For evolutionary psychiatrists, psychologists and others interested in sociophysiological Integration

ASCAP

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"According to [Thomas S.] Kuhn, all terms, even the most observational, are theory laden.... Leeuwenhoek prided himself in describing what he saw through his lenses, not in theorizing about them. Yet he termed the little creatures that he saw 'animal-cules', implying what sorts of creatures he thought they were."[1]

David L Hull

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

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ASCAP Society Mission Statement:

The ASCAP Society represents a group of people who view forms of psychopathology in the context of evolutionary biology and who wish to mobilize the resources of various disciplines and individuals potentially involved so as to enhance the further investigation and study of the conceptual and research questions involved.

This scientific society is concerned with the basic plans of behavior that have evolved over millions of years and that have resulted in psychopathologically related states. We are interested in the integration of various methods of study ranging from cellular processes to individuals in groups.

Across Species Comparison and Psychopathology (ASCAP) Newsletter Aims:

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

♦Elaboration of others' ideas.

♦Keeping up with productions, events, and other news.

♦Proposals for new initiatives, joint research endeavors, etc.

*The **ASCAP Newsletter*** is a function of the ASCAP Society.

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ADDRESSED TO & FROM ...

New Book by Richard Nisbett

Richard Nisbett, the well-known social psychologist and HBES member whose work on biases and heuristics is familiar to many of you, has just published a new book, *"Culture of Honor* (West-view press, paperback). The book tackles the problem of why violence in the Southern United States is so much more frequent than it is in the Northern states, even controlling for multiple social indicators. His conclusion, that this cultural trait is partly a heritage of those who settled in the South, partly explained by human social strategies in this particular ecological circumstance, and partly a self-sustaining social system, makes interesting reading indeed. The data range from demographics, to crime data, to anthropology, to controlled experiments in which students from different parts of the country participate in an experiment one at a time. Half are jostled by an impolite stranger. Then the subjects walk down a hallway lined with tables so there is just room for one person to pass, and walking the other way there just happens to be a very large football player. The outcome measure is the distance at which people back up. The finding is a huge interaction effect between getting jostled or not and being from the South or not. I think the book is a superb example of data-based interdisciplinary work, and thought others might like to know about it as well.

Randy Nesse
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ANNOUNCEMENTS:

The Tao of Jung

The Way of Integrity by

David H. Rosen, M.D.

Modeled on the classic *Tao Te Ching* - the world's most translated book after the Bible - this is a startling and revealing new interpretation of Carl Jung's life and psychology.

Paralleling Jung's natural world of the psyche and that of Taoist philosophy, it explores the integration of opposites such as shadow/persona, yin-yang, dark/light, and feminine/masculine; the Great Mother as the origin of all things; the / *Ching* and synchronicity; the Way of integrity and individuation; and the need to release the ego and surrender to the Self or the Tao.

Drawing throughout on Jung's own letters, aphorisms, and other writings, *The Tao of Jung* traces the 6 crises of his personal development, including his break with Freud and his later work with the / *Ching.* It serves also as an illuminating introduction to both Taoism and Jungian thought - a spiritual resource for contemporary of the Path.

Transforming Depression: Healing the Soul through Creativity

by David H. Rosen, M.D.

In this new work, psychiatrist and Jungian psychoanalyst, David H. Rosen, M.D., offers depressed suicidal individuals hope from despair through creative transformation. Dr. Rosen's innovative approach of "symbolic death (egocide) and new life", stems from the research that he carried out with 10 survivors of suicidal leaps from the Golden Gate Bridge, in San Francisco, California.

The book offers a radical approach to recovery - a deep exploration of the inner life using the creative arts.

While working extensively with depressed patients, Dr. Rosen uncovered helpful clues to this widespread malady. When people feel grief and despair, and possibly suffer from suicidal thoughts, their motivation to live grows weak. They may feel like they are dying inside.

Actually, in order to regain their will to live, only a part of them needs to die - a "false self. The symbolic death of this false self- through in

depth psychotherapy, dream analysis, active imagination, and the creative arts - is called "egocide". The "death" sets in motion a kind of mourning process which leads to a "rebirth" of purpose and meaning.

This book applies Carl Jung's method of active imagination to depression and suicide. Dr. Rosen shows that when people learn to confront the rich images and symbols that emerge from their struggles, they can turn their despair into a fountain of creative energy.

He chronicles the transforming journeys of 4 patients whose work in drawing, pottery, and dance - in conjunction with psychotherapy - led them from the violence of sorrow to a more meaningful life.

In this book, Dr. Rosen offers depressed, hopeless, and suicidal individuals, their families, and therapists a path of renewal and a new source of healing the soul through creativity.

David H. Rosen, M.D. is a psychiatrist and Jungian analyst who holds the only American full professorship in Jungian psychology, at Texas A&M University, where he is also professor of humanities in medicine.

He is also the author of 4 books, including *Transforming Depression: Healing the Soul through Creativity,* and *The Tao of Jung.* He currently lives in College Station, Texas.

To find out more about these books, write, call, fax, or e-mail the author at:

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ANNOUNCEMENT:

The Lucifer Principle

A Scientific Expedition into the Forces of History

by Howard Bloom

Paperback examination and desk copies are available to professors and teachers considering a title for course adoption. All requests must be submitted in writing on University letterhead. All requests must include the course's title, beginning date, approximate enrollment size, as well as the name of the college store that will be placing the order. To help defray shipping and handling charges, $4.00 for the first book and $0.75 for each additional book ordered must accompany your request. For shipping and handling of international orders, please include $15.00.

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ARTICLE:

by John S. Price

Hormones and Behaviour Books Review

Becker, J.B., Breedlove, S.M. & Crews, D. (editors): *Behavioral Endocrinology.* Cambridge: Massachusetts Institute of Technology Press, 1992.

Nelson, R. J.:, *An Introduction to Behavioral Endocrinology.* Sunderland, MA: Sinauer Associates, 1995.

The effect of hormones on behavior and the effect of the social environment on hormones are at the heart of sociophysiology. Seeing these books well reviewed in the May issue *of Animal Behaviour,* I ordered them from the library and was surprised how soon they came. Not much of a queue of readers for behavioral endocrinology!

I have not read them all through, but will recommend some bits. The Becker volume contains an excellent chapter by David Crews. He describes the analysis of mating behavior in parthenogenetic forms of whiptail lizard - in which the receipt of male behaviour is necessary for ovulation to proceed successfully. Some females adopt the male role and mount their sisters, including the transfer of bite from neck to pelvic region to form what the author calls a "doughnut". The neural basis for male behaviour is present in these unisexual females, but what switches it on, since they completely lack androgens? I will not spoil anyone's excitement by revealing the answer.

Crews also describes how the phenomenon of "dissociated reproduction" has helped to disentangle cause and effect in hormone/behaviour relationships. In some animals the sperm and eggs are synthesised many months before embryogenesis begins. In some, such as the garter snake, the male retains the sperm over the winter, in others the female keeps the sperm in storage, in yet others fertilisation occurs in the autumn but the zygote is held in suspension over the winter and embryogenesis does not resume until the spring. In the red-sided garter snake, sex hormones are used for gamete synthesis and play no part in the control of sexual behaviour.

In arid Australia, ovulation in the zebra finch may occur ten minutes after the first drops of rain. The Becker book also contains an excellent chapter on "stress" by Robert Sapolsky. He points out that stress not only prevents more energy and resources flowing into the immune system, but that the immune system is actively inhibited, even to the extent of lymphocytes undergoing lysis. This is likely to have evolved to prevent stress-induced autoimmunity, which seems plausible since stresses are likely to be associated with tissue damage, and the experiencing by the immune system of self products that in normal circumstances it does not encounter.

The single-authored Nelson book contains a most readable chapter on "aggression and social behaviour" among much else. For instance, many rodents are aggressive during the breeding season but form social groups which huddle together during the winter (they could be said to switch to the hedonic mode in winter). But some male prairie voles remain agonic all the year round, and presumably find females to mate with when the winter is less severe.

In Harris sparrows the level of testosterone during the autumn moult determines social status throughout the winter, including priority of access to food. It does this both by making the birds more aggressive in their behavior for the next few months, and by ensuring that they have a high ratio of dark to pale feathers on the crown and throat, a social signal of dominance which is respected by the subordinate pale sparrows.

Is this another instance of Mike Waller's comparator gene in operation?

It is becoming clear that there is a vast amount of within-species individual variation in both agonistic and reproductive behaviour.

In some species, some of this variation is due to variation in sex hormone levels; but in male house mice, there is evidence that androgens conceal individual variation in aggressiveness, which is revealed by castration and concealed again by the administration of androgens. *c8*

ARTICLE:

by W.M. Schleid?

The Koro Syndrome: A Link between Stress, Testicular Temperature and Fertility?

In a recent paper, attention was drawn to urological aspects of the psychiatric disorder, koro (genital retraction), considered to be culture-specific, endemic in southeast Asia and China and only exceptionally observed in the Western hemisphere.[2]

This reminded me of two cases of "retraction of the penis," one observed in England and the other in Russia, reported in *The Lancet* of 1886 by Thomas F. Raven, L.R.C.P. &c, Broadstairs, England:[3]

"*I should have published the following singular case some two years ago had I not feared that the strange details would be received with incredulity, but since a similar but more marked example of the same condition has recently been recorded by Dr. Ivanoffin a Russian medical journal, I do not hesitate to bring my own experience forward."*

"A.B.—, a *healthy, steady, single man, aged twenty-seven years, shortly after he had gone to bed one night, felt a sensation of cold in the region of his penis. He was agitated to find that the organ, a fairly developed one, was rapidly shrinking, and was, he thought, finally retiring. He at once gave the alarm, and I was hastily summoned from my bed to attend him."*

"I found him highly nervous and alarmed. The penis had almost disappeared, the glans being just perceptible under the pubic arch. The skin of the penis alone was visible, and looking like it does when the organ is buried by a hydrocele, or, in an extreme degree, as it does after death by drowning. I reassured him, and gave him some ammonia, and found on the next day that the natural state of things had returned. But he remained weak and nervous for some days. He could give no explanation of the occurrence and the unnatural condition has never returned. The circumstances of this case were not so distressful a character as those related by Dr. Ivanoff. In his case the penis had bodily disappeared, and was recaptured only after prolonged manipulation. Even then the patient seems to have distrusted its tendency to remain in its natural position for he had tied a string around it above the glans, in order that it not again escape him. In this instance, too, the result was satisfactory, but the tendency to retraction was not subdued until the patient had been six days under treatment. He was a peasant, aged twenty-three, a *married man with a family."*

Raven's description of the shrinking of his patient's organ "in an extreme degree, as it does after death by drowning" presumably refers not to a consequence of death by drowning, per se, but to the fact that the penis and scrotum contract when a person is subject to cold, especially when submerged in water below body temperature.

Raven's mentioning of his patient's "sensation of cold in the region" points to the possibility that this episode was elicited by an illusion of cold, due to an inappropriate bout of activity of cold receptors, within the sensory pathway, or in the brain. This "cold response" of the human penis appears to be an adaptation to prevent frostbite of the flaccid organ.

Professor Valerius Geist, an expert on Pleistocene vertebrate biology, suggests that this cold response may have been a special human adaptation to ice age climate.[4]

This response is apparently related to the outstand ing size of the human penis and its function as a signaling device in male-male communication The genitalia of primates show an amazing diversity the

special features of the human penis, in its flaccid state not only the biggest amongst primates but also the most conspicuous, are apparently related to the evolution of the upright gait.

The function of the erect penis as a threat signal toward other males was described in the scientific domain some time ago.[5] It is likely ritualized in some English speaking cultures by the gesture of "giving the finger" and the phrase "fuck you."

Recent insights into the use of penile displays in a variety of cultures (before intervention by colonialism's missionary zeal) suggest that in male-male communication, the penis is of fundamental importance in preverbal and nonverbal signaling.[6]

The display of the erect penis as threat signal is but one extreme of a continuum, with display of the engorged flaccid penis as signal of male self-confidence in the middle of this spectrum.

A shrinking or withdrawn penis associated with anxiety, as observed in koro, constitutes the opposite extreme on this scale. Chronic withdrawal of the penis doesn't occur to the extent observed in koro, but is noticeably uptight compared to the engorged, flaccid state of the relaxed, self-confident male. Such is commonly associated with raised testicles, when due to anxiety and lack of self-confidence, as under some conditions linked to male status consciousness. Such withdrawal is likely to result in elevated testicular temperature, reduced fertility and, ultimately, psychological castration.

This effect constitutes a link between psychiatry and urology not just in the case of koro, but also in the wider context of stress and infertility.

These connections may not be obvious in modern man, however, because of Western "modesty" with its nudity taboo — a relatively recent invention, going back only a few thousand years, related to living within large settlements and complex hierarchies.

Nudity started to become an issue only during the Renaissance (recall Michelangelo's struggle trying to realize his visions in the Sistine Chapel), and peaked in the Victorian and post-Victorian era.

Things are slowly loosening, or at least changing. According to a recent report on indecent exposure in *The Washington Post,* police said they would not arrest a woman found bare-breasted unless she smoked a cigarette while using public transportation.[7] *c8*

ARTICLE:

by Russell Gardner, Jr.

Unusual Workers in the Vineyard of Sociophysiology

This issue of *The ASCAP Newsletter* celebrates unusual workers for the basic sciences of socio-physiological medicine and its related clinical disciplines. Who would have guessed that the thinking of industrialists, a lawyer, a dentist, and a management expert would bear relevantly on topics that I would like eventually to see described under the heading of genome-neural-behavioral analysis? A pioneering ethologist and sociologists who thought of evolution in the context of systems theory are perhaps more expectable and are certainly welcome. Behavioral and communicational analyses must be seen in terms of history and contingencies of the past. A most important feature of human biology entails the human attribute to command what the Davies family describe as "worldview" and "dreamtime" (concepts that I in a similar vein, have thought of as "cultural storyline").

Industrialists:

According to the cover notes of their book, *Humankind the Gatherer-Hunter: From Earliest Times to Industry,* Englishman Michael Davies, his brother, Henry, and wife Kathryn have had combined business experience in cotton spinning and weaving, hot metal forging, consumer goods, printing inks, petrochemicals, synthetic resins and international brand management.[1] (See M.D.'s summarizing article this issue.)

They wrote their book and had it personally published by Myddle-Brockton in Kent (they could afford it and moreover, had skepticism about whether the academic community would accept it). They have made it available free of cost to Human Behavior and Evolution Society members and, as you will see from M.D.'s letter, also to those ASCAP Society members who desire it. I'm reading it now and much appreciate their gift, finding it a good read; they have a direct no-nonsense style (as I suppose one might expect from successful business people). They also have an important formulation to bring to bear and demonstrate an extraordinary erudition which significantly includes the philosophical basis of their endeavor, plumping down solidly with philosphers Hume, Russell and Popper.

They make their theoretical assertions in the book's first part. To support their view in the next section they matter-of-factly show that they have read seemingly everything archeological there is to read about (though they missed Denise Schmandt Besserat's discovery of money-like symbols in the form of small clay tokens that symbolized kind and quantity of goods in ancient times; these tokens preceded writing by millenia and their particular codings influenced the forms of written characters when writing did finally appear).[2] Also they haven't read other workers doing things in parallel with them from more traditional corners of academia; for instance, they don't review PJ Wilson's 1988 *The Domestication of the Human Species,* which covers much of the same ground.[3] They also do not allude nor review critically the era of evolutionary adapted-ness or EEA, popular in HBES and ASCAP circles. But working independently, if they reinvent the wheel differently from fellow workers, they may have made a better wheel for all of that, one that might function well in the muddy circumstances of humankind's necessary future thinking. We need all the clear thinkers we can get and business experience may foster that.

To my mind they show very attractive attributes of making their assertions in a well chosen and restricted set of their own vocabulary which they make easy to learn. Free of the usual editorial constraints, perhaps, their own definitional base may seem quirky at times; it may deviate from our routine but

like the successful pictorial artist, they bring their own world view increasingly into one's ken so that one sees more clearly. Think of Cezanne for instance. The new language *is* more efficient (one can sense the manufactor's thinking — if it takes fewer steps in the processing, look at how much is saved by being what to others is unconventional). For instance, *all* dates are rendered in years BP (before present, that is, 1990, a center point for when the work was done no doubt and easier to calculate). Ancient history is thus united and merged with recent history: on page 374, "By 200 BP, demand justified factory production." On page 234, "In later periods, overt sexuality waned although public copulation in temples was still prevalent 2500 BP but not in Greece or Egypt." That they like their own terms — or appropriated ones — for things not adequately described in routine parlance were for me novel and interesting rather than disorienting variations from routine (see more on routine this issue below).

For instance, ***"WORLDVIEW** is the conventional means within a community of construing experience and consists of a generally agreed understanding of events, defining their relative significance and moral content. Within this framework, reality is shaped, ordered, explained and, simultaneously, assigned an ethical value. The outlook or paradigm is mirrored in dreamtime and is subject to the scale (abundant or scarce), other facets of society and the means of subsistence. Worldview occurs in five broad categories: abundant- and scarce-scale gatherer-hunter, agricultural, capitalist and socialist-industrial."*

***"DREAMTIME** is an external reality or other world, which is governed by and reflective of the worldview (the understanding of external reality). The other world is inhabited by heroes, heroines, god(s), goddess(es), or spirits and furnishes an explanation of humankind's role in the universe. Examples are the spirit worlds of the Australian Aborigines and the Mbuti, agricultural religions (polytheistic and monotheistic), which persisted in industrial countries, and cults surrounding events, places or individuals (film stars, pop singers, football teams and so forth).*

***"EMOTIONS** are the strength and scope of human feelings, see placid, intense, broad, and narrow."*

***"BROAD** defines the scope of emotions. A broad is interested in and motivated by all aspects of society even if no direct personal impact or involvement can be anticipated, see narrow. Most people share the aspects of both broad and narrow, but specialists are noticeably biased towards one or the other."*

As you can tell from the above, the Davies exemplify "broad" in the best sense of their own definition. I believe they have made a powerful contribution that deserves our close attention and urge to you to look at what this most productive family has to say.

They deviate from the routine. But what is routine and how can it be studied? Some beginning answers stem from another unlikely place for sociophysiologi-cal inquiry, the law.

The lawyer:

I heard Paul C. Wohlmuth speak at the Evanston HBES meeting in June, and asked him to send me his paper on routine written with academic dentist, Louis J. Goldberg. He did and on my July vacation I found myself not only reading but studying and translating it into my own parlance. The product of that exercise is copied into this issue: I suspect that for efficiency our brains (do we call it habit when in one person possess many ways to use routine?). We function with the ordinary and usual. We need the kind of creative look at this that Professor Wohlmuth provides.

Professor of Law at the University of San Diego, he is also the Executive Director for the Institute for Law and Systems Research (ILSR) which is about a decade and a half old. He also sent along Volume 6, Spring, 1995, of the *Journal of Contemporary Legal Issues.*[4] The journal is sponsored by the ILSR and the volume is the first published collection of Institute-facilitated scholarship. The 6th volume published products of a symposium occurring August, 1994, and the resultant volume contains 533 pages. Entitled *"The Crisis of Text: Issues in the Constitu-*

tion of Authority, it has six sections and 3 or 4 articles per section. The sections are:

1. Dimensions in the constitution of authority and text.
2. Co-constitution of structure, text and context.
3. Resources and constraints in learning and development.
4. Predisposition and accomodation in microl-behavioral repertoires.
5. Reconstituting complex fields of meaning.
6. The constitution of meaning in social systems.

I haven't completely read this yet, but I'm looking forward to it. One of the reasons stems from the thinking and writing of Professor Wohlmuth's co-author, Louis J. Goldberg, who must be an interesting person.

The dentist:

Goldberg's paper in the above volume was titled with one of my own favorite characterizations of human beings: "Expanding the narrative: the grand compulsion of a *story-telling species"* (Italics added because I regularly use the same expression with students and patients). When Goldberg authored this, he was Dean, School of Dental Medicine, State University of New York, Buffalo. Two paragraphs from the introduction read:

"In this paper I examine two perspectives for telling stories that inform us on how it is that living creatures manage to stay on track in their daily negotiation of an ever-changing and always challenging environment. In both of these cases the narratives are never closed; they remain continuously open to examination, criticism and revision. One such perspective, which I call the "event-driven view,"is used by scientists to reveal the underlying mechanisms by which living systems operate. The second perspective, which I call the "relational view," is much less concerned with mechanisms. It sees life as a process, and sees process as not amenable to partitioning into any particular series of events."...

"Members of Homo Sapiens *like a good story. We get our stories from movies, radio, TV, plays, books, magazines, and newspapers. When we don't watch stories on screen or read them in print, we get them directly from each other. Gossip at work, at play, at parties, is a never-ending stream of storytelling. We tell stories about our children. We tell stories to our children. We tell stories about ourselves, sometimes for public consumption, but more often we tell them to ourselves to satisfy our own private needs. We love to hear stories about our leaders and entertainers. Their public and "private" lives become an unfolding series of stories we all share. We tell stories about our country. We tell stories about our ancestors. We tell stories about our gods. We tell stories about our heroes. We tell stories about those who stumble and fall from grace. Until the emergence* of Homo Sapiens, *the unfolding of events on this planet occurred without the benefit of commentary by any of earth's creatures. Now the earth is alive with human beings who, as a part of their daily rounds, regularly make note of the sequence of events in the animate and inanimate world."*

One of the functions of story-telling and consuming relates to science and scientific verification. The philosopher Karl Popper, one of the few to survive the Davies' critical review of philosophers, promulgated the idea of falsification as a way to approximate the truth. By then, truth is not so much the issue but persuadability is; can the current hypothesis-myth be seen as believable?

Can one talk other people into an idea so that it can enter into the routine of usual science? If something is falsifiable, then the consumer of the information is more likely to believe that increment in the progression of science. Mike Waller has provided us with such a falsifiable idea.

Waller's Theorem: management expert who makes comparisons.

Mike Waller is well familiar to those of us in ASCAP or the HBES-related email listings. A management expert, he writes well and found in such thinkers

some kindred spirits, as he had read Dawkins some years ago and looked for others who regularly discuss evolutionary and biological issues. Recently, Mike Waller keenly missed HBES-L which is an email listing of the Human Behavior and Evolution Society. The official governing body no longerwished to be held responsible for some of the politically incorrect — and truly offensive — things that were being said. To Mike's relief (and that of many of us), HBES-L has now been transmuted to HBE-L because Mario Heilman from Los Angeles, bless his soul, has become the new list-master — somehow accomplishing this even during a three week European vacation in the initial stages of the new effort.

Not only was it a blessing for Mike but for those of us who have wished to continue enjoyment of his colorful prose as he continues to tilt against the non-believers in his comparator gene, a construct in which he is so invested that even his email address of "mwaller@comparator.win-uk.net" shows his commitment. I have been interested and even collected a number of his contributions not so much that I have a sense of conceptual validity but because I enjoy good stories and his color always provides such. Mike is a quick read, extremely bright, very fast on his verbal feet, and a pleasure to be around (I had that pleasure in Evanston as we together looked at the posters).

But finally, I believe that Mike in his efforts to communicate comparator theory has shown his thinking to be falsifiable. He stated the Waller Theorem which he boldly labeled, himself putting it in quotes. He desires, so he says, critical counterarguments. In his own words, *"I should be eternally grateful if fellow HBEians [we presume ASCAPians as well] would give the matter the widest possible circulation. This idea is either worth pursuing or it is not; and I have the greatest interest in finding out."*

Let us now replicate Mike's theorem: *"Although natural selection will generally work towards the reduction or elimination of heritable traits deleterious to the individual, it will strongly favour such traits in all cases in which they serve to increase its (i.e. natural selection's) own effectiveness. This condition is met in those instances in which the expression of a deleterious trait is conditional upon the individuals affected being amongst the least well fitted in any population whose numbers exceed resource availability. "*

The key words showing the fatal flaw in Mike's argument are *"in which they served to increase its (i.e. natural selection's) own effectiveness."* Peter Frost, picked up on the amazing anthropomorphism immediately in a quickly responsive post, saying gently, *"Mike, I have admired the quality of your postings and I really would like to be able to understand your comparator gene theory. There are, however, a few synapses in my brain that this electrical spike won't cross."*

"First, why will natural selection favor traits that increase its effectiveness? Aren't you reifying natural selection by talking this way?" "Let's put it another way. Why should natural selection "care" about its effectiveness? Does it have a long-range goal? A plan?"

Mike responds with usual color:"/ *was genuinely shocked earlier this week when Ralph Holloway characterized what I intended to be playful banter as "British condescension". I only raise this at this juncture because I start to wonder how much you can take for granted in international excheinges. (Peter will no doubt puncture my rhetorical introduction by telling me that he was born and bred in the U.K. and arrived the other side of the Atlantic just about the time I got on the net!) What I am trying to say is that I thought that I was using a perfectly normal piece of imaginative license that would never be taken seriously. Isn't the term "a trait favoured by natural selection" universally understood as meaning no more than that the trait is likely in increase the reproductive success of the organism in which it is expressed? Certainly, my view is that "natural selection" is no more than a portmanteau abstraction which encompasses all the external factors affecting reproductive success. In physical geography its direct equivalent would be the term erosion which embraces all those factors which shape the physical landscape, i.e., water, wind, temperature, etc. This*

parallel also holds true with regards the mindless-ness of the interactive process. Some rocks happen to be more resistant to erosive processes than others and these differentials determine what we see about us. So with genesAraits. Some happen to have a more effective "strategy" (more imaginative license!) than others. The effective strategians persist, the failures go to the wall. Neither category cares as, like lumps of rock, they have nothing to care with. The whole process is absolutely mindless. Long-range plans goals or plans simply do not enter into it."

"This is the background against which I am postulating "Waller's Theorem." Darwin's basic proposition is that traits which lead to reproductive success will reappear generation after generation. Those which act against reproductive success will soon be eliminated. Comparator gene theory holds that there is a special case exemption to the second Darwinian proposition. The crucial issue is what I call contingency and what David Sloan Wilson has taken to call the lottery model. Neo-darwinists seem invariably to treat behaviours such as selfishness and altruism as a fixed. You are either selfish or altruistic. Period/full stop! But what if the way in which you behave is conditional (i.e. contingent) upon some other factor? The face plates of male orang-utans are an uncontentious structural example. They only appear if an individual makes it to alpha. My special case is that nasty things which actually] reduce or eliminate an individual's chances of reproductive success could persist over an evolutionary timescales on a similar principle. Mate choice is a powerful demonstration of how organisms can be "shaped" by natural selection to identify and make "decisions" on the basis of traits manifest in others. We also know that as weaker rarely attacks stronger, the same evaluative processes are applied to self. Now take a small conceptual step for a person but a huge conceptual leap for personkind. Consider what would happen if the same skills, by mutation, became linked to factors increasing or deccreasing the chances of reproduction. No problem with the positive factors but what my challenge [embedded in the theorem] is about is asking how the deleterious linkage would ever be eliminated. Could selective pressures act against a "helpful" contingent mechanism which caused individuals, on realising that they were amongst the poorest of this generation's crop, unconsciously to trigger processes that accelerate their exit from the gene-pool? Frankly, I cannot see how and that is what I am asking everybody else."

Peter Frost replies: *"I agree that the term 'natural selection'is a metaphor that doesn't imply the existence of a single god-like selecting agent. It is simply the summation of all the selective forces in the environment."*

"/disagree, however, with the proposition that evolutionary trends can be speeded up by intensifying existing selection pressures. Remember that today's winners are often tomorrow's losers. And vice versa."

"Eliminating unsuccessful individuals who nonetheless are still managing to hang in may unnecessarily reduce the amount of genetic variabiliy in a population. Yet this is precisely the effect of comparator genes: reducing the amount of variability well beyond what would otherwise be the case and thereby making the population more vulnerable to sudden population change."

"In Canada, we have politicians who believe they can make the marketplace work better by giving funds to "winners". Unfortunately, this kind of policy has never worked out in practice. Rewarding today's "winners" above and beyond the normal rewards provided by the market simply penalizes the small struggling "unknowns" who may become tomorrow's success story.... [by the way,] my connection with England is only genetic. My father was born in Leicester."

The argument continued for some days, perhaps at this writing still is; some of it we may capture at other points. But I'd like to add my own sense of discomfort with Mike's anthropomorphic metaphor for natural selection despite his disavowal of personhood and comparison to erosion. Even Darwin had trouble with how to describe the process he discovered and

for which he should be given most credit: he of all people of course, as we all know, was firm in his sense of their being no overall creator (or selector). There is no progress; the very term evolution was only very reluctantly agreed on by him (to him — and his era) — the word 'evolution' meant the unfolding of perfection — humans are more perfect that others, etc — and this he passionately argued against. But he still used an anthropomorphic term, selection, after all of that. His examples for how natural selection might work stemmed from *unnatural* selection, as in artificial breeding. He well knew humans designed their animals by breeding for particular characteristics (pointing, retrieving, fleetness, appearance, size, miik or meat bearing characteristics). He visited country fairs and talked endlessly to breeders and specialists.

As you have seen, Mike with passion too describes the impersonal nature of the process and then tells us that comparator genes might hasten the natural selection process: stress effects that weaken the organism are there to make elimination more likely; suicide is a declaration of no success and therefore expression of unsuccess genes. Remember his statement, *"how [could] the deleterious linkage would ever be eliminated? Could selective pressures act against a "helpful" contingent mechanism which caused individuals, on realising that they were amongst the poorest of this generation's crop, unconsciously to trigger processes that accelerate their exit from the gene-pool?"*

We see that Mike continues use of mentalistic images: unconsciousness, realization, helpfulness. The individual portrayed in his imagery — is it Mother Nature? — is someone with a purpose: helping the group by eliminating parts of herself, like apoptosis of body cells, the noninflammatory self-elimination of cells. They turn in on themselves, lose fluid and disappear but without rupturing and spilling toxic cell contents. In Mike's experience people do that too and he has explored the inherent self-destruct possibilities that seem very obvious to him.

Perhaps there is such an inherent tendency to see natural selection as anthropomorphic — protestations to the contrary. An elimination of the metaphor may be impossible. But one should know the hazards. William Calvin and George Ojemann in their impressive book, *Talking to Neal's Brain,* discuss a Darwin Machine, a process, that is not apparent in natural selection only but in many other spheres as well. Calvin introduced the notion in *Nature* in 1987; it has parallels to Edelman's Darwin Automaton introduced at the same time. These take us away from the person metaphor (not that machines aren't metaphors also, but the machine metaphor has some de-anthropomorphizing virtues). I have recapitulated this model in *The ASCAP Newsletter* before but review of basic premises can be very productive.

First and importantly, the Darwin Machine generalizes well beyond the natural selection of the animal and plant worlds. Calvin and Ojemann give it six components:

1. a *pattern* must exist,

2. for which there is a mechanism for copying;

3. *variations* on the pattern co-occur,

4. there is a *competition* for a work space,

5. and there is a multifaceted environment that biases the competition for which pattern version will win *(selection).*

Finally, 6. a closed *repeating loop* for the variation-and-selection steps assures the continuation of the process.

This is *not a* personal process. Calvin and Djemann point out that such processes take place for neurons shaping the brain (this is why brains are so variable in their component sizes. But also thinking and even writing. For instance, I have a myriad of verbal patterns first in mind as I begin to compose this. All can not be put forth, as some are better than others, so compete successfully, and if they work well, may be used again. The process is not unconscious, does not realize, cannot plan. The Darwin Machine simply is, for the purpose of producing neuron pathways, thoughts, organisms, and other pattern-ings. It has no place for consciousness nor mental-ism of any kind.

Mike cites the prevalence of self-defeating behaviors like suicide and stress related illness. The sheer numbers have impressed him. Contrary notions, such that the self-defeat might have a powerful indirect effect on survival, seem not to have impressed him although when they are not in competition with comparator theory, he seems to understand them.

So our articulate HBESian and ASCAPian has an *idee fixe.* He's hardly the only one amongst us, of course but since his anthropomorphism is clearly wrong, can we persuade him to argue some less clearly wrong ideas? He offered to be silent if proven wrong, but that would be an enormous loss. We need his continued effort. But rest assured this will not be the last word. I teasingly say that I wouldn't be surprised that he would still hold out his unfortunate stance that has evolution as a person rather than a machine.

The Ethologists:

As we see, the above issue is hardly new. Darwin himself struggled with it as a central theme. Progress was made in 1987 with Calvin and Edelman's generalizations.

The ethologists also carried forward Darwin's thought, three of them gaining the Nobel Prize exactly 100 years after he published his book on *Expression of the Emotions.*

In this issue, Wolfgang Schleidt now from Vienna provides us with an observation this issue that applies to "cultural psychiatry" an ethological perspective. Koro or fear of penile retraction has been associated with tropical Asian cultures but the phenomenon maybe, as he points out, a human adaptation to the cold.

The Sociologists Russell:

I believe that Michael Chance can take responsibility for bringing together *The ASCAP Newsletter together* with the English sociologists, Bill and Claire Russell. We recall our gratitude that the first of their series on population crises and cycles published in the March, 1996, issue.

They have graciously allowed us to reprint this and now others in a series from *The Galton Institute Newsletter.* We will fit them in as our Managing Editor, Frank Carrel, allows.

W.M.S. Russell is a pioneer, having long been an advocate of general systems viewpoints for behavioral sciences, articulating modem concepts already over three decades ago, as seen by the following titles:

1. Russell W.M.S: Evolutionary concepts in behavioural science: I. Cybernetics, Darwinian theory and behavioural science. *General Systems: Yearbook of the Society for General Systems Research. 1958; 111:18-28.*

2. Russell W.M.S: Evolutionary concepts in behavioural science: II. Organic evolution and the genetical theory of natural selection. *General Systems: Yearbook of the Society for General Systems Research. 1959;IV:45-73.*

3. Russell W.M.S: Evolutionary concepts in behavioural science: III. The evolution of behavior in the individual animal, and the principle of combinatorial selection. *General Systems: Yearbook of the Society for General Systems Research. 1961;VI:51-92.*

Erica Ainsbury moves to California. The Russells related very well to our English (in origin) former managing editor, Erica Ainsbury, who has now moved to California with her husband who, with the Davies, represents a very successful business man.

We wish Erica well. She helped us not only during the transition but afterwards as well and we knew her to be always nearby when needed.

But I believe that Frank Carrel is carrying the ASCAP tradition forward and is taking us gradually into the Internet in increments. Now we have our own World Wide Web page thanks to Frank, and to our UTMB colleague, Charles Holzer III, who loaded it on the UTMB Server for us. *c8*

ARTICLE:

by Michael Davies

Human Culture and the Era of Evolutionary Adaptation

Humankind is genetically uniform. The explanation proffered by anthropologists and geneticists is an African dispersal, sometime around 130,000 before present -1990 (BP) to 100,000 BP, from a population, at that time, of some 10,000 adult individuals. Genetic evidence also suggests that the beginnings of the dispersal were the termination of a long period of decline. Human numbers are thought to have fallen from 100,000 to only 10,000 over the preceding 100,000 years.[1] During this period, our ancestors were apparently under severe stress, probably because of climatic factors.

Africa has been subject to dramatic climatic shifts during the last two million years. Climatic extremes pose many challenges. The ensuing periods of scarcity and abundance create powerful Darwinian pressures. Our physical characteristics are distinctive (gracile frame, lack of insulation and dependence on water). The latter suggest that, without the requisite technology, humankind was restricted to a relatively small, tropical, ecological niche. Unlike animals who can migrate, our species evolved the diverse behavioural capacities, aided by reason, to cope with scarcity and abundance within the same habitat. This putative capacity we have called scale.

If the scale hypothesis is true, the outcome of human evolution has been the celebrated human adaptability which sociologists and social anthropologists call culture. Accordingly, humankind was a cultural, gathering and hunting hominid.

A social origin (coping with complex group relationships) for humankind's relatively large brain and language ability is now a familiar idea. On its own, the concept seems insufficient. After all, the chimpanzee, with a much smaller brain and, at best, some meaningful calls, uses tools, gathers, hunts and lives in relatively large social groups. However, one key difference from the chimpanzee is that humankind, operating out of a home base, possesses a cooperative, sharing lifestyle. Humphrey, Dunbar and others have stressed that the concomitant social interaction creates demanding intellectual challenges.

The idea of scale offers a plausible reason for humankind's "excess" intelligence. The maintenance of a community becomes appreciably more difficult, if original, viable social systems have to be invented, instituted and sustained in response to environmental change. The reshaping of social structures is a daunting undertaking. This task could not have been accomplished without significantly more language, imagination and intelligence than that possessed by the chimpanzee. The capacity for deliberate social change, so apparent in the dynamics of present-day society, explains the extent of human intellect and distinguishes humankind from all other animals.

During the past three decades, social anthropologists have recognised that gatherer and hunter societies fall into distinct types. One classification (by Woodburn) is into immediate and delayed-return systems. At one point, Woodburn tentatively speculates whether the delayed-return system ('activities are oriented to the past and the future as well as to the present') is a consequence of 'harsh seasonality'.[2] Tumbull has developed the idea of 'flux' (movement between local bands), which depends on an abundant environment, to describe hunter-gatherer living arrangements.

Today, in poor agricultural communities, humankind accepts regulation, for example in arranged marriages. These rules primarily relate to the inheritance of land by men. Humankind can adapt to the strict discipline inherent in scarcity. In richer, more meritocratic, industrial countries, a revised lifestyle is

actualised. The resultant changes in feelings and the application of reason lead to a virtually unrestricted choice of marriage partners. Humankind can adjust to the freedom brought by abundance. Incidentally, Kent Bailey's Mismatch theory is still very much applicable, although with some refinements.

By the use of the scale, one universal principle (the relationship between behaviour and the environment) is found to explain, at least in part, the diversity of behaviour that is human culture. The ensuing social analysis is, however, inevitably complex. For example, the utilisation of the resources within the environment is largely a function of the form of social organisation and level of technological and scientific knowledge.

Nevertheless, the hypothesis can be progressed. The evidence gained from studies of gatherers and hunters (the Australian Aborigines and the Mbuti) is encouraging. The widely-dispersed, semi-desert-dwelling, "scarce-scale" Aborigines were under the control of male elders and practised arranged marriages. In contrast, the tropical rainforest-dwelling, "abundant-scale" Mbuti, who lived at higher population densities, were provisioned by young married couples, who chose their spouses freely.

The diversity of social organisation i.e. culture among gatherers and hunters reflects the ecological factors of scarcity and abundance. Their communities, including the role of men and women, parallel, to a remarkable extent, that of scarce agricultural and abundant industrial societies. Coincidences of this magnitude, for example in marriage practices, albeit for disparate social purposes, are improbable.

All present-day and past societies reveal cultural traits which vary with either scarcity or abundance, for example in the intensity of religious belief. The testing of the scale hypothesis of scarcity and abundance as the origin of culture certainly allows for the possibility of refutation, because none of the patterns of behaviour predicted by this theory may be found. The conditions laid down by Popper for a scientific theory are satisfied. In my view, a determined effort to explore this proposed universal principle is the most fruitful avenue for the study of human behaviour.

Michael Davies is the co-author of *Humankind the Gatherer-Hunter: From Earliest Times to Industry,* in which the ideas discussed in this article are expanded into a comprehensive, coherent theory of human behaviour.

A copy of the book (hardback, 400 pages) is available free to ASCAP members. Write now for your free copy from:

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Human Behavior and Evolution Society (HBES)

http://psych.lmu.edu/hbes.htm

HBES was founded October 29, 1988, at the University of Michigan. Participants in a national conference on Evolution, Psychology and Psychiatry (sponsored by the University of Michigan Evolution and Human Behavior Program) voted to create the organization, decide on a name, elect the first officers, and create a constitution for the Society. The Society was formed to promote the exchange of ideas and research findings using evolutionary theory, including studies of animal behavior, to better understand human nature.

ARTICLE:

by P. C. Wohlmuth & L.J. Goldberg, paraphrased & summarized by R Gardner.[1]

Routine in Human Regulatory Systems

Russell Gardner's voice: I had heard PCW, a lawyer, present the manuscript at the Human Behavior and Evolution Society. At my request, he then sent it for my review. I found the premises surprisingly interesting, surprising because my own fundamental approach works on translating behavior into neurophysiological counterparts and a lawyer focuses necessarily on more interpersonal system levels. I found myself responding in part to the authors' proposal that routine is a force in human behavior, but even more to the implicit challenge that they make: in the ultimate genome-neural-behavioral analysis that will happen in our futures, routine must be accounted for in the operations of our brains. Routine ways that we deal with others are the stuff of life (not just of the courts). In reading it carefully, I found myself simplifying, paraphrasing and shortening (making it over in the process of my personal mastery) and decided to concretize what I was doing in typed form — I had my computer along on the airplane. I further decided to proffer the product to the ASCAP readership hoping that the authors would appreciate another venue for their work, although I'm dealing with only the first sections of the manuscript. I hope that I haven't distorted the authors' meaning too much. But if I have, in the best tradition of *The ASCAP Newsletter,* I expect they will tell us all in future issues how I went wrong.

Abstract: In dealing with the role of law and other methods of processing disputes, especially alternative dispute resolution (ADR), the authors turned their attention to less visible (often invisible) forces that exert surprisingly strong influence over human behavior. They identified "routine" processes underlying stereotypic behavioral sequences. The authors hold such influences on behavior to be the life-blood of societies and the single most important determinant of the shape and direction societies take. The role of law and other more visible guiding influences can be recast in light of the demands for versatility in routine brought about by the complexities of modern civilization.

Introduction:

From social, political and legal literatures, the authors gathered diverse threads on routine to integrate them with their own thinking and to reorient understanding of dispute and related socio-legal processes.

Since Weber, the western scientific/intellectual community has called attention to human action modalities which in their stereotyped and repetitive character contrast sharply with features of the highest levels of human behavior, namely choice, versatility and creativity. Such mundane action modalities promote efficiency, but are more than that; they are deeply rooted in human individual and social behavior. They exert powerful grips on behavior, partly manifested as constraints on action. When acting routinely, we seem haunted by a kind of memory; influences from the past transcend us and our power to direct our own action Such routine properties (constraints) become identified with our individual and collective selves

Routines are not necessarily simple; indeed, routines may rather involve complex actions and action sequences. The authors hold in fact that complex behaviors cannot persist in time *unless* they are routinized; the intricacy of sequencing may require a memory imparted to subsequent performance that can reliably occur only via a routinizing process.

Routine is not only suggestive of a memory func tion, but it indeed seems to embody the operative memory of a system, the "enactable structure of it's indigenous process." This is true for the sociolegal

system; they assert indeed that the great bulk of human social, political and legal behavior *must* be oriented around routine.

A central metaphor for them describes routine as a stream of transactions within a main channel. This main channel powerfully determines behavior but is not completely self-maintained. Indeed, the more complex the society, the more intricate the sequencing and meshing of transactions and the more, therefore, that can go wrong. The main channel is helpfully modulated by side-channel maintenance.

Alternative dispute resolution (ADR) fulfils one side-channel function for the mainstream of society. Indeed, they assert that the legal profession is primarily shaped by side-channel functions such as this.

Even before recognition of ADR as such, most lawyers had less to do with formal legal resolution (in the court) than with informal proceedings (side-channel maintenance). Law in their view provides a means to restore routine when such side-channels are inadequate. When system memory embodied in the main channel is inadequate for regulation, then formal legal proceedings come into play.

Regulation in human society involves tiered levels of action and consequent "levels of attention" relate to routine-maintenance; various such attentional levels characterize densely packed urban civilizations. This paper concerns the overall dynamics of the regulatory pattern but the authors focus especially on ADR and the law.

Nexus between ADR and routine:

ADR methods were considered *alternatives* to litigation until recently, but now this is being formally reconsidered. The authors intend the present contribution to make this reexamination more penetrating. A major problem with assessing the relationship stems from the difficulty in observing routine processes in legal and other activities. With greater recognition of the importance of routine, they argue, previously inextricable interrelations of litigation, ADR and routine will come clearer.

Other disciplines have examined routine. In primary school classes, flow of educational process depends on establishing and maintaining routine in the dialog between instructor and students.[2] Classroom discourse synthesizes instructor-imposed routine and expression by individual students.

A book entitled *Routine Justice* presented the study of cases in a court adjudicating minor offenses by women.[3] Marcia Lipetz found that case flow depends on work routine by various court personnel, including attorneys. Peter Nardulli *et al* showed routine to be important in the administration of criminal justice, such as adjudication of ordinary felony cases.[4]

Research on plea bargaining and of government and bureaucratic organizations demonstrate the ubiquity of routine processes. Economists Sidney Winter and Richard Nelson have attended most comprehensively to the infrastructure of organizational functions and the implementation of individuals' skills; their work resembles the elaboration of routine channeling of behavior depicted in the present manuscript.[5] Earlier work by Winter had featured a critique of optimization theory in which he identified "inertia in routine processes." This anticipated the central strategy of the present work.[6] The authors' treatment of levels of attention closely parallels Winter's efforts to understand the emergence of innovation in the cognitive functioning of organizational personnel.

From the above studies, centrality of routine to the operation of court, classroom and other activities emerged. But despite the above mentioned studies, no systematic attempt has previously related ADR to a refined concept of routine. They also note that partly this has not yet satisfactorily happened because the processes are "invisible" and in the background. They predict a continuing readjustment of litigation and its alternatives will enhance the investigation. The authors foresee a compelling composite image: human social behavior results from the resultant of a continual dialog between "a powerful engine which human language designates as "routine", and "individual" expression and development."

Recognizing and observing routine:

They present two examples to sensitize the reader to the problem of observing routine and methods that can be used to overcome the difficulty.

Example 1: Solar routine. Earth's rotation on its axis and about the sun are routines of solar system operation. People are caught in this flow and the authors note that biological cycles internalized in the form of hormonal and other structures have a 24 hour periodicity hinging on the solar rhythm.[7] These form, indeed, a fundamental background for all human behavior. Science, which partly functions to observe routine systematically, has described such cycles, but the knowledge has not altered them.

Example 2: Behavior when the lights dim. Humans in modern society behave in a routine way when in an auditorium waiting for a program to begin. Each takes a seat and sits quietly like all the others, whatever the business happens to be, either as a theatre-goer or as observer of theatre-goers. Perhaps there is a brief state of tension or anxiety as one's position is safely established. If asked what is going on at that point, before the actions begins, a person would typically say, "nothing yet." But the most important thing of the routine has already happened: the person has entered the middle of a routine and was instantly caught up in it, so totally that one is oblivious to the fact. With biological cycles, social skills are hardly required, but they are in the second example (an important lesson of the classroom study mentioned above).

The auditorium example shows us how to recognize and observe what is happening when gaining access to an ongoing routine. The authors note that the rest of the audience provided information content that made it possible for the observers to join in, to slip unobtrusively into the routine.

They engaged in the thought experiment of yelling out, "what is everyone doing here?" but then opined that if one is *really* interested in finding out, but would *"rather use ourselves as indicated to learn from the others what is going on. Only the experience can adequately teach us.... To observe that slipping into a routine is what we are doing is an additional step built upon the first.... [U]sing ourselves to measure what others (and we) are doing will become useful as we turn to the role of routine in the function of legal systems."*

Subjecting routine to investigation:

All investigators to date have reported pressure towards routine stereotyped behaviors. The pressure is strong and expressed in varied ways. One must artfully and skillfully (like Marcia Lipetz mentioned above) maneuver oneself into position so as to observe routine without disturbing its operation. Moreover, investigators of the phenomena note it to be a dominant factor shaping social process, the most powerful single force influencing action. This raises many questions: What is routine in the social context? How can it be studied systematically? How is routine constructed? Put into place? Changed? No consensus about study of routine in human social systems has yet emerged. While investigators often note effects of routine in social systems seldom if ever unpack the phenomenon, resulting perhaps from the peculiar observational demands placed on researchers. The most penetrating studies have stemmed from limited action contexts, such as automobile driving described below.

Studies of these phenomena so far have had two things in common: (1) hypothesized powerful unacknowledged social forces in particular settings, and, (2) sometimes by inserting themselves in the process, they have found ways to examine the forces at work. Literature on bureaucracy by Max Weber and others have suggested routine is important in the operation of major power centers of society, especially the political system and the state.

If routine impinges on the legal system, this calls in to question the former picture of the law as a conscious governor of social process; if true, the metaphor would be a myth. Deviations from legal process for resolution of disputes which resemble routine channels threaten to disclose forces more powerful than, and different from case-by-case human interven-

tion. Compromise solutions are increasingly visible that bear close resemblance to routine conversations and negotiations. Thus, the authors argue, not only social science but practical developments in human conflict resolution urge the question of human routine upon us.

The authors' approach centrally uses participation observation so they decided to compare it with merging automobile traffic, as there is much of the ADR process that resembles it. Each of us as we dispute use our bodies as sensors in the same way as we do when entering the auditorium when the lights dim; they endeavor to demonstrate that the various alternatives to litigation are ways we are discovering to enter the flow of routine more gracefully under enormous pressure to do so, a pressure that can be traced to the routine of everyday life itself. Further, those who study the nature of disputing enter the self-same traffic as all drivers but acquire the additional skill of observing that routine is what is going on. Making "legal" interventions means that we attempt to go still further to influence how routine processes are regulated.

Automobile Traffic Flow as Prototype Routine:
This example compels us to sense the force of traffic's effect on drivers who enter and participate. There is no clearer case of entrance into a social process requiring instant and accurate measurement to calibrate oneself in synchrony with an ongoing routine. There is traffic itself, but the highway and its conformation is likewise compelling though subtle.

In learning to drive in a major traffic flow, each new driver must gain the feeling or sensation of moving in concert with others. The novice is not total stranger to that already (having ridden with others); training builds on what one already has and "brings one up to speed." Clearly learning the rules is not enough in itself; they help us remember what to do but that knowledge cannot control our actions: most are automatic or semi-automatic reactions to the situation. Driving in traffic "relentlessly teaches us how to drive and keeps teaching us throughout our lives as drivers."

Learning to View One's Own Participation in Routine:

Observing routine has difficulties; one must see enough of the totality to recognize it as routine and enough detail to perceive the structure too. The investigator participates inescapably in routine on many levels, including the level understudy. Of course this is ubiquitous in science and human experience generally, but the study of social phenomena magnifies it. But the scientific method systemizes a perspective that oscillates between the closeness requisite for familiarity and the distance requisite for assessment. Back to driving to illustrate this. When does the driver enter the morning traffic? Not just at the ramp. The morning routine means allowing enough time for getting to the destination and traffic is just a small component of any individual's more extended daily routine. So well in advance, we have built a picture, image, set of sensations; we begin then to feel the weight of the headlong rush, extended in time and space. This full momentum behind the flow, the authors assert, is what they mean by routine.

Routine is not just getting things done in an orderly way (though that is part), but there is a considerable pressure propelling us in that direction, "an established trajectory harnessing (or crushing) everything in its path." That it forms the background of all of our actions makes it hard to see. But the authors intend to bring routine gradually out of this background and into the foreground of attention. This gives a taste of the authors' thinking. The manuscript goes on divided into the following headings:

Automobile traffic flow as a prototype routine

Learning to view one's own participation in routine

Observing the structure of routine

The "self-regulation" of automobile traffic

The accident adjustment side-channel

Observing the dynamics of routine maintenance

Considering ADR

The more deliberative regulatory processes: law and legislation *c8*

ABSTRACTS & EXTRACTS.,

Zillmann, D., De Wied, M., Jing-Jablonski, C, Jenzowsky, S.: Drama-induced affect and pain sensitivity

Rowe, T.: Coevolution of the mammalian middle ear and neo-cortex

Nelson, R.J., Demas, G.E., Huang, P.L., Fishman, M.C., Dawson, V.L., Dawson, T.M., Synder, S.H.: Behavioural abnormalities in male mice lacking neuronal nitric oxide synthase

Watanabe, M.: Reward expectancy in primate prefrontal neurons

Mainen, Z.F., Sejnowski.T.: Influence of dendritic structure on firing pattern in model neocortical neurons

Zillmann, D., De Wied, M., Jing-Jablonski, C, Jenzowsky, S.: Drama-induced affect and pain sensitivity. *Psychosomatic Medicine,* 1996:58:333-341

This study was conducted to examine the pain-ameliorating and pain-sensitizing effects of exposure to emotionally engaging drama. Specifically, the consequences for pain sensitivity of exposure to dramatic expositions differing in both excitatory and hedonic qualities were determined. Hedoni-cally negative, neutral, and position affective states were induced in male respondents by exposure to excerpts from cinematic drama. Pain sensitivity was assessed by the cuff-pressure procedure before and after exposure and by the cold pressor test after exposure only. When compared against the control condition, pain sensitivity diminished under condition of hedonically positive affect. An inverse effect was suggested for hedonically negative conditions, but proved tentative and statistically unreliable. The findings are consistent with earlier demonstrations of mood effects on pain sensitivity. Unlike inconclusive earlier findings concerning the magnitude of directional effects, however, they suggest an assymetry that emphasizes the pain-ameliorating effect of positive affects while lending little, if any, support to the proposal of a pain-sensitizing effect of negative affects. The investigation did not accomplish the intended creation of condition necessary to test the proposal that heightened sympathetic activity diminishes pain sensitivity. The utility of a rigorous determination of this hypothesized relationship is emphasized, and procedures for a viable test of the proposal are suggested.

Rowe, T.: Coevolution of the mammalian middle ear and neocortex. *Science,* 1996;273:651-654

Phylogenic analysis with x-ray computed tomography of fossilized and recent crania implicates differential growth of the neocortex in the evolution and development of the mammalian middle ear. In premammalian tetrapods, the middle ear evolved as a chain of bones attached to the mandible and cranium, but in adult mammals the chain is detached from the mandible and lies behind it. The neocortex evolved concurrently with detachment of the chain. In mammalian development the auditory chain arises connected to the mandible but later detaches, recapitulating the phylogenetic transformation, in modern didelphid development, the auditory chain reaches mature size by the third

week after birth and is then separated from the jaw and displaced caudally as the neocortex grows for another 9 weeks.

Nelson, R.J., Demas, G.E., Huang, P.L., Fishman, M.C., Dawson, V.L., Dawson, T.M., Synder, S.H.: Behavioural abnormalities in male mice lacking neuronal nitric oxide synthase. *Nature,* 1996;378:383-386

In addition to its role in blood vessel and macroph-age function, nitric oxide (NO) is a neurotransmitter found in high densities in emotion-regulating grain regions. Mice with targeted disruption of neuronal NO synthase (nNOS) display grossly normal appearance, locomotor activity, breeding, long-term potentiation and long-term depression. The nNOS mice are resistant to neural stroke damage following middle cerebral artery ligation. Although CO_2-induced cerebral vasodilatation in wild-type mice is NO-dependent, in nNOS mice this vasodilation is unaffected by NOS inhibitors. Establishing a behavioural role for NO has, until now, not been feasible, as NOS inhibitor drugs can only be administered acutely and because their pronounced effects on blood pressure and other body functions obfuscate behavioural interpretations. We now report a large increase in aggressive behaviour and excess, inappropriate sexual behaviour in nNOS mice.

Watanabe, M.: Reward expectancy in primate prefrontal neurons. *Nature,* 1996;382:629-632

The prefrontal cortex is important in the organization of goal-directed behaviour. When animals are trained to work for a particular goal or reward, reward 'expectancy' is processed by prefrontal neurons. Recent studies of the prefrontal cortex have concentrated on the role of working memory in the control of behaviour. In spatial delayed-response tasks, neurons in the prefrontal cortex show activity changes during the delay period between presentation of the cue and the reward, with some of the neurons being spatially specific (that is, responses vary with the cue position) Here I report that the delay activity in prefrontal neurons is dependent also on the particular reward received for the behavioural response, and to the way the reward is given. It seems that the prefrontal cortex may monitor the outcome of goal-directed behaviour.

Mainen, Z.F., Sejnowski, T.: Influence of dendritic structure on firing pattern in model neocortical neurons. *Nature,* 1996;382:363-366

Neocortical neurons display a wide range of dendritic morphologies, ranging from compact arborizations to highly elaborate branching patterns. *In vitro* electrical recordings from these neurons have revealed a correspondingly diverse range of intrinsic firing patterns, including non-adapting, adapting and bursting types. This heterogeneity of electrical responsivity has generally been arrtibuted to variability in the types and densities of ionic channels. We show here, using compartmental models of reconstructed cortical neurons, that an entire spectrum of firing patterns can be reproduced in a set of neurons that share a common distribution of ion channels and differ only in their dendritic geomtry. The essential behaviour of the model depends on partial electrical coupling of fast active conductances localized to the soma and axon and slow active currents located throughout the dendrites, and can be reproduced in a two-compartment model. The results suggest a causal relationship for the observed correlations between dendritic structure and firing properties and emphasize the importance of active dendritic conductances in neuronal function.

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