. They must trust that he will not be slack in his duty. The sentinel in turn needs to trust that his sacrifice will be rewarded.

You might ask why any creature would endanger his own safety by advertising his position to predators, or in the case of humans, go out on a limb for a stranger. Darwin himself viewed this as a dilemma. How could the bravest men, who would naturally be sacrificed in greater numbers, increase through natural selection? Cowards may die a thousand deaths, but they have more opportunity to reproduce than the brave dead man. Darwin tried to explain it with a concept that came to be known as reciprocity. In *The Descent of Man*, he said, "*as the reasoning powers and foresight...became improved, each man would soon learn that if he aided his fellow-men, he would commonly receive aid in return.*"<sup>4</sup> He considered this a rather base motive for human generosity, but he recognized the effect on both the giver and receiver as a movement toward benevolent behavior within the human social structure and the development of social virtue.

This theory of reciprocity took a backward step when Hamilton explained self-sacrifice as a way to ensure that your genes would be passed on through your kin. A person might sacrifice his life for his kin, being unconsciously aware that his genetic material would go on in perpetuity. Such unconscious awareness must have been in the mind of Abigail Rice, my ex-husband's ancestor, who gave birth to 21 children, 18 of whom lived to a ripe old age. While some of her children were still toddlers, she caught yellow fever ministering to Washington's wounded at Yellow Springs Hospital near Valley Forge. She had backed the winning side and her children and her children's children (my two girls and boy included) reaped the benefits of a self-governing republic. Her direct ancestors now number in the tens of thousands. Her sacrifice, however much it may have incidentally benefited many, had a direct reward for her kin. They grew and prospered in a free land.

This explanation for reciprocity doesn't really explain

why anyone would sacrifice his life for a stranger when there is no apparent benefit for your kin. Robert Trivers, in his paper, "The Evolution of Reciprocal Altruism,"<sup>5</sup> declared he had a solution to this enigma. Trivers attempted to reveal the mechanism of sacrifice by explaining it as "The Golden Rule with Options and Contingencies." Do unto others as you would have them do unto you, but if they don't, be prepared to give them their just desserts. This naturally involves an element of trust that your fellow man will indeed reciprocate at least at some point in the future.

All of this babble about sacrifice and reciprocity brings us back to what trust is and why we need it. We need it to maintain the stability of the social hierarchy, whether the hierarchy is bird, bee or human society. As these chapters unfold, trust will be shown to be more important than truth to the social unit; in fact, the opposite of truth is very often essential to maintaining the good of a society. In the case where deception is not common knowledge, or is at least acceptable to the whole (as in the case of politics), deception aids in the maintenance of the hierarchy. Like the paradox of truth and trust, a paradox exists in the balance in a hierarchy. It is easy to see that balance is essential to its well-being. What is less obvious is its importance. Balance is so vital to hierarchal societies that it is more important to the individuals within the hierarchy than in the position they occupy. When squabbling for position occurs in laying hens, egg production for all hens declines, for those at the top all the way through to those at the bottom. Similar stability is essential for the human hierarchy.

In the fantasy, *The Wizard of Oz*, the balance of the hierarchy of an imaginary land is threatened by the arrival of four unusual travelers, a tinman, a lion, a scarecrow and a little girl. Unbeknownst to them, the wizard is a charlatan who rules over a city by means of an elaborate hoax. The hoax is that an ordinary man presents himself as a "great and powerful" wizard, and by virtue of his ingenuity in creating a magic lantern show, he *is* a wizard. Before a golden throne a gigantic head appears suspended. The ordinary man, who would be wizard, is behind a curtain that conceals his manipulations of the horrendous hologram. While the man speaks in an ordinary voice, his words are

electronically amplified in rafter rattling tones that issue forth from the monster's mouth. Lightning flashes from carbon arcs, puffs of colored smoke, and roaring sheets of gas flame, strategically spaced in intervals of time, shoot hundreds of feet in the air to terrorize and subjugate with fear the citizens of Oz, Dorothy, and her companions.<sup>6</sup> With his large primate brain, the wizard has created an illusion that is not unlike the physical displays of our cousin, the chimpanzee, who makes his hair stand on end in order to appear larger and more ferocious in his attempts to establish his rank in chimpanzee society.

Biological anthropologist, Richard Wrangham<sup>7</sup> says, "we exaggerate only barely in saying that a male chimpanzee in his prime organizes his whole life around issues of rank." The human primate, as an individual in a larger sociological hierarchy, has no less need for establishing rank as part of his self-actualization, and unlike the chimpanzee, has a much larger bag of tricks to establish and maintain his rank, and many more ways to deceive his competitors. Deception is a powerful and useful tool in establishing and maintaining rank in both human and chimpanzee society.

In order to establish and maintain his rank at the top of the heap, the wizard, a formerly low-ranking human, creates a spectacular, yet artificial, display of dominance with his gadgetry. His fire-spouting hologram is a terrifying "display" created to make him appear larger, smarter, and more powerful than the other inhabitants of Emerald City, and it works! Jane Goodall observed an analogous use of artifice by a low-ranking chimpanzee who rose to the top of his hierarchy at the Gombe Stream Research Reserve.<sup>8</sup> Mike was almost at the bottom of the adult male dominance hierarchy when he cleverly discovered the intimidating submission he could accomplish by banging together two empty kerosene cans. Chimpanzees regularly display dominance and challenge authority by hooting, and dragging and beating tree limbs, but the spectacular and fearful sound that Mike was able to create with the empty cans was enough for him to establish supreme rank in his troop. Just like the wizard, Mike seemed very aware of the unique effect he had upon the other males, for as Jane Goodall comments, "*It seems that*

*Mike actually planned his charging displays.*" (p. 114)

According to biologist, E. O. Wilson, "*dominance hierarchy... is a general trait of organized mammalian societies*" and "*like humans, animals use elaborate signals to advertise and maintain their rank in the hierarchy.*"<sup>9</sup> These signals often involve a visible or auditory deception, well thought out, to give the impression of extraordinary courage or size, even though the advertiser of rank may himself actually be shaking in his boots. The character of the cowardly lion in the Wizard of Oz illustrates this when he pursues the little dog, Toto. This little chase is meant to advertise his rank in the forest (as he later reveals in his amusing rendition of King of the Forest) His puffed up balloon of bravery is deflated when Dorothy stands up to his braggadocio and calls his bluff. A deceptive mask of courage disappears when Dorothy smacks him on the nose, and he breaks down in tears.

It would have been interesting to see what might have happened to Mike, Gombe Stream chimp, if one of the higher-ranking, or even lower-ranking, chimps had called his bluff. As it was, the humans at the research reserve decided to remove the cans when Mike started using them as missiles to hurl at the other chimps and even humans. He eventually had to resort to the old "branches and rocks" and "hair standing on end" displays, but by that time his rank had been established and he needed only maintain it. I suspect that if a chimp had challenged him at the beginning of his rise, he would have backed down, but I think that perhaps the initial reaction to his kerosene can banging surprised even him, and the more it worked, the more he believed in himself, adaptive self-deception.

The wizard's top rank in the hierarchy of the land of Oz was similarly established by his amazing hologram. The hologram is so terrifying that the memory of its appearance and apparent power was all he needed to maintain his rank and the status quo of the idyllic Emerald City. He remains unchallenged and secure in his rank until the Wicked Witch of the West arrives on her broomstick and writes, "SURRENDER DOROTHY" in the sky over the city. When the people of Emerald City flock to the wizard's palace in abject fear, the wizard, disguised as the gateman, tells them that the

wizard has everything under control. When in fact, he doesn't even know who Dorothy is. His nervous withdrawal behind the door of the castle shows the erosion of his self-deception. He needs to re-establish the belief in his own powers. He does this through subjugation of others, exploration of his own resources of the mind, and adaptive self-deception.

Of course achieving and maintaining one's position in the group is a selfish endeavor, and advancement comes from subordinating others. When Dorothy and her traveling companions show up at the wizard's palace, their subordinate position is established by the gateman/wizard's refusal to let them see the wizard. Their subordination is his elevation which has been challenged by their presence. He tearfully manipulates them by use of emotional bonding. "*I had an Aunt Em once too!*" The diffident four gain entrance to the wizard's palace, but fail to notice that the gateman has disappeared and they must find their way to the wizard's chambers by themselves. When confronted with the terrifying giant head, they reveal, with appropriate fear and trembling, their heart's desires to the wizard. The scarecrow requests a brain, the tinman a heart, the lion, courage, and Dorothy, a way home.

While the wizard himself knows that these requests are not within his power, behind the curtain of deceit, he can pretend omnipotence. He might even be, as Mike might have been, somewhat self-deceived. He promises to fulfill their wishes provided the misadventurers bring him the broom of the Wicked Witch of the West, knowing full well that they will probably be killed. For the wizard, it is a win-win situation. If they are killed, the witch will be happy that he delivered them to her. If they kill the witch (the only way they can get the broom), they will remove the threat to his hierarchy without his having to risk anything.

The wizard's magic lantern show has the desired effect, just like Mike's kerosene cans, and so emotionally immobilizes the four visitors that they don't question either its power, or its authority, but like the dutiful adherents of the Crusades, set out to accomplish the impossible. He's big enough to make them

feel protected. Their faith in the power of his authority and its ability to grant them their heart's desire gives them the impetus and courage to follow the wizard's directive. Furthermore, it blinds them to the wizard's deception. A smokescreen is often an important part of maintaining a deception and the wizard is an expert at smokescreens. What he didn't take into account was that his power would be challenged and his deception unmasked.

Deception can be positive and constructive, as it is in the maintenance of the comfort of those living in Emerald City. This is one ironic way that deception pays for everyone, including the deceived. It can also be used to harm with or without intention when deception leads others astray and threatens their well-being, as it does when the wizard sends the foursome on their quest for the broom of the wicked witch. In the same way that deception can be useful to a society, it can be useful to you and me when we deceive ourselves. We know self-deception is valuable when we use it to map the future, or when it provides assurance to the threatened and purpose to existence. Self-deception is negative and destructive when it becomes a shell to retreat within, then we can say the tool is a weapon.

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**Extract:** The first phalanx might have comprised a small elite group of fighting men and assured these specialists in warfare of success in the works of Ares. But the phalanx implies a radical transformation of the warrior ethos: Collective discipline takes the place of individual exploits and *sophrosune*, self-discipline takes the place of *menos*, the state of warrior frenzy. In the context of social conflicts of the seventh century [B.C.] it also made it possible for the men who made up the former foot soldiery (the men of the demos...) to accede to all the privileges which until then had been reserved for the *hippeis* and the *heniochoi* by reason of the latter's military superiority, symbolized by their chariots and horses. With the introduction of the phalanx the warrior's panoply was in fact reduced to the hoplite equipment that was within the means of the small peasant landowner as well as those who possessed horses. Finally, the phalanx represents on the field of battle the model of the human group in which every man is equal and claims to be nothing more. The ideal of *isotes*, *homoioties*, with its corollary, the right to *isegoria*, freedom of speech in the military assembly, may originally have been a feature of an elite group of fighting men united by the *pistis* which their reciprocal oaths of loyalty have sealed, but it now becomes possible to extend it to all other social categories, to all other fighting men, in other words to the citizens as a whole. So it was that the aristocratic and warrior values did not die out with the advent of the city-state. They lost certain specific features and were diluted to the extent that the entire city now became an aristocratic, military elite....

Through their own efforts the Greek farmers, small peasant owners of a parcel of land, were to confiscate all the ancient privileges of the aristocracy to their advantage, making them "common property": These included access to legal and political magistracies, the administration of public affairs, control of the army and even of culture, with its particular modes of

thought and feeling and its particular system of values. This widening and democratization of the aristocratic culture is one of the features that characterizes the Greek civilization. It explains the persistence of a certain ideal of man, and of certain attitudes: The agonistic spirit, the desire always and everywhere to prove oneself the best; the scorn for utilitarian and commercial values; the ethic of generosity, exalting the concept of largesse and the gracious giving of gifts; disinterestedness; and finally, and above all, a desire for autonomy and non-servitude, coupled with a concept that the human quality of a man depends upon his relation to other men. We should note straightaway that it is only within such a society, in which the concept of the autonomous individual, free from all servitude, has emerged and has been confirmed, that the legal concept of the slave can, by contrast, be clearly defined as an individual deprived of all rights that make a man into a citizen. Greece at one stroke invented both the free citizen and the slave, the status of each being defined in relation to the other. Without free citizens there would be no slaves, but instead a hierarchy of degrees of dependence stretching from the top to the bottom of the social scale, a general state of servitude from which even the king, in his relations to the gods or the divine order, is not exempt.

Nothing better illustrates the importance of this aristocratic ideal of autonomy implying an *isokratia* (in which power is shared equally by all) than the intellectual significance of the urban phenomenon in Greece....

In a city inspired by the ideal of *isonomia*, power and authority are, as the Greeks put it, placed at the center (en *mesoi*), and are not the prerogative of one individual such as the king or of a privileged minority of citizens.... [S]o too does culture belong to all; it is placed at the center, no longer the privilege of a few families or, as in China, of a class of educated men. This democratization is, of course, only made possible by alphabetic writing, which is no longer the specialty of a class of scribes, and which enables all the citizens to learn to read and write.

## Channel Hopping Metaphor

Recently I have had that experience already familiar to most of you from childhood - channel hopping. The reasons for my virginity are that I do not have a TV, my parents refused to have cable and no one until recently has been paying me to stay in hotels with TV. In channel hopping you switch from one television studio to another or some film or news desk. But after ten minutes you realize nothing much changes: the same requirements of story telling are needed whether it is selling quack slimming aids, the latest events in East Timor, or some soap opera drama.

It strikes me that this experience is very similar to my reading of the science literature of late. I am no cell biologist but I am a fan of all those molecules that make cells work - the DNA, the receptors, the chemokines, the G proteins, the organelles that create them and in turn are made of them, the viruses and mutations that subvert the whole process, the P53 protein circuits that spot and check such processes within the cell and without (the immune system).

But I have a problem - I think it is an important problem for cell biology science - there is the giddiness of channel hopping (while I stress the cell biology level, it becomes even more giddy as one opens one's eyes to all the phenomena beyond it such as physiology, living organisms, ecology, psychology, civilization and history). One moment one is at the nanosecond level of thinking about how proteins turn off and on DNA replication, the next thinking about mitochondria and the production of oxygen radicals, then the next how transmitters lock into receptors and change their shape or let them channel in ions, how neurons interact as networks, brains as societies and so on.

One is constantly looking at images of dynamic processes of very different kinds and at very different scales both of time and size. There is a great similarity between pressing the remote control on the TV and flicking the pages on science journals. One's mind buzzes with the variety:

once scientists had it easy as subject areas were linked in a nice hierarchical way, the physics of atoms provided the ground upon which chemistry was based, and this in turn cell biology which in turn did this for physiology. Now in the cell we see dozens of these levels within one area alone of science. There is a fundamental need to find order within this multiplicity of processes.

When we channel hop after a few minutes we notice that the various channels are not all that different: there are media rules of thumb about how to keep viewer's interest whether it's informing us about the weather, presenting a sales pitch or a daily soap opera yam. These include: tell a story, balance good things with bad, keep it personal, keep the viewer in suspense for more after the commercial.

Now what we need to understand the diversity within the cell [and beyond it] is a set of principles to understand mechanisms and how they create the richness of phenomena at different levels even though their component parts might be very different: molecules, whole organelles, cells, individuals or societies. That is what I see as the role of the corollary generator. It is a top-down rather than a bottom-up axiomatic approach to understanding the mechanisms of things. The usual approach is to start with the axioms provided by maths and its corollaries deduced from them about fields, geometries, etc and use these to understand phenomena.

Here instead phenomena are examined across various areas and axioms hunted out that produce corollaries in the form of processes which underlie their mechanisms, phenomena and entities. At bottom it relies on the insight that systems with lots of properties such as DNA regulation, cell development, ecologies, civilizations will owe their capacity for phenomena richness to many shared abstract processes. Thus, if we look at one system and understand how it generates its wealth of phenomena, processes and

entities, we can understand broad principles upon how another system generates its phenomena, processes, and entities - even if their components are very different and at different scales of size or temporal duration. (See p. 5 for Dr. Skoyles's addresses)

**Roberts M: *The Man Who Listens to Horses*. New York: Ballantine Books, 1996,1997, pp 1-2,19-23.**

**Extract:** In the wilderness of Nevada.... I remember, especially, a dun mare.... Clearly the matriarch of the herd, she was disciplining an unruly young colt who had been roughing up foals and mares. I vividly recall how she squared up to him, her eyes on his eyes, her spine rigid, her head pointed arrow-like at the adolescent. No longer full of himself, he knew exactly what she meant. Three hundred yards from the herd, the outcast would know by her body position when he could return to the fold.

If she faced him, he could not. If she showed him part of her body's long axis, he could begin to consider it. Before her act of forgiveness had to come signs of his penitence. The signals he gave back to her—the seeking of forgiveness—would later be fundamental to a technique I would develop to introduce young horses gently to saddle and rider. It was the mustangs who taught me their silent body grammar and the dun mare was my first teacher....

Older than most, with a heavier belly that hinted at many pregnancies, she seemed to issue a lot of commands. She ordered her group to move off. She started, the others followed. She stopped, they did likewise.... [S]he was the wisest and they knew it....

Many people likely still think that the stallion still runs the show. The breeding or dominant stallion, sometimes called the alpha male or lead male, will skirt the herd and defend it from marauders. His motivation is to prevent anyone or anything from stealing his harem. But ... the dun mare ... was in charge of the day-to-day running of this group.

The bay colt... was about twenty months old, I guessed ... he took a run at a filly gave her a kick.... he was only about 550 pounds in weight, but very aware of the

fact that he owned a pair of testicles. Then he committed another crime.... The bay colt was a terrorist. Immediately after the attack, he pretended nothing had happened. ... Each time he behaved badly, the dun mare ... weaved a little closer to him....

[She] witnessed about four such episodes before she finally made her move. Now she stood within twenty yards. Still, the... colt could not help himself: he launched himself at a grown mare, grabbed the nape of her neck, and bit down hard. The dun mare did not hesitate. In an instant she went from neutral to full-blown anger; she pinned her ears back and ran at him, knocking him down. As he struggled to his feet, she whirled and knocked him down again. While this chastisement took place, the others apparently took no notice....

[She] ended by driving the colt 300 yards from the herd and left him there, alone. Amazed, I tried to fathom what I was seeing. The mare took up a position on the edge of the herd to keep him in exile. She kept her eyes on him and faced up to him. She was freezing him out.

It terrified the colt to be left alone. For a flight animal [as horses are], this was tantamount to a death sentence; the predators will get any horse long separated from the group. He walked back and forth, his head close to the ground, several times executing this strange, uncomfortable gait. It looked like a sign of obedience, similar to a human's bow.

Then [he] made his way to the other side of the herd and attempted to sneak back in that way, but the dun mare had followed his circle. Again she drove him out until he fled another 300 yards.... [S]he kept her body square on his, and nevertook her eyes off him. He stood there, and I noticed a lot of licking and chewing going on, although with all this drama, he had eaten nothing.... Was [he] saying [I'm not a threat to you.]? ...

[Hours later] I [again] caught sight of the herd. To my astonishment, the dun mare was now grooming the troublesome colt.... giving him little scrapes on the neck and hindquarters with herteeth, and generally fussing over him. She had let him back in; now she was keeping him close by and giving him a lot of attention.... Purgatory was behind him. This was heaven.

## Poetry, News, and Groceries

Nobody knows exactly why or how or when language was invented. This uniquely human proclivity—though we aren't the only animals that communicate with vocal sounds—probably has a long and complicated evolutionary history. Words have many uses, and they were invented, no doubt, not only to "tell it like it is" but also to deceive.

A basic use of language is to convey information, as in newspapers, or in utterances like, "Please pass the potatoes." Unless you say that sentence in an ironic or nasty or humorous tone of voice, it should mean exactly what it says. Now consider the first line of a poem called "Next Day," written by the American poet, Randall Jarrell:

*Moving from Cheer to Joy, from Joy to All...*

What's the use of that utterance? What does it mean? It doesn't sound like news, or act like news. A few lines later we find out that what we're reading are the words of a person who is shopping in a supermarket the day after the funeral of a good friend. Gradually, the words begin to take on new meanings. We know that "Cheer" and "Joy" and "All," are names of soaps used for washing clothes. But they carry other meanings as well. Poets have a habit of speaking two ways at once, and poetry is a kind of doublespeak. Art, according to Picasso, is a lie that helps us see the truth. Behind Jarrell's line is a wonderful deception that also can help us see a truth.

It is true: When a good friend or a loved one dies, our perceptions and assumptions about everyday life are altered. Momentarily at least, if not forever. We go on as we must, shopping for groceries, working, doing what needs to be done. But nothing is quite the same as it was when our friend or loved one was alive. Another way to say it is that death can both depress us and wake us up at the same time. The well-known literary critic Cleanth Brooks, called poetry "*the language of paradox*." Both inside and outside of poems, we need always to be prepared for all kinds of mind-bending.

Ever since I read Jarrell's poem about 20 years ago, I haven't been able to walk down the aisle of detergents in a supermarket without having it occur to me. Ezra Pound said that poetry is "*news that stays news*." Whatever you call it, it's memorable language, and it reaches deep into our lives. That is why poetry is so often associated with those primordial, archetypal images and stories that are a part of our neuropsychic inheritance as human beings. We are, as the Harvard biologist E. O. Wilson wrote, "*the poetic species*."

Poetry can happen anywhere at any time. It mostly occurs in poems created by practicing poets, but it can be called forth by anybody in moments of excitement or stress. The words of poetry tend to be the familiar ones that we use among family and friends, and not those of the work place. Poetry can be brutal or tender, funny or serious; it can be about earthquakes and the cosmos as well as about bees and dirty kitchens. Poets generally don't elevate one subject over another. One person may make a poem in which all the right and proper and moral things are said on a given subject or behavior, but that doesn't mean it's good poetry. Another person may write one line about, say, a squirrel running along a telephone wire, and it could last as long as Shakespeare's sonnets. I once had a seventh-grade student in Madison, South Dakota who described blackbirds as "*pieces of night left over to see the morning sun*." I told the young poet I'd never forget it, and that was the truth.

Like all artists, poets fill a necessary niche in communities. They keep the people awake. And they more or less lend them the words (in poems) that they couldn't quite come up with themselves. Sure enough, they did what the poet did, saw what the poet saw; but they just couldn't think of how to put it. Finding the right words may not be as important as running General Motors, but it can make us a little smarter and our lives a little clearer.

Maybe Robert Frost said it the best: A poem is "*a momentary stay against confusion*."

# ARTICLE :

by John K. Pearce

## Family Therapy and Evolutionary Psychology

I have been thinking about the contrast between the explosive growth of the Family Therapy movement and the torturous growth of Evolutionary Psychology. I figure the reasons are as follows:

1. Family Therapy forwarded the interests of marginalized groups—social workers, minorities, MA level psychologists. There was no discrimination. Though blacks and hispanics were slow to join, they were extra welcome.
2. Family Therapy forwarded the interests of women, with both a family focus and the central role of women in the movement. Also, women are probably cognitively better suited to keeping track of the maze of interests that make up the fabric of family life. This is, in fact, what mothers actually do in daily life, while the men stubbornly pursue their unitary interests..
3. Psychoanalytic Theory was, just at that time, no longer seen as convincing. More and more it seemed a cult. An elite cult, but a cult. Psychoanalysis could not be call Patriarchal—women were prominent powers in psychoanalysis—but they were even more conservative than the men. And the training was implacably elitistic.
4. In Family Therapy's last "decadent phase," when strategic therapies were claiming dramatic and obscure cures, therapeutic optimism enjoyed a brief ascendancy, though it was quickly extinguished by dismal outcome studies. Still, exaggerated therapeutic claims are a potent boost. The decline of the family therapy movement is probably related to these poor results, and the fact that fads do not last. Family therapy mostly abandoned scientific grounding.

Evolutionary Psychology, in contrast:

1. Is likely to offend women by not anathematizing male's incorrigibly promiscuous desires. The current cultural direction has been to prize female values over

male. A level playing-field is unwelcome. Nor is the bad news about wired-in "bad desires" appreciated. (The less said about this the better," huffed his aged Victorian Aunt.)

2. No easy cures. No professional discipline benefits. No parochial interest served, except that of beleaguered males.
3. Access to cross-species and other evolutionary knowledge is uncommon. Only polymaths need apply-  
So, we will have no crowd of supplicants to make us feel important. (Sigh...)

Also, I am reading Rubenstein's wonderful book, *When Jesus Became God* about the Roman Empire in the period 200 to 400 AD. The Jesus movement was spearheaded by women, whose interests the new religion championed. Also of interest is the quest of personal transformation, that included not feeling any sexual desires. Hence, the cult of virginity, chastity, and complete clerical chastity. Transformation by faith and will was supposed to bring one, Jesus-like, toward salvation and eternal life in heaven. When the Roman World was falling apart (something unthinkable in that unchanging world) the appeal of eternal life in heaven was enormous. Pagan faith only offered permanent wandering in Hades. Anyhow, it would seem that a period of suppression of sexually unruly behavior is upon us again.

Talking to a 28 year old Venezuelan woman today, she reported that women of her generation were determined to not allow their husbands to chase skirts, and, interestingly enough, she sees going to church with her husband as a possible aid to keeping him in line.

(Well, an N of one. Fidelity in South America would really be some trick...)

## A Contemporary Ground for Gestalt Therapy

The following was inspired after reading a piece by a gestalt colleague about the historical groundings (background, context) of Gestalt Therapy.

Gestalt Therapy has to respond to the times. We know so much more than our founders. Consider this, the reason there are no Gestalt psychologists now is because they are all neuroscientists. Today's investigations into learning and perception are about brain physiology, mind structure (mind being the brain when it is functioning) and artificial intelligence. If Gestalt Therapy were to construct a contemporary ground out of which strong theory and practice figures would emerge the following is what I think its elements should be.

**Evolution:** Modern Darwinism brings a most important and radical change to our way of understanding human behavior. Although some of its implications may at first be disturbing, Evolutionary Theory also exposes and undermines the Naturalistic Fallacy which demands: Since that's the way it is, that's the way it has to be. That is unequivocally false. By understanding exactly how things are and how they got that way humans can decide to make them different. Among all the organisms in the world, members of homo sapiens are the only ones who can do that. All the choices under the following headings are more or less informed by Evolutionary Theory, nevertheless here are a few of the figures that relate most specifically to this category.

Charles Darwin concluded that organisms change through time by means of descent with modification and that the best modifications increase their presence in subsequent generations by being better reproducers. This is called Natural Selection. He also added the impact of sexual selection referring to criteria by which sexually reproducing organisms choose mates. This also helps to keep the best modifications in the gene pool (although it must be remembered that Darwin knew nothing about genes)

W.D. Hamilton proposed what is now known as Hamilton's Rule and the concept of "inclusive fitness." It shows mathematically that to support close relatives also supports your fitness because they share from one-half to one-fourth of your genes. Thus kinship altruism exists.

George Williams revealed that decidedly different interests motivate male and female mammals including humans. Also, with David Lack, virtually obliterated the idea of group selection, that is, that individuals behave for the good of the larger group-the species, for example.

Richard Dawkins wrote *The Selfish Gene*. Immortality is the property of some genes. The mortal body is the carrier and transmitting device.

Robert Trivers worked on social evolution. Trivers was the seminal thinker about reciprocal altruism, parental-offspring conflict, and deception/self-deception.

E.O. Wilson's *Sociobiology* created a storm in the mid-1970s and was wildly misunderstood by people who should have known better, such as Stephen Jay Gould. What is known today as Evolutionary Psychology is nearly identical to sociobiology. Wilson's latest, *Consilience*, makes a case for biology being the thread that unifies the physical sciences, anthropology, psychology, religion, philosophy, and the arts.

**Literature:** This may seem like an odd list and of course its very short. These entries are definitely outside the realm of post modernism, on all sides.

Lewis Carroll. His Red Queen said, "You have to run faster and faster just to stay in one place" and Alice who said, "It's so difficult - everything being alive."

Niccolo Machiavelli's *The Prince*. This is may be one of those disturbing things in that he nearly had it right.

Daniel Quinn. Anyone who has read *Ishmael, My Ishmael*, or *The Story of Swill* know why he belongs in this compendium. He has some of his theory wrong, and he would do well to consult some of the references on these pages; but I like his understanding of how we passed from hunter-gatherers to "totalitarian agriculture."

Robert Wright wrote *The Moral Animal*. If any of this intrigues you this is the one to start with. Probably all the names on this list appear in Wright's bibliography.

**Research:** This should be the longest section by far because the result of research in brain function and the biology of behavior in the last forty years has been tremendous. Unfortunately, unless the results were a new medical treatment, the public, even the educated public, remained pretty much uninstructed. Just like under the other headings, here's only a few that now construct the ground for me.

Elizabeth Loftus wrote *The Evolution of Memory*. She may be the only voice of objectivity during the hysterical years of treating child abuse.

Nicholas Humphrey wrote *The Social Function of Intellect*. This is a seminal article describing how the unique brain mechanisms of homo sapiens likely evolved from the social primates like chimpanzees, bonobos, and gorillas. The necessity for social maneuvering in the context of limited resources and hierarchy has selected for a remarkable brain in homo sapiens (but one still not well adapted for the 21st Century!)

Martin Daly and Margot Wilson are evolutionary psychologists from McMaster's University in Ontario. Their remarkable book, *Homicide*, I would put second on the must list behind *The Moral Animal*. Find out what domestic violence is really about.

Frank Sulloway wrote *Born to Rebel*, and Steven Pinker, *How the Mind Works*, two important books.

Behavioral Ecology used to be the domain of animal behaviorists (ethologists) like Konrad Lorenz and Nikko Tinbergen. But when it was discovered that we

could look at animals and make predictions about humans and then look at humans and make predictions about other species, Behavioral Ecology expanded its boundaries to include not only Biology but Anthropology and Psychology. And since Gestalt Therapy (sometimes now referred to as an ecological therapy) from the beginning talked about contact with the environment we should be paying attention to the scientists whose attention is focused exactly there. There are many people who deserve to be cited but I will choose the anthropologist Laura Betzig because of the excellent introductory essay in the volume *Human Nature* that she edited. Her article is entitled "People are animals."

Theory of Mind represents the ability to understand another's state of mind, mindreading, in a way, an essential ability for social and interpersonal maneuvering. This pretty clearly is the function of evolved brain mechanisms. We can see rudimentary Theory of Mind ability in chimps. Some of the researchers in this field are Simon Baron-Cohen, David Premack, Uta and Chris Firth, and Sanjida O'Connell. (O'Connell's book is called *Mindreading: An Investigation into How We team to Love and Lie*)

Neuroscience: There are startling things discovered daily in the field of Cognitive Neuroscience. The people who are doing it are legion so I'll pay homage to the one that started it: D.O. Hebb who published *Organization of Behavior* in 1949 in which he developed the first comprehensive theory of how complex psychological phenomena, such as perceptions, emotions, thoughts, and memories might be produced by brain activity.

**Technology:** Computerized Axial Tomography (CAT), Magnetic Resonance Imaging (MRI), and Positron Emission Tomography (PET) are examples of technology now revealing the functional structure of the brain. Artificial Intelligence can actually demonstrate how it might work. But don't worry; Intel is a long way from getting the required number of chips jammed into 2000 cubic centimeters

**Themes and Philosophy:** The End of Post-Modern-ism (PM) whose extreme relativism expressed by its mindless slogan "Whatever!". And what will end PM? A

new look at causation brought about by the concept of Levels of Analysis, those levels being Proximate and Ultimate. Social science for example has always offered proximate explanations: culture and social learning. An ultimate explanation is always a Darwinian one, understanding behavior in terms of "inclusive fitness". Thus "Why" can no longer be forbidden.

Constructivism will continue but will be understood as creating structures built on the platform of the human animal brain. Ultimate causation demands that we ask "Why do we have to do that, anyway?"

Nature and Nurture. People will finally stop asking how much is it of one or the other. If you must have percentages then try to understand that it is One Hundred Percent for both.

Dualism. Cartesian dualism has certainly been dead in the Halls of Science for a long time and proclaimed moribund by the intelligencia at large. But it is so embedded in our language and thought habits that it creeps in. Many people who long for spirituality in their life make up a sort of neo-teleology implying if not Divine Purpose then a logic in the Big Bang that made the development of Homo Sapiens inevitable. And that our species represents for the present a pinnacle on the long road to perfection. Is it possible to have a spiritual practice that does not require compartmentalization from objectivity? Yes. The oldest admonition of the great spiritual teachers is: Know Thyself.

The Materialistic Philosophers. Check out Patricia Churchland, *Neurophilosophy: Toward a Unified Science of the Mind/Brain* and Daniel Dennett, *Consciousness Explained*

**Psychotherapy and Psychiatry:** So what does this imply for the practice of psychiatry and psychotherapy? Neuroscience certainly is going to make us more and more sophisticated in the use of medication. It is easy to foresee increased use of chemical intervention for treatment of psychopathology, mental health, and just better functioning. But a knowledge of Evolutionary Psychology will change the way we view and interpret behavior; it will provide more options for the way we explain things to our clients. It makes

racism impossible. It reveals the mechanisms behind gender politics and family dynamics.

Oliver Sacks is a wonderful writer, the author of *Awakenings* and *The Man Who Mistook His Wife for a Hat* (this title also points to Daly and Wilson's *The Man Who Mistook His Wife for a Chattel*).

Kalman Glantz and John Pearce, a psychologist and psychiatrist respectively, are the authors of *Exiles From Eden - Psychotherapy from an Evolutionary Perspective*. One of the book's salient points is the importance of reciprocity in social and interpersonal dynamics. How we came to value reciprocity and how we are frequently in conflict with it have cogent evolutionary explanations. This book is unfortunately out of print and so far no plans to issue another printing or another edition. But it's only a matter of time.

Randolph Nesse, a psychiatrist at the University of Michigan School of Medicine, has written widely about psychiatry and evolution. I referred extensively to his article *The Evolution of Psychodynamic Mechanisms* (published in *The Adapted Mind*, edited by Barkow, Cosmides and Tooby) in my article that Peris, Hefferline, Goodman, and Darwin published in the *Gestalt Journal*.

Gestalt Therapy will have to update its theoretical underpinnings, but it is not a fundamental change. The founders (including Freud) made it explicit that ultimately the theory and practice should rest on Biology. They were right but they didn't know much and some of what they "knew" was wrong. The concepts of connection and contact which are so central to Gestalt Therapy become meaningful in a less ideological way and more concrete and historical when informed by Behavioral Ecology. If our belief in the power of awareness and attention skills is sharpened it will be possible for (at least some of) our clients to see the human animal functioning relentlessly underneath the machinations of our neo-cortex. Gestalt Therapy's concepts of contact, awareness, and creative adjustment put us ahead of any approach to psychotherapy that might be open to being influenced by neo-darwinism.

Over the last thirty years there have been several attempts to answer the question "What works in psychotherapy?" Every time the answer has come back the same. It's the relationship that counts. As long as there is psychotherapy that will be true. Gestalt Therapy is the only approach that takes that point seriously enough to let new figures emerge from a contemporary and very dynamic ground.

**Johnson G: Incognita terra: science may be no closer than ancient tribes to understanding consciousness. *The New York Times Magazine Section*, October 17, 1999, pp. 132-134.**

**Extract:** This year marks what was grandiosely christened the Decade of the Brain. In the last 10 years, scientists have used new scanning techniques to see which parts of the brain light up when you listen to music, read a book, or recall a buried memory.... But this has only served to deepen the mystery. The brain indeed appears to be a biological computer. So where in the neurological wiring is the source of consciousness? How does a three-pound glob of cerebral flesh exude thoughts and know that it is alive?

On one side are the materialists of various stripes, sure that the inner light can, like everything else, be explained scientifically — in terms of matter, energy and information. On the other side are the "New Mysterians," named by their opponents in honor of the 1960's rock band Question Mark and the Mysterians. They believe that consciousness is so far outside the domain of conventional science that it is the one pattern we never understand.

For those who hope ... science will answer every question, ... the mind is what the brain does. As the trillion brain cells... communicate with electrochemical signals, intelligence, awareness and all the mysterious inner feelings emerge.... Francis Crick... starkly described this view: "'You,' your joys and your sorrows, your memories and your ambitions, your sense of personal identity and free will, are in fact no more than the behavior of a vast assembly of nerve

cells and their associated molecules."...

In his tour de force, "Consciousness Explained," the philosopher Dennis Dennett showed how neuronal machinery might even give rise to the stream of consciousness, the inner voice that plays constantly in our heads.

From the pandemonium, bubbling just below the surface of awareness, a single narrative emerges—the voice of the inner T conducting its running story about what seems to be going on in the world. Consciousness, then, is a tale-spinning computer, what Dennett calls "the Joycean machine." The implication is that there is no reason a properly programmed digital computer couldn't be made equally aware.... But could [such] rudimentary cognitions ever be accompanied by the profound feelings of inhabiting vast mental spaces?

Of course, the robot could operate perfectly well without agonizing and enthralled over its own existence. But so, it seems, could we.... In the mid-1970's, the psychologist Julian Jaynes created a sensation with an intimidatingly titled book, *The Origin of Consciousness in the Breakdown of the Bicameral Mind*. "People he declared, indeed used to be zombies, with no more feeling of I-ness than the living dead. For centuries they were steered through life by persistent inner voices, as controlling circuits in the right side of the brain sent signals to the left side. Modern people experience these as the sound of the inner self. But in the beginning, Jaynes says, they were interpreted as the voices of the gods. There no private ambitions, no private grudges, no private frustrations, no private anything," Jaynes wrote. As the world grew more complicated, this "bicameral mind" broke down. The two sides of the brain became more closely intertwined and consciousness, the sense of the self, was born. The spirits were replaced by the ego, the I.

[However, Mysterian David] Chalmers believes it will be necessary to admit consciousness into science as an irreducible thing-in-itself, along with matter, energy, space and time. Then perhaps we will truly understand the universe.

## Thomas Metzinger's Philosophical Viewpoint & Metaphors concerning Evolutionary Theory & Psychiatry

In this article, I present Metzinger's functional model and phenomenological approach to understand and describe psychopathological dysfunctions, what he calls, "Applied Philosophy of Mind" or "Philosophical Psychopathology"<sup>2 S. 1</sup>

"Neuropsychiatry and applied philosophy of mind — are these the beginnings of a fascinating and beautiful friendship?"

### Who is Thomas Metzinger?

Born in 1958 in Frankfurt/Germany, from 1978 - 82, he studied philosophy, theology and ethnology at the University of Frankfurt. Since 1994 he is one of the founding and leading members of the Association for the Scientific Study of Consciousness. He is one of the few philosophers to have gotten involved very thoroughly with the evolution and results of the neuro-sciences and who achieved an international reputation in his field at the same time.

Having finished his habilitation at age 34 and still without a university employment, he had a hard time with the ritual ranking fights in the field of his home-country. Moreover, because he was oriented towards the scientific field of neurosciences he became distrusted and disregarded by most of his traditional philosophical fellows.

But he has found an ecological niche in a new founded Hanse-Wissenschafts-Kolleg - beside the university - at the University town of Bremen, where the new German centre for Brain-and-Consciousness-Research shall be evolved. He was able to organize an International Conference on Consciousness in Germany 1998.<sup>1, 3</sup>

What is the role that philosophy can play in our actual situation?

Philosophy of mind is a metatheoretical project, i.e., a theory of other theories. The contributions should be: 1) a conclusion/comprehension and overall view of the recent findings in the different scientific fields, 2) the elaboration of a conceptual framework which is able to reflect the rapid changes in our world view caused by the continuously increasing amount of knowledge.

George Graham and Lynn Stephens conclude this development as follows:

*Philosophy of mind has increasingly turned away from the search for clean counterexample-immune analysis of psychological concepts and toward a wide, integrating, empirically informed sort of theorizing... The model for much current work in philosophy of mind is interactive and cooperative or coevolutionary... Traditional philosophical conceptions of mental activities are tested against, and redefined in the light of, empirical findings, while tools of the philosopher's trade are employed in assessing accounts of particular phenomena in the relevant scientific fields.*

What we actually need for a comprehensive and systematic theory of psychiatric dysfunctions is a theory of the "self-model" of *Homo sapiens*. From the perspective of cognitive sciences it shall be a computational model, which is activated episodically by the system to regulate its interaction with reality. Vivid and increasingly more complex self-models enable not only an improvement of somatomotoric, perceptive and cognitive functions, but later also social cognition (what Ferdo Knobloch theorized - based on empirical findings - as "group-schema" as the framework of our "virtual social world").

Subjectivity is the core of the modern theory of mind. We are creatures, who experience part of their own states consciously. That defines the three main elements of subjectivity: (1) identity, (2) conscious-

ness and (3) carriership of experience. These three elements relate to three phenomenological columns: (1) self (joins all subjective states as "my states" and simultaneously they constitute self), (2) consciousness (the seemingly immediate and direct being of its contents), (3) quality of experience (contributes the concreteness, abundance and colour to our inner life).<sup>1, 21, 22</sup>

### **Mental Representation**

Human creatures are able to create self-centered mental representations (that means that all presentations and representations are centered towards the perspective of the subject) not only of certain areas of the surrounding physical and social reality (like "moving maps" of a GPS-Receiver or F.Knobloch's "Group Schema")- They include their own body and nervous system (like many other biosystems can as well) - and on a higher level also complex inner representations of their own self. In the human brain the evolutionary older modules are processing and presenting information on a "lower" level (see: P. MacLean's *Triune Brain*) much faster and efficiently as, for example, the speech-modules. But that is one reason that for our brain it is impossible - concerning sensual perception - to re-present this process itself mentally again on a higher level. Our mind is also capable of producing "virtual representations," which reflect - in the normal state of awareness - the actual reality only partly, or which, on other states of trance or dreaming, they are partly or totally dissociated, e.g. spontaneous fantasies, day- or nightdreams and hallucinations. It seems that our "representational systems" are continuously in activity - we can't switch them off. If the external strain decreases-to the extreme of total sensory deprivation -then a "mental simulation" of inner presentations and representations takes over. Human brains can generate possible phenomenal worlds- like virtual realities.<sup>1 p. 65</sup>

### **Mental Simulation: the generating of virtual worlds by phantasy, imagination and planning.**

Mental representations are tools used by our brain with the evolutionary advantage of processing as much information as possible and necessary for survival.

Mental states that represent non-realistic situations are defined as "mental simulations". Creatures, who are in a state where they can't identify mental simulations as such and take them for representations are dreaming or hallucinating. Indeed such mental states do quite often arise by disinhibition of certain areas when strong inner signal-sources are activated.<sup>1, p. 64 - 7</sup>

The evolutionary history of mental states from rudimentary archetypes to increasingly more complex macro-representations happened as biological phenomena under circumstances of selection. These mental capacities achieved overtime an increasing amount of inner relationality and autonomy. This increasingly achieved independence from input. Due to this input-detachment, mental representations allowed development of a much larger inner behavioral repertoire. This means that mental simulation became a new form of behavior- inner behavior.

### **Consciousness -subsymbolic meta-representation**

How is it possible, that out of all the different forms of representations used by the human brain, a non-fragmented consciousness can evolve with the content (under standard conditions of awareness) of one phenomenal "I" in one world? <sup>1, p.88</sup>

(A very complex discussion of consciousness is deliberately omitted at this place, because it would distract us from the present topic)

### **From subject to self-model - introducing the flight-simulator as a metaphor** <sup>1, p. 241ff</sup>

The flight-simulator is an apparatus to train and teach future pilots. It allows them to experience without the risk of a crash in a phenomenally most realistic way unpredictable and critical flight situations. The evolution of flight-simulators has reached a complexity of information input on different levels-visual, acoustic up to kinesthetics, so that the simulated virtual world comes very close to real flight experience and its representation.

Human brains are functioning in a very similar way from stored data they create an internal model of the

external reality on a real-time basis. The continuous actualisation is achieved so fast that we don't experience it as a model contrary to the experience in the flight-simulator. Our brain is distinguished from the flight simulator in some other important aspects: (1) it represents many more sensual modalities, (2) it processes the data much faster, (3) the computed multimodal pictures or representations are more detailed and reliable-an advantage which probably will change soon, (4) it isn't reduced to a special application but rather open for an almost infinite number of problems, and (5) a most important difference: human brains simulate also the pilot integrated into the picture. Of course there is no "homunculus" in the system. But there is the necessity for the system as a whole, to explain to itself its own inner and outbound behavior. Therefore it needs a representational tool, which helps to survey essential characteristics of itself by means of internal simulation and display to itself the history of its actions as well as its history.

Our brain is also distinguished from a normal flight simulator by the fact that it can't be used and controlled by a pilot, who just temporarily enters it. The adaptation of this metaphor to our brain leads us to a higher and more sophisticated technical level of a "total flight-simulator," which operates as a self-modelling airplane designed to fly and navigate fully automatically without any pilot and which has in its cockpit a simulator that continuously generates a complex representation of itself. Because it interprets this representation in a naive-realistic manner as a thing, therefore arises in the flight-simulator the idea of "the pilot."

This deficit of subjective knowledge about the conditions of origin and the inner structure of our self-consciousness entails the platonic picture of the steerman (cybernetics) and the birth of the cartesian myth, to cite two of many false theories of pilots who only temporarily enter the body. From our actual knowledge we can say, that our brain activates the (inbuilt) pilot especially in situations, when a representational tool is needed to survey the activities of the whole system and mentally display it.<sup>1,p. 243-244</sup>

As human beings we are systems incapable of recognizing our own subsymbolic self-model as self-model. That's why we operate under conditions of a "naive-realistic self-misunderstanding". We experience ourselves as in direct and immediate epistemic contact with ourselves.

De facto we humans are systems, who permanently "mistake" ourselves with our self-generated subsymbolic self-models. By doing so we generate a stable and coherent "Me-illusion", which we can't transcend on the level of conscious experience.<sup>2, p. 13</sup>

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**Associated Press (Milwaukee): Bonobo was bananas until the ape shrink took over. Wisconsin State Journal, October 18,1999, p. 3B.**

**Extract:** Psychiatrist to the great apes" is not Harry Prosen's most prestigious title, but it may be his favorite. The chairman of the psychiatry department at the Medical College of Wisconsin takes delight in his role as consulting psychiatrist to the Milwaukee County Zoo. He has seen definite signs of improvement in both his patients. Dick, the orangutan, has pulled out of his depression. Brian, the self-mutilating, bulimic bonobo... well, Brian is better.

Brian, 10-years old, arrived at the Milwaukee Zoo, in 1997, with severe psychological problems. "Brian was the first patient that proceeded to both urinate and throw feces at me at the same time," Prosen said. The zoo had been asked to take Brian by the Species Survival Plan, said primate curator Jan

Rafert.

"He was sent here to provide him with a social environment," zookeeper Barbara Bell said. They knew we had a rock-solid, mentally stable group of animals." She described her new charge as "really messed up, beyond training, beyond socializing, very aggressive and at the same time incredibly frightened."

Brian screamed. He paced. Around and around he went, always in the same circle. He clapped his hands together. He induced vomiting. He inflicted injuries on himself. He didn't sleep. "Never have I been so haunted by an animal," Bell said. "He had a vacant, almost zombie-like look."

Rafert said: "We were working with this problem from the day (Brian) arrived. But his behavior was way beyond our league." Bell suggested seeking help from the Medical College of Wisconsin. Bonobos and human, after all, share 98 percent of the same DNA. Rafert agreed.

Euthanasia was not really considered, although Prosen feared it might have to be an option. This extremely endangered species, after all, numbers only 133 animals in captivity worldwide, and the wild population lives in a war zone in the Congo. However, the zoo staff was worried that Brian might do himself permanent injury. "Frankly, I was perplexed," Prosen said.

He was also fascinated. As he would have with any other psychiatric patient, Prosen sought background data. He received a written case history from the research facility describing Brian from birth on. Brian's experience did not follow the usual pattern of bonobo infancy in which there is constant contact with the mother. At one point in his young life, for unexplained reasons, he lived in a small enclosure with only his father, who sexually abused him.

Again, Prosen did what he would have done with a human patient. He held a case conference. Zookeepers, staff veterinarians, animal curators and Shelley Bauman, director of Oceans of Fun, the privately run seal and lion show at the zoo, all offered perspectives and what Prosen called, "very, very sharp

observations." Prosen began to see Brian's behavior as an attempt to soothe himself from extreme anxiety.

He suggested a small dose of an anti-depressant that also had a calming effect.

Zoo veterinarians Victoria Clyde and Roberta Wallace relied heavily on Prosen's judgment, Wallace said.

"We're not trained in psychiatry," she said. But it was Bell and the other keepers who were providing Brian with a safe world that was utterly predictable. Every meal was served at the same time in the same place. Quiet time always came after lunch. Keepers worked hard to keep their mannerisms, words of praise, even voices were the same when they were with Brian.

What would have bored his fellow bonobos to screams of rage was bliss to Brian.

"It seemed to give him peace," Bell said. Rafert said Prosen's intervention and advice "exceeded our hope."

Slowly, zookeepers have increased the proportion of his day that is not rigidly fixed. "Right now, about 50 percent of his day is unpredictable," Bell said. "He's doing OK with that."

When he was first introduced to fellow bonobos in the same enclosure, things went fine for awhile. Then he was placed with two dominant females. He approached them as a normal male his age might do. He got it wrong. They darn near killed him," Prosen said.

In bonobo society, sexual activity is the primary means of communication, but evidently there were subtle cues that Brian had not mastered. Now Brian spends much of his time with Lodi, the dominant male, and with Kitty, the oldest captive bonobo in the world.

Will Brian ever be 100 percent? Probably not. Early disruption of the link with his mother—and essential anchor in a bonobo's life — left him with a severe developmental incompetence. In any case, Brian is better than he was.

## Coalition for Science in Psychiatry

To follow are the minutes of the Coalition for Science in Psychiatry, a group that owes its origins to the partnership of Mel Haas and Peter Jensen from two U.S. federal agencies, the Center for Mental Health Services (CMHS) and the National Institute of Mental Health (NIMH) respectively (Dr. Jensen subsequently left the government for a University position and has been replaced by Brent Stanfield). They let a contract to the University of Pennsylvania in Philadelphia (UP) for assembling a group of representatives from various organizations concerned with teaching of psychiatry in U.S. residency (specialty) training. This stemmed from a sense that the findings from federally funded research need learning by practitioners.

Ron and Elizabeth Weller from UP wrote the contract and the meetings have all been held in the Children's Hospital in Philadelphia. I had the good fortune to represent the Group for the Advancement of Psychiatry (GAP) in view of the committee that I lead there being involved with framing a basic science of psychiatry.

Bonnie Zima from UCLA composed the following minutes. She voluntarily assumed this responsibility from the beginning. Before leaving the October 15 meeting I elicited permission from all assembled to record the minutes here for two international groups, the ASCAP Society and the Psychotherapy Section of the World Psychiatric Association.

### Minutes of the Fifth Meeting of the Coalition for Science in Psychiatry, October 15, 1999

Members present: Drs. Russell Gardner (GAP), Melvyn Haas (CMHS), James Harris (Professors of Child/Adolescent Psychiatry), James Meadow-Woodruff (American College of Neuropsychopharmacology), Sheldon Miller (Residency Review Committee), Ronald Rieder (American Association of Directors of Psychiatry Residency Training), Steven Scheiber (American Board of Psychiatry and Neurology), Lori Simon (American Psychiatric Association [APA]

Committee of Residents and Fellows), Ed Silberman (Association of Academic Psychiatry), Brent Stanfield (NIMH), Ronald and Elizabeth Weller (UP), and Bonnie Zima (American Academy of Child and Adolescent Psychiatry). Others who could not be present included Daniel Winstead (American College of Psychiatrists), James W. Thompson (APA), James Stevenson (American Association of Chairmen of Departments of Psychiatry), and Carl Greiner (Association of Directors of Medical Student Education in Psychiatry).

**1. Introduction** (R. Weller) The purpose of this meeting is to receive feedback from the major psychiatric professional organizations about how to accomplish the goals of this initiative.

### Overview of the Coalition

#### *The problem*

1. There is a large body of foundation science unfamiliar to many residents.
2. Many residents may lack the fundamental knowledge that is necessary to incorporate new research findings into their practice.
3. This may result in inability to practice state-of-the-art psychiatry.

#### *Goals of the Coalition*

1. Increase graduating residents' knowledge of the foundation science of psychiatry.
2. Increase graduating residents' ability to continually gain new knowledge and apply advances in science into their clinical practice.

#### *Learning objectives*

1. Develop an understanding of the scientific process.
2. Be aware of significant areas of investigation/knowledge that are likely to impact the future practice of psychiatry.
3. Have an understanding on how basic research findings can be translated into clinical practice.
4. Be able to recognize the role CNS factors may

play in the etiology and treatment of psychiatric illness. 5. Be able to practice evidence-based psychiatry.

#### *How to do it*

1. Mandate changes
  - a. Increase RRC requirements b. Questions on ABPN exams
  - c. Include in the recertification exams
  - d. Require CME
2. Encourage changes
  - a. Demonstrate need in patient care
  - b. Provide interesting learning materials
  - c. Provide easy access to learning foundation science
  - d. Provide incentives if they learn (te trip, food)
3. Facilitate change ("prime the pump")
  - a. Example: a research course (ie Dr. M. Pato from Buffalo has a course often discussed)
4. Educate
  - a. Improve educational materials available to training programs/directors  
Examples include model curriculum, prepared courses, education for training directors, education for chairs, core competencies, telemedicine, case-based learning, improve teaching methods, lists of key articles
  - b. Improve materials available to residents  
Examples include programmed learning materials, improve access (website, internet, access to literature, "traveling show" training for residents (topic-based program that comes to the program).

#### *Projects/Products*

1. Disseminate research methods course to programs
2. Develop study guide for ACNP's Generation of Progress
3. Develop problem-based learning cases for dissemination
4. "Train the Trainers" Updates at national meetings

#### *Direction*

The initial funding for the coalition was from the NIMH and CMHS. The goal of the next phase is for the organizations to take ownership of the coalition's work.

## **2. Computers in Psychiatry Education (L.Simon)**

Hand-out materials provided an excellent review of informatic science and its application to psychiatry.

The presentation stimulated discussion about the issue of standardized curriculum vs. program-specific flexibility, clarification of core competencies and curriculum, lack of funding for teaching activities (i.e. Medicare funding), funding for time to develop an informatic infrastructure, variable level of computer literacy skills among faculty/ persons in leadership roles, increasing cost in telecommunication services, need for support from the field to move some of the professional organizations, and quality assurance of information.

The cost of overseeing the quality of information would be over an estimated \$50 million/year. To meet this, government support would be needed. The National Library, for example, is funding informatic projects.

## **3. APA Institute on Research Update**

The institute is developing and evolving. The existing Office of Research will be incorporated into the APA Institute on Research in 2001. The institute has a well-respected Board of Directors, but there is no Director. APA is undergoing an enormous reorganization. The question was raised if the APA Institute should take on the mission of the coalition. The purpose of this coalition is to have all the major psychiatric organizations input on improving science education in psychiatric residencies.

An early purpose of the Institute was to be a vehicle to obtain external funding for projects like the PRN, NIDA training grant, APA/Janssen Fellowship, young investigator mentoring programs, and practice guideline development. This came in response to the problem that APA is viewed as a trade organization and thus not eligible for external funding. Dr. Harold Pincus's leadership was key to the development of this Institute. With his resignation, the Institute needs a leader. Input from Jim Thompson would be helpful to understand how the educational mission will be met in this reorganization.

A limitation is that the APA Institute has no track record to be competitive for more substantial sources of funding.

The debate: Is APA going to change their tax status from an educational organization to a trade organization?

Would the American College of Psychiatrists be willing to take on the mission of this coalition?

#### 4. Reports from Organizations

*American Academy of Child & Adolescent Psychiatry (B. Zima)*

The key committee to collaborate with is the AACAP Work Group on Education and Training. The Abramson Fund (AF) is a possible mechanism for some funding. The application guidelines for funding are being rewritten. Applications must come from an AACAP committee or work group and the estimated budget for projects is \$5-10K. A wide range of projects have been supported, reflecting the diversity of AACAP committee work. A mechanism for support of the coalition's work would be to work with the Work Group on Education and Training on a proposal to the AF.

*APA Committee of Residents and Fellows (L Simon)*  
This committee is strongly supportive and appreciative of the opportunity to participate in the process. The increasing clinical demands make it difficult to protect time for education. There are ways for faculty to cover these clinical service demands to open up time for the residents.

*Residency Review Committee (S. Miller)* This is a regulatory organization. The coalition's recommendations were adopted into the new RRC criteria, which was a major accomplishment of the coalition. There is no other organization that provides the view and mission of the coalition. By the nature of the organization, the RRC is not allowed to fund an initiative such as this.

*American Association of the Department of Psychiatry Chairs (S. Miller, as proxy for D. Winstead)* This has not been discussed in the Council because it is under reorganization. They would be very supportive of this activity—the coalition mission is "right on target." This organization has a very small budget; therefore, it is not able to monetarily support the

coalition's work. The coalition could help persuade the Chairs to keep education and training as a priority.

There is no committee within the organization that has the coalition mission. This would have to be addressed by the Council. A question was raised on whether this would be an appropriate organization to collaborate with given their tax status.

*Society of Professors of Child & Adolescent Psychiatry (J. Harris)*

This is an education committee, chaired by S. Sexson that meets in conjunction with the AACAP annual meeting. This meeting with representatives from the Commonwealth Fund explores mechanisms to support this group's work. In a survey of child and adolescent training program directors about PBL methods, there were no responses. PBL methods should be taught by the experts. The Wellers were invited to the professors' group.

*American Board of Psychiatry and Neurology (S. Scheiber)*

This organization oversees the certification process and works closely with the RRC and ACGME. There is an increasing emphasis about the teaching of science of psychiatry on the certification exams. This has had an influence on the educational and training process. The board is also undergoing strategic planning and one of their goals is to become more responsive to the technologic advances. There is an R&D committee to address this issue. The Board may go to this coalition to discuss pilot projects developed with the ABPN. Additionally, the Board has a track record of reaching out to others for consultation. Please see the attached statement for further details.

*Group for the Advancement of Psychiatry (R. Gardner)*

This is a think-tank organization with 25 committees, established about 50 years ago. Funding is based on membership dues. The Liaison Committee would be the appropriate point for collaboration with this coalition. Should the Gaps in Knowledge Subcommittee active earlier in the Coalition re-activate for a collaborative role with this coalition? Should the work of the PRITE include the work of the coalition? A question also was raised on whether there should be collabora-

tion with international organizations.

*American College of Psychiatrists (S. Scheiber)* The ACP would be in a very good position to work with the coalition to enhance resident education. This has not been tested yet, but there would be some appeal.

*American Association of Directors of Psychiatric Residency Training (R. Reider)* It would be supportive of the coalition's mission. The central priority however is the immediate need to meet the new RRC criteria. The work of the coalition is not a high priority area for AADPRT. AADPRT has been skeptical that a multi-organization coalition would parcel back coalition goals to the organization. AADPRT is really an association for the training directors, and does not want to really run things. It has occasionally received grants, such as the one on recruitment and development of a neurobiology curriculum. The budget is very lean. We should consider having the President of AADPRT be a member of the coalition.

*American College of Neuropharmacology (J. Meadow-Woodruff)*

There is a split consensus. There is general support for the concept. An expansion of ACNP website can be attributed to the coalition's efforts. The role for this is to provide access to educational products. There are two schools of thought: model curriculum is not used vs. technology will make such curriculum work. It would be an important role of the coalition to generate funding for developing technology to improve the science of psychiatry training. The cost of developing the technology for education is quite high (estimated millions); however, the coalition would help ACNP by being a facilitator of funding. The ACNP is looking into CME private companies and pharmaceutical companies for support, but this is not enough to do the projects that this coalition has discussed. Support from the federal government would be needed.

*Association of Academic Psychiatry (E. Silberman)* The organization would like more information about the work of the coalition. How much does this overlap with APA's Institute? There was concern that the coalition's work would overlap with the organizations.

In principle, the coalition's mission is a worthy endeavor. A follow-up on Dr. Pato's course stemmed from its having been presented at a recent AAP meeting over a 3-day period. The entire meeting was small (n= about 100). Ten people participated in the course on day 1, and attendance diminished overtime. Those that participated in the course were pleased with it, but the format might be a problem. It was discouraging that more members did not attend the AAP meeting. There needs to be a greater commitment to support educators to learn how to teach the translation of research findings into clinical work.

## 5. Discussion

### A. Coalition: What can it do for you? Role?

#### *Background*

#### Role of the Coalition

1. Provide forum for discussion
2. Serve as an advocate
3. Prioritize and establish goals/projects
4. Perform tasks itself
5. Assign tasks:
  - a. Parent organizations)
  - b. Another organizations)
  - c. Form task force inclusive/exclusive
  - d. Establish partnership with one of above
6. Obtain help/resources
  - a. NIMH/CMHS
  - b. Pharmaceuticals/Industry
  - c. Universities
  - d. Foundations
  - e. Psychiatric organizations (i.e. partnerships)
  - f. Patient advocacy groups
7. Serve as a facilitating group

#### *Comment*

The organizations will not be able to do much because nobody has the time to complete the work the coalition wishes. The membership of the organizations is fluid. Since leadership changes frequently, it is difficult to consistently dedicate the energy over time that would be needed to complete the coalition's work.

For now, we can be advocates. We would require a defined identity to obtain funding. It is unreasonable to

ask the organizations to increase their member dues to support this effort. There would be societal benefit for this work. Together with the high cost, federal government would be needed.

This coalition has a unique role and could be developed into an entity to obtain funding.

We also should consider being "adopted" by an organization. Some concerns were expressed that if the coalition was adopted by one organization, there would be repercussions from other organizations who are also dedicated to residency education.

In the past, the APA served this role, but this is lost now. The College may be the next appropriate organization to work with the coalition.

There is a fragmentation in education issues because many of the organizations are interested in education. The efforts are not coordinated. The format of this group facilitates this coordination.

We could expand the communication that has occurred in the coalition. One mechanism would be a quarterly newsletter that would be available in hard copy and on a website. Some example topics would include PBL, ACNP Generation of Progress, and new developments (in basic sciences, organizational level, opportunities to learn how to teach research/obtain funding). The coalition would serve as an editorial board. It should be in a hard copy and on a website with links to the representing organizations. Should there be an interactive component for residents and faculty on the website? Could the newsletter be sent with another organization? A suggestion was made to possibly attach it to the APA CORF newsletter that goes to all residents. Funding would be needed to support the additional pages. The two main costs are printing and mailing. We should consider having an Editor—we need someone to take responsibility for the copy, researching topics, etc. If we use an existing server, the cost of the website would be minimal. This product would need to be marketed and there should be incentives to encourage members of the organizations to use the newsletter/website. Should we create our own website or adopt an organization's website?

This raises the issue of whether the coalition should have a separate identity.

This coalition is an excellent forum for communication and this group has demonstrated this well. The first three roles (stated above) have been realized in the coalition's recent work.

A coalition should remain a coalition. This would maintain its unique identity and recognize the contributions of the organizations.

NIMH/CMHS are potential funding sources. Coalitions usually function as a lobbying force.

## 2. What products do organizations want?

### *Background*

#### Abridged Product Summary

1. Generation of Progress Study Guide
2. Case-based learning modules (5 child and 5 adult cases)
3. Teach research evaluation skills to residents
4. Telemedicine  
Example topics: molecular neurobiology, genetics, neural networks, sleep and circadian rhythms, development of neurotransmitter systems, attention, emotion, language, memory, consciousness, evolution of language, temperament and personality, cognitive development
5. Programmed teaching in Neuroanatomy (computer-based interactive)
6. Train training directors on how to teach
7. Core competencies (educational goals for research course were drafted)
8. Developmental Psychopathology
9. Training for faculty to teach evidence-based medicine
10. Website

### *Comment*

A newsletter from a coalition needs approval from each organization. There must be an entity before we can produce a product. There needs to be a decision to become a separate organization or become part of an existing organization. Coalition vs. organization

implications were discussed. For example, members of the coalition would need to get approval from their organizations to use their name on the newsletter. The ambiguous nature of the products also contributes to a potential stalemate position for the coalition.

We should consider becoming an organization and dropping the word "coalition" to enable us to move forward.

The assumption that the individual organizations were going to guide the structure of the coalition will not be realized. We should work on developing the structure.

### **3. Funding/Support for Coalition vs. Organization**

The contract for this phase of the work will end in late October. We have completed the work that we were charged with. The products are the accomplishments (i.e. RRC changes, expansion of ACPN website, core competencies for research skill training). Additionally, there was a recommendation that RFP's be developed to address the agenda set by the coalition.

Potential federal funding sources are the NIMH R25, R13 (?), and small business grant mechanisms.

A motion was made to apply for a 501 c3 status to become an organization and change the name to a liaison. This was not seconded, but stimulated discussion. This would take money to set this up. This motion was made again later.

Should we ask the organizations: 1) incorporate; 2) be adopted by a parent organization; 3) remain a coalition for advocacy and communication; 4) disband. Ask about their opinion about financing. Consider getting consultation on their priorities for the suggested products.

Written correspondence should be sent to the organizations to increase accountability and improve consistency of feedback.

There is the possibility that some organizations would view that the new organization would compete for limited resources for psychiatric education. There

could be a territorial response, but setting up a liaison could address this matter. The leadership is going to have to come from this group, with the burden being on the Wellers to take on this role.

Dr. Scheiber's written comments were reviewed. There were very positive responses to how the roles of the organizations were stated.

A motion was made to disband. This might be premature because the government will not be responsive to our suggestions for RFP's. Some felt that we should continue the grassroots support for this, while others felt that we should disband and that we have accomplished our goals. It is a shame that education has become less of a priority. This perhaps is an argument that the need for this coalition's work is more than ever. A unanimous vote to not disband was made.

A motion was made to create a 501c3 organization, which requires affiliation with a state. Then, an application needs to be submitted to the federal government to get approval for a tax-exempt status. A non-profit status is needed to allow individuals and corporations to take a tax credit for their support. The results of the votes were 8 yes, 0 no, and 1 abstain

A motion was made to meet as long as there is funding. Unanimous vote of yes.

A motion was made to become incorporated into an existing professional organization. There were 2 votes in favor, 6 against, 0 abstain. (Note: The Wellers recused themselves from the voting.)

#### **Action Plan:**

The Wellers will draft a letter from the coalition to the organizations briefly summarizing the coalition's work, outlining it's conclusions, and eliciting their input or the priorities of the products that should be developed.

Look into the McArthur Foundation model of a network.

# ABSTRACTS & EXTRACTS ...

**Sugase Y, Yamane S, Ueno S, Kawano K: Global & fine information coded by single neurons in the temporal visual cortex. *Nature* 1999;400:869-873.**

**Abstract:** When we see a person's face, we can easily recognize their species, individual identity and emotional state. How does the brain represent such complex information? A substantial number of neurons in the macaque temporal cortex respond to faces. However, the neuronal mechanisms underlying the processing of complex information are not yet clear. Here we recorded the activity of single neurons in the temporal cortex of macaque monkeys while presenting visual stimuli consisting of geometric shapes, and monkey and human faces with various expressions. Information theory was used to investigate how well the neuronal responses could categorize the stimuli. We found that single neurons conveyed two different scales of facial information in their firing patterns, starting at different latencies. Global information, categorizing stimuli as monkey faces, human faces or shapes, was conveyed in the earliest part of the responses. Fine information about identity or expression was conveyed later, beginning an average 51 ms after global information. We speculate that global information could be used as a 'header' to prepare destination areas for receiving more detailed information.

**Gil D, Graves J, Hazon N, Wells A: Male attractiveness and differential testosterone investment in Zebra Finch eggs. *Science* 1999;286:12G-128.**

**Abstract:** Good genes hypotheses of sexual selection predict that offspring fathered by preferred males should have increased viability resulting from superior genetic quality. Several studies of birds have reported findings consistent with this prediction, but maternal effects are an important confounding variable. Those studies that have attempted to control for maternal effects have only considered differential maternal investment after egg laying. However, female birds differentially deposit testosterone in the eggs, and this influences the development of the chick. This study

shows that female birds deposit higher amounts of testosterone and 5-alpha dihydrotestosterone in their eggs when mated with more attractive males.

**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 ionotropic glutamate receptors, of which there are three subtypes: AMPA (alpha-amino-3-hydroxy-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 developmentally 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.

**Miyashita-Lin EM, Hevner R, Wassarman KM, Martinez S, Rubenstein JLR: Early neocortical regionalization in the absence of thalamic innervation. *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 telen-cephalon generate 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*, *Id-2*, and *RZR-beta*) developed normally. This provides evidence that patterning mechanisms intrinsic to the neocortex specify the basic organization of its functional subdivisions.

**Sugita Y: Grouping of image fragments in primary visual cortex. *Nature* 1999;401:269-272.**

**Abstract:** In the visual world, objects are partially occluded by nearer objects, separating them into image fragments. However, the image fragments of the object can be easily grouped and organized together by the visual system. Psychophysical data and theoretical analysis indicate that such perceptual grouping might be mediated in the early stages of visual processing. Here I show that some orientation-selective cells in the primary visual cortex (V1) have response properties that can mediate the grouping of image fragments. These cells stopped responding to a stimulus bar when it was occluded by a small patch. The cells also did not respond when the patch had uncrossed disparity so that it appeared to be behind the bar. However, the cells began responding again when the patch had crossed disparity so that it appeared in front of the bar. These results indicate that cells as early as V1 have the computational power to make inferences about the structure of partially invisible forms seen behind occluding structures.

**Keltz MB, Chen J, Cariezon WAJ, Whisler K, Gilden L, Beckmann AM, Steffen C, Zhang Y-J, Marotti L, Self DW, Tkatch T, Baranauskas G, Surmeier DJ, Neve RL, Duman RS, Picciotto MR, Nestler EJ: Expression of the transcription factor deltaFosB in the brain controls sensitivity to cocaine. *Nature* 1999;401:272-278.**

**Abstract:** Acute exposure to cocaine transiently

induces several Fos family transcription factors in the nucleus accumbens, a region of the brain that is important in addiction. In contrast, chronic exposure to cocaine does not induce these proteins, but instead causes the persistent expression of highly stable isoforms of deltaFosB. DeltaFosB is also induced in the nucleus accumbens by repeated exposure to other drugs of abuse, including amphetamine, morphine, nicotine and phencyclidine. The sustained accumulation of deltaFosB in the nucleus accumbens indicates that this transcription factor may mediate some of the persistent neural and behavioural plasticity that accompanies chronic drug exposure. Using transgenic mice in which deltaFosB can be induced in adults in the subset of the nucleus accumbens neurons in which cocaine induces the protein, we show that deltaFosB expression increases the responsiveness of the animal to the rewarding and locomotor-inducing effects of cocaine. These effects of deltaFosB appear to be mediated partly by induction of the AMPA(alpha-amino-3-hydroxy-5-methyl-4-isoxazole)glutamate receptor subunit GluR2 in the nucleus accumbens. These results support a model in which deltaFosB, by altering gene expression, enhances sensitivity to cocaine and may thereby contribute to cocaine addiction.

**Plenz D, Kital ST: A basal ganglia pacemaker formed by the subthalamic nucleus and external globus pallidus. *Nature* 1999;400:677-682.**

**Abstract:** The subthalamic nucleus of the basal ganglia (STN) is important for normal movement as well as in movement disorders. Lesioning or deep brain stimulation of the STN can alleviate resting tremor in Parkinson's diseases. The STN and its target nuclei display synchronized oscillatory burst discharge at low frequencies, some of which correlate with tremor, but the mechanism of this synchronized firing is unknown. Here we show that the excitatory STN and the inhibitory, external globus pallidus (GPe) form a feedback system that engages in synchronized bursting. In mature organotypic cortex-striatum-STN-GPe cultures, neurons in the STN and GPe spontaneously produce synchronized oscillating bursts at 0.4, 0.8, and 1.8 Hz. Pallidal lesion abolishes this bursting, whereas cortical lesion favours bursting at 0.8 Hz. Pallidal

bursts, although weaker than STN bursts, were required for synchronized oscillatory burst generation by recruitment of subthalamic rebound excitation. We propose that the STN and GPe constitute a central pacemaker modulated by striatal inhibition of GPe neurons. This pacemaker could be responsible for synchronized oscillatory activity in the normal and pathological basal ganglia.

**Tang Y-P, Shimizu E, Dube GR, Rampon C, Kerchner GA, Zhuo M, Liu G, Tsien JZ: Genetic enhancement of learning and memory in mice. *Nature* 1999;401:63-69.**

**Abstract:** Hebb's rule states that learning and memory are based on modifications of synaptic strength among neurons that are simultaneously active. This implies that enhanced synaptic coincidence detection would lead to better learning and memory. If the NMDA(N-methyl-D-aspartate) receptor, a synaptic coincidence detector, acts as a graded switch for memory formation, enhanced signal detection by NMDA receptors should enhance learning and memory. Here we show that overexpression of NMDA receptor 2B (NR2B) in the forebrains of transgenic mice leads to enhanced activation of NMDA receptors, facilitating synaptic potentiation in response to stimulation at 10-100 Hz. These mice exhibit superior ability in learning and memory in various behavioural tasks, showing that NR2B is critical in gating the age-dependent threshold for plasticity and memory formation. NMDA-receptor-dependent modifications of synaptic efficacy, therefore, represent a unifying mechanism for associative learning and memory. Our results suggest that genetic enhancement of mental and cognitive capacities such as intelligence and memory in mammals is feasible.

**Rollmann SM, Houck LD, Feldhoff RC: Proteina-ceous pheromone affecting female receptivity in the salamander. *Science* 1999;285:1907-1909.**

**Abstract:** A 22-kilodalton protein was isolated from the submandibular (mental) gland of the male terrestrial salamander *Plethodon jordani* (family: Plethodontidae). This proteinaceous pheromone, termed plethodontid receptivity factor (PRF), was

experimentally delivered to the female during courtship and shown to increase female receptivity. In most plethodontid salamanders, ovulation occurs weeks or months after insemination, so the pheromone-induced change in receptivity is the only known function of PRF. The messenger RNAs corresponding to isoforms of PRF were transcribed into complementary DNA, cloned, sequenced, and shown to have homology with cytokines of the interleukin-6 family. Pheromone activity would represent a previously unrecognized function for cytokines.

**Petrie M, Krupa A, Burke T: Peacocks lek with relatives even in the absence of social and environmental cues. *Nature* 1999;401:155-157.**

**Abstract:** Lek mating systems are characterized by males displaying in groups. The main benefit from group display is thought to be an increase in the number of females arriving per male. However, when mating success is highly skewed it is not clear why unsuccessful males participate in group display. In theory, all males on leks could obtain indirect fitness benefits if displaying groups consisted of related individuals. Here we present two independent sets of data that show that peacocks (*Pavo cristatus*) display close to their kin. DNA fingerprinting showed that males at Whipsnade Park were more closely related to males within the same lek than to males at other leks. Separately, we found that after an experimental release of a mixed group of related and unrelated males, brothers (paternal sibs or half-sibs) established permanent display sites very close together. This result is unexpected, as the released birds could not become familiar with their brothers during their development. The released young were hatched from eggs that had been removed from their parents shortly after laying and mixed with eggs of non-relatives. These data indicate that birds can evolve a means of kin association that does not involve learning the characteristics of relatives or the use of environmental cues. If social learning is not necessary for kin association then kin effects may be of more widespread importance in avian social interactions, and in particular in the evolution of lek mating, than previously appreciated.

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