

ASCAP NEWSLETTER

Across-Species Comparisons And Psychiatry Newsletter

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"To an evolutionary biologist, it is axiomatic that animal sounds, utterances--voices--are as integral a part of the animal's being as the shape of its body, the functioning of its internal organs and nervous system, and all the other behavior it exhibits in the course of its life." Morton & Page, 1992¹

The ASCAP Newsletter²
is
a function of the

International Association
for the Study of
Comparative Psychopathology
(IASCAP)³

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

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

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Announcement: Congratulations to Paul Gilbert on selection of his new book on depression by The Newbridge Club as its book of the month!⁴ This is the largest USA psychology book club.

Abstract: Smeets DFCM et al: Prader-Willi syndrome and Angelman syndrome in cousins from a family with a translocation between chromosomes 6 and 15. New Engl J Med 1992;326:807-811

Prader-Willi syndrome represents the most common form of genetic obesity and is associated with mental retardation, short stature, sexual infantilism, and hypotonia...In about 60% of affected persons a microscopically visible interstitial deletion in chromosome 15 (band q12) is observed, and in up to 70X deletions can be found at the molecular level. DNA studies with polymorphic markers have indicated that in Prader-Willi syndrome the aberrant

chromosome 15 is always of paternal origin, suggesting that the two parental chromosomes are differently imprinted and that the presence of a gene or genes on the paternally derived chromosome is necessary to prevent the syndrome. This suggestion was corroborated by the recent finding that in 20 to 30% of the cases, Prader-Willi syndrome results from the inheritance of both copies of chromosome 15 from the mother (uniparental disomy), with the consequent absence of a paternal chromosome 15.

Deletions of the 15q12 band can also be associated with Angelman syndrome, which is clinically very different from Prader-Willi syndrome. Its prominent clinical features include severe mental retardation, microcephaly, paroxysms of laughter, and seizures, but other features may also be present... Contrary to the findings in Prader-Willi syndrome, in Angelman syndrome it is the maternal chromosome 15 that has the deletion. Again, this points to a possible role of imprinting in the pathogenesis of the disorder. This is confirmed by a recent report that Angelman syndrome can also result from uniparental (paternal) disomy. Hence, Angelman syndrome and Prader-Willi syndrome are both caused by the absence of a limited region of chromosome 15, but differ with respect to the parental origin of the chromosome 15 present.

In this report we describe a family in which one of two female first cousins has Prader-Willi syndrome and the other has Angelman syndrome. Cytogenetic and molecular studies revealed that both syndromes resulted from a familial translocation between chromosomes 6 and 15, leading to a deletion in the paternally derived chromosome 15 in the patient with Prader-Willi syndrome and to the inheritance of two...copies of chromosome 15 from the father in the patient with Angelman syndrome.

Letters; (Cont.) April 17, 1992

Thanks for your continuing work on the newsletter and for your invitation to comment on Beck's article. This is just to let you know that I am behind with things, and it'll take me a few weeks, but I will.

Hope to see you in Albuquerque!
Randolph Nesse, U Michigan, Ann Arbor

Letters; (Cont.) April 26, 1992

We had a Sunday morning get-

together with Leon Sloman, Dan Kriegman, Dan Wilson, Frank Sulloway, Kalman Glantz and me. Mel Slavin and Karen Norberg were away. The new Slavin and Kriegman book sounds promising, though cluttered with jargon. They point out that analysts and analysts have competing interests that must be negotiated in the course of treatment. They support unconditional empathy ala Kohut for the "opening" of the patient to renegotiate basic human relations. They give evolutionary rationales for both instinct theory and social relations. (As usual evolutionary theory allows holding "contradictory" points of view representing different adaptations.) Kriegman assumes that *psa* has splendid therapeutic results, which I have not seen. If their book is readable, hurrah for them. Definitely a step forward for *psa*.

Leon Sloman, as an outsider, made everybody behave and a good time was had by all. We were all displaying our wares, and good wares they were. Sulloway... is amazing.

John Pearce, Cambridge, MA

Letters: April 17, 1992

The Easter break, which started yesterday, is giving me the opportunity to spend time with the material you sent me. I learned from your chapter on "Sociobiology and its Applications to Psychiatry," and I enjoyed reading anew your DeKalb paper.

Your discussion of the Angelman and Prader-Willi syndromes seems to be a major contribution to the understanding of the biological basis of language. The question that came to my mind after reading your paper is how the genetic material deleted in these patients relates in normal circumstances to the growth of the linguistic parts of the central nervous system, and especially to Broca's and Wernicke's areas.

I was pleased to read in your let-

ter about "the adaptive significance of protolanguage and language." If only we could get that idea across to the average linguist, who still is convinced that all linguistic features are equal! I enclose two relatively recent papers of mine and look forward to comments you may have.

I am also enclosing a check for \$18 to cover my IASCAP membership. ...

Bernard H Bichakjian, U Nimegue,
Nijmedgen, The Netherlands

Thomas, Bickerton and laughter by RG

Thank you for your letter and your papers read with interest. With regard to your idea that the Broca's and Wernicke's areas might be affected by chromosome 15, I am eager for the day when we can apply imaging techniques such as the PET and MRI to Angelman children, to determine whether these areas are different. Within the next month we will find out whether a \$30 million facility will be built next to our hospital! Studies yet to be done!

Resistance to a prehuman-human continuity. What wonderful discussion on pages 300 and 301 of your Diachronica article as you discuss what is to me obvious but is apparently unobvious to those immersed in traditional linguistics and other forms of humans-firstly-and-uniquely. I am amazed at the "average linguist" who, apparently with Chomsky as example and role model, is somehow able to think of language as having arrived like Athena from the head of Zeus already full formed and in final shape, a language organ like the heart, as though the heart had originated full-formed! I'm of course only recently acquainted with language origins issues and am naively amazed and amused at this odd implicit assumption. I find it hard to believe that when you state what I believe will be the reality of coming decades, you find yourself abutting someone (Lass) who

has the temerity to call you "pseudoscientific." Interestingly, I gather from the other article that he provided some data supporting your thesis! These testify to the complex climates of scientific opinion and that affect considerably the nature of debate. This constitutes a reason for ASCAP. a hopefully comfortable avenue to speculative discussion.

The existence of this resistance to the obvious--that language is an evolved system of communication with developmental phases, not suddenly an adult Athena--is interesting in itself. I believe it to represent splitter vs lumper philosophies on the human-nonhuman distinction, ie, those who believe in their fundamental thinking that we are distinct and separate from our nonhuman forebears vs those who are comfortable with our identity as primarily living creatures, not primarily humans. The continuity conclusions of evolutionary theory have of course *lumped* all of us together, human and nonhuman. The *splitters* remind me of the native tribes, eg, Zuni Indians, whose name for their own group translated to "human" and hence kept themselves "split" from other humans. Of course, sophisticated splitters may find evolution theoretically alright so long as it is not applied in the specific instance of language, just as long so we stay split from other nonhuman creatures by that attribute.

So a splitting philosophy is a resistance that you and the Language Origins Society, as well as Philip Lieberman and Derek Bickerton, are all facing as you-all try to propound the opposite.⁷ I experience it also in my field, as I and others who think in the evolutionary mode are ignored by many in psychiatry. The prevailing idea is that though evolution may be true, the prehuman-human continuity is better to ignore when you come down to cognitive specifics: stay human-firstly-and-uniquely.

Let me supplement that I and ASCAP physician subscribers are not the only medical types who think in this way. The latest book by Lewis Thomas has arrived. This physician-essayist has been both a powerful administrator/political physician and a literary person with regular contributions to the prestigious medical journal, New Engl J Med with resultant books. He is a medical Stephen J. Gould whose books are mainly collections of articles in Natural History.

I quote from Thomas's book, because in a witty gentle manner, he captures what I believe to be the philosophical position of the lumper idea while being aware of his splitter-peers and conveys with as little threat as possible how it must work.

p18: [D]uring that time [the time of embryogenesis and fetal life], I went through brain after brain for nine months, finally contriving the one model that could be human, equipped for language.

It is because of language that I am able now to think farther back into my lineage. By myself, I can only remember two parents, one grandmother, and the family stories of Welshmen back into the shadows when all the Welsh were kings___From there on I must rely on reading the texts.

They instruct me that I go back to the first of my immediate line, the beginner, the earliest Homo sapiens, human all the way through, or not quite human if you measure humanness as I do by the property of language and its property, the consciousness of an indisputable, singular, unique self. I am not sure how far back that takes me, and no one has yet told me about this convincingly. When did my relatives begin speaking?

Writing is easier to trace, having started not more than a few years back, maybe 10,000 years, not much more. Tracking speech requires guesswork. If we are slow learners, as slow as we seem to be in solving today's hard problems, my guess is that we didn't begin talking until sometime within the last 100,000 years, give or take 50,000. That is what's called a rough scientific guess, but no matter, it is an exceedingly short time ago and I am embarrassed at the thought that so many of my ancestors, generations of them--all the way back to the very first ones a million-odd years ago--may have been speechless. I am modestly proud to have come from a

family of tool-makers, bone-scratchers, grave-diggers, cave-painters. Humans all. But it hurts to think of them as so literally dumb, living out their lives without metaphors, deprived of conversation, even small talk. I would prefer to have them arrive fully endowed, talking their heads off, the moment evolution provided them with brain cases large enough to contain words, so to speak. But it was not so, I must guess, and language came late. I will come back to this matter.

What sticks in the top of my mind is another, unavoidable aspect of genealogy, far beyond my memory, but remembered still, I suspect, by all my cells. It is a difficult and delicate fact to mention. To face it squarely, I come from a line that can be traced straight back, with some accuracy, into a near infinity of years before my first humanoid ancestors turned up. I go back, and so do you, like it or not, to a single Ur-ancestor whose remains are on display in rocks dated approximately 3.7 thousand million years ago, born a billion or so years after the earth itself took shape and began cooling down. That first of our line, our n-granduncle, was unmistakably a bacterial cell.

I cannot get this out of my head. It has become, for the moment the most important thing that I know, the obligatory beginning of any memoir, the long-buried source of language. We derive from a lineage of bacteria and a very long line at that. Never mind our embarrassed indignation when we were first told, last century, that we came from a family of apes and had chimps as near cousins. That was relatively easy to accommodate, having at least the distant look of a set of relatives. But this new connection, already fixed by recent science beyond any hope of disowning the parentage, is something else again. At first encounter, the news must come as a kind of humiliation. Humble origins, indeed.

To my psychiatrist's mind, Dr Thomas is empathic with the linguists' feelings that since language is such a wonderful attribute, there is something demeaning that forebears would have been less so and that there would have been a gradual change from predecessor to present forms. But many are dreamers and must relinquish our dreams for reality: I won't have many million dollars.

More from Dr Thomas bearing indirectly on your thesis, p23:

I cannot remember anything about learning language as a child. I do have a few memories of studying to read and write, at age four or five, I think, but I have no earlier recollection at all of learning speech. This surprises me. You'd think the first word, the first triumphant sentence, would have been such a stunning landmark to remain fixed in memory forever, the biggest moment in my life. But I have forgotten. Or perhaps it never embedded itself in my mind. Being human, I have known all along about language, from the time of my first glimpse of human faces, and speech just came, as natural a thing to do as breathing. The reason I cannot remember the learning process, the early mistakes, may be that at that time they were not mistakes at all, just the normal speech of childhood, no more memorable than the first drawn breath."

In other words, Thomas is underlining the continuity of child language and that of the later more elaborate speaker. Derek Bickerton does this too but differently.

Now let me move to my understanding of your data juxtaposed to that of Bickerton. After describing his protolanguage ideas, I will summarize your findings to compare. *Bickerton's protolanguage and Bichakjian's language changes*. Derek Bickerton in his new book attempts to trace the origins of language from an earlier "protolanguage" that appeared in the communications of chimpanzees studied by a number of investigators in a quest to see if these genetic relatives had any capacity for language only to learn that they did not; put more positively, they *did* have a protolanguage similar to what is exhibited by humans using pidgin languages, by young children, or by any person when fatigued or toxic. Aphasic speech is different, more fragmented.

Protolanguage vs language. Bickerton lists five differences between the two: (1) word order in protolanguage does not have a fixed relationship between the expressive needs and formal structures that language possesses; (2) null elements of language--in which there is an im-

plied reference even when not explicit--do not exist in the protolanguage counterparts; (3) verb subcategorization is done according to rules that are automatic and unambiguous and that are independent of context, but protolanguage depends upon context; (4) language provides expansion of utterances by adding modifiers and phrases but protolanguage has no equivalent expanders embedded in a syntax, and (5) language includes grammatical items in detail and with fine gradations that protolanguage has rarely and, to the extent they do exist, are more connected with specific meanings.

Now, how accurate vs distorted is the following summary of your data? *Bichakjian's evidence*. Language characteristics acquired early in development, i.e., phonological, morphological (markers of grammar) and syntactical properties, are more in evidence in later languages than in earlier. Bichakjian notes evidence for this and suggests in a very general statement that this neotenus process has been adaptive because "the sooner language is acquired, the sooner the child can proceed with the mental development that language makes possible, and the sooner the mental development begins, the better and more extensive that development will become." But he doesn't guess about how exactly this is true and of course the statement is general.

Phonology. (a) Change in languages: functionally, modern French and the ancestral language Indo-European [seen in Latin] provide as many distinctions in the realm of obstruents (true consonants exemplified by the English p, d, s, z), but are less complex in the modern version. Thus, instead of speech sounds made with a complete closure at a given point in the vocal tract with additional lip and breathing variations (complex stops), plain stops and fricatives (friction at a point of partial

closure) characterize modern languages. Vowels have evolved from a "constraining system of morphologically determined vowel gradation, and a set of complex vocoids" to long and short vowels that are used without distributional restrictions. Quantitative distinctions gave way to qualitative ones.

(b) Developmental data: "modern phonological items are mastered much earlier than the ancestral ones."

Morphology I. (a) Change in languages: Grammatical markers evolved mainly from fixed to independent particles, such as personal pronouns, articles, auxiliaries and prepositions. Morphemes changed from bound to free.

(b) Developmental data: "particles such as prepositions and personal pronouns are mastered sooner than sets of nominal and verbal paradigms."

Morphology II. (a) Change in languages: time (verb tense) is another grammatical distinction. Over centuries, temporal distinctions have replaced aspect, wherein everything is in present time, but grammatical distinctions indicated whether something was being performed, the performance was done, or if the performance caused a state. Such distinctions characteristic of ancestral languages were replaced in modern languages by temporal distinctions.

(b) Developmental data: in Greek (where both temporal and aspectual components coexist), children learn temporal facets of the language more quickly than aspectual facets, lending support, rather than contrary evidence, to the paedomorphization hypothesis.

Syntax I. (a) Change in languages: ancestral sentences were simple, with one clause for each. Complex modifications called participles were necessary to communicate complex thoughts and they were relatively inflexible. Subordination developed later, evol-

ing first from the inflexible participles into a more complex double device called correlation, preserved in maxims, as follows, "whatsoever a man soweth, that shall he also reap." This in turn became simplified into subordination.

(b) Developmental data: psycholinguists have compared how soon children acquire modern subordination clauses versus when they acquire participles, which turns out to be not only late but very late. Learning subordination comes much sooner.

Syntax II. (a) Change in languages: A second syntactical evolution includes that of sentence structure. Current sentences have the head or governing word at the sentence's beginning with what is governed later* in the sentence and modified by this head (right branching). Ancestral sentences more often put modifiers early in the sentence (left branching).

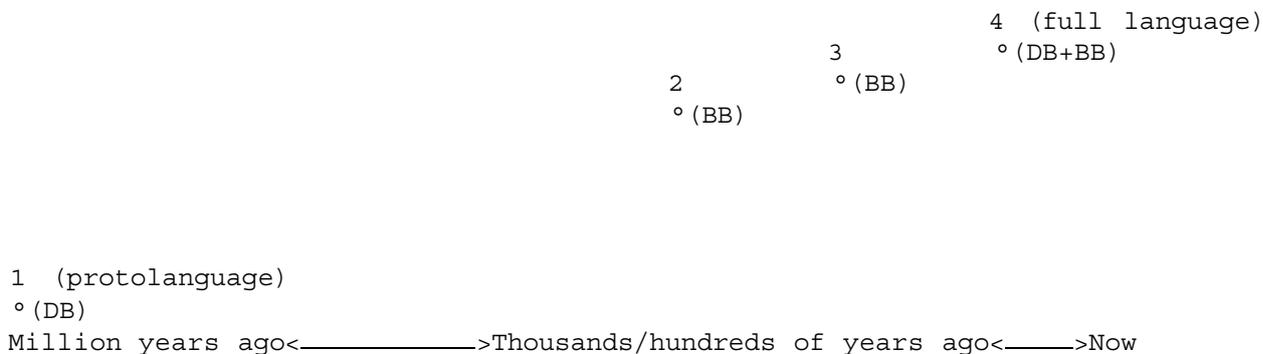
(b) Developmental data: Children learn the right branching modern version much earlier.

Now for a change in subject to the pre-protolanguage sources of language. Both of you work on making sense of children speaking.

First, I, the newcomer, am allowing myself to wonder about whether you would see a sequence between Bickerton's protolanguage and your languages of antiquity on the way to the full language of the present (see figure next page). He goes directly from points 1 to 4 in the figure, whereas you *may* interpolate points, eg, points 2 and 3. My question to you: according to your data, *is* it the same trajectory? Or do you and he have separate lines of convergence? Did the "basic plan" of his protolanguage become modified to produce the changes you detect on a microlevel?

I am curious about your answer as I can see it going both ways. Perhaps the limitations of the antique languages are limitations also

Figure: Study points of language evolution
 (DB=Derek Bickerton; BB=Bernard Bichakjian)



experienced by children as they progress beyond protolanguage. Or perhaps the adults invented language. Thus, that they should increasingly find it adaptive on which to instruct their children also gives rise to the progression you found. I'm also reminded of the process of revision when writing: one tries always to simplify (vs trying to impress the reader with a "snow job" of pretentious diction!) Is the simplification process something akin to what languages have done?

Does this mean, thus, that older people, not youths evolved useful language? Language did not originate to bond mothers and children; complex word formation was hardly necessary for that (rather smiles, laughs). Only later did children usefully learn it too, hence your findings. *What is the role of laughter in the evolution of language?* The next question is whether laughter is on a same trajectory, but perhaps starting at several millions rather than one million years before present. A word first on how you exemplified use of laughter--variants in your last section of the Reply to Lass article:

You commented on wit, ridicule, and facetiousness as ways that argument gets made quite independently of fact and evidence. I see these as functions of laughter. Laughter is

another vocal signal in addition to, certainly related to, verbal language, deployed pleasantly in this case amongst those who are doing the laughter, but of course *not* felt pleasantly by those laughed at. Being the butt of wit is very painful and a powerful signal for separating in-group from out-group members, far more so than anything verbally vocal, although in many cases the laughter-signal and the moods and communicational states that go with it are verbally induced and mediated.

How subtle Lass is in his verbal ploy as he seeks to laugh with others making you the butt of the joke, appealing to and expanding the in-group who will agree with him in, concluding your position is a ridiculous one, saying essentially, "are we foetal apes?" How verbally subtle you are in your counterploy to win the laughs to your side, as you attempt to engage the same readers to be amongst your in-group, as you engage Wilberforce'a use of wit and Huxley's devastating reply.⁹ I laughed aloud as I read it, feeling much more with you than with Lass.

In the argument I just made, one can wonder if laughter happened before present forms of language, or perhaps in combination with it. We know developmentally that laughter occurs first about three months of

age, as much as a year before speech happens in most children. Thomas again, now p26:

From earliest infancy on, we can smile and laugh without taking lessons, we recognize faces and facial expressions, and we hanker for friends and company. It goes too far to say that we have genes for liking each other, but we tend in that direction because of being a biologically social species. I am sure of that point: we are more compulsively social, more interdependent and more inextricably attached to each other than any of the celebrated social insects. We are not, I fear, even marginally so committed to altruism as a way of life as the bees or the ants, but at least we are able to sense, instinctively...obligations to one another."

Thomas focuses more on the bonding than on the alienating and distancing functions of laughter. But it is a vocal form that relates to the also oral but silent smile. Similar mood and feelings are communicated but with different means and intensity.

Back to the age of the language originators: perhaps story-telling existed initially to find food and avoid predators, to select paths with precision, to coordinate hunting, and to communicate myth, as Seymour Itzkoff's hero, Ernst Cassirer, suggested in 1946.¹⁰

Somehow, we assume that the telling and the listening were pleasurable, linking activation of key neurons with stimulation of the median forebrain bundle and the soothing that production of endogenous opioids produces (See John Pearce's essay below for discussion of this). How better to enhance our sociability and our bonding on the one hand and to isolate out-group members than with laughter at that less favored. But better now to raise group solidarity with a joke with no obvious object.

But in addition to sharpening in-out group distinctions, language might have allowed story-telling among same language-strangers. Peddlers and other messengers might have had their way facilitated by enhanced verbal communication.

In summary, I propose that also oral, but the verbal and more precise speech came well after laughter and played a part in diminishing out-in-group distinctions by allowing negotiation between out-groups on the one hand and by building solidarity within in-groups via telling stories on the other hand.

Bickerton and Bichakjian unlike

by BH Bichakjian

I appreciate your supportive words about my reply to Roger Lass. It is very helpful for me to hear that the biological part of my hypothesis makes sense to biologists. Thanks for mentioning Lewis Thomas's book. It is clear from your excerpts that he is a fine writer and also a sensitive man.

Your summary of my evidence and your presentation of language evolution could not have been better. May I ask that you please replace *Latin* with *Indo-European*? The observational data is indeed largely from Latin, but on the basis of Latin and other ancient languages, especially Greek and Sanskrit, linguists reconstruct Indo-European (spoken presumably between Babylon and the Caucasian Mountains some six or seven millennia ago), which then gives a longer perspective with more archaic features.

Your attempt to marry Bickerton and Bichakjian will not prove easy. Our approaches are not complementary. As you rightly point out in your letter, he wants to go directly from point 1 on your chart to point 4. That's because he's an essentialist (cf Athena's birth), while I am evolutionist, and my data suggest neotenuous developmental pattern, while he assumes a recapitulationist scenario. Let me argue these points.

Without taking position for the time being on the issue of whether the shift from one to the other was gradual or abrupt, let me temporarily

accept the idea of a linguistic Rubicon, and call the earlier type pre-criterion language and the historical types post-criterion languages. Obviously that criterion is elusive--if we take a gradualist view, we may have to choose a given state of development somewhat like the 800 cc brain threshold in the evolution of hominids; if instead we suppose an abrupt transition, comparable to a would-be direct mutation from monad to man, then Chomsky's Universal Grammar (the basic structures allegedly common to all languages) or Bickerton's bioprogram would be the criterion.

Now we all would like to know what the pre-criterion language looked like, but what makes Bickerton think that babies will deliver it to us on a silver platter? Why are we to assume that ontogeny recapitulates phylogeny in linguistics when we know that such a scheme proved to be wrong in biology and ethology? Of course, there is a romantic nineteenth-century charm to the idea of associating "primitive" societies and ancestral populations with infants of today's Western civilization, but whatever genre that may be it is not serious scholarship.

Bickerton's equating pidgin and creole languages with pre- and post-criterion languages, respectively, is also a gratuitous move. Pidgin is a mutilated language used consciously as such in certain circumstances by speakers who otherwise are proficient in a full-fledged language. To assume that pidgin is a reflection of pre-criterion language is comparable to thinking that Walter Reed is a center for the study of australopithecines because it has a population of war veterans with loss of limbs or severe head injuries.

We are told by Bickerton that children born from pidgin speaking parents build creole languages by putting some grammatical mortar around

the linguistic debris made by the previous generation of adult immigrants. Let us assume that this scenario is true--that creole languages are indeed an umbilical cord away from pidgin. There are nevertheless two possible ways of explaining the mortar--either children are born with the ability to mix sand and cement, or it grows in their hands because mortar is coded in their genes. Bickerton insists on the latter, and this brings me to his essentialist position.

Like Chomsky, Bickerton believes that basic grammatical structures are coded in our genes--Bickerton's growth model is somewhat more rigid than Chomsky's, but they both advocate that post-criterion grammar is coded in our genes. It is alleged that it was a single jump from animal communication or chaotic speech to complex languages, a process resembling a would-be direct evolution from monad to man. There was not gradual evolution before that jump nor any evolution since then. As you rightly point out above, evolution is fine as long as it is confined to bones, and brought to a halt a respectable number of millennia before our time. Otherwise you obviously wouldn't be able to be for freedom and equal rights!

My position is that linguists, whose material covers only seven millennia while language appeared probably before 100,000 years before present, find themselves in the situation of the biologist whose evolutionary evidence live and palaeontological would be limited to the data provided by primates. Would it be possible for him then to project the shape of the primate's ultimate mono-cellular ancestor? All we can do, or certainly the first thing we should do, is try to uncover the evolutionary pattern, the possible mechanisms and the guiding principles that could account for the observational data. This knowledge could then be used tenta-

tively to project the course of earlier developments, seeing to it that the general direction remains the same (ie, neotenus) and keeping in mind that the further back we go into time the more abstract our conclusions will become, such as, for instance, as you travel back in time, syntactic functions become less and less grammatical and *ipso facto* more and more cognitive in nature. This is the type of work that Bickerton fails to do, and because of this omission he fails to see that you cannot equate child language and pidgin with pre-criterion language. Ancestral languages were presumably coarse, clumsy, and confining, but there was a system to them, a system that we have to try to uncover through the projection I suggested above. That system was probably neurologically quite onerous, while juvenile or mutilated languages are less taxing by purpose and because they are the reduction or the incomplete imitation of systems that have become less taxing through evolution.

Your question about laughter is very interesting, but I have to think about that one. Since the Fax office will close shortly and will not be open tomorrow, let me stop here.

Alcoholics Anonymous and our "Higher Power"

by John K Pearce

Some people who would benefit from AA, or its offspring SLAA (Sex and Love Addicts Anonymous), ISA (Incest Survivors Anonymous), OA (Over-eaters Anonymous), ACOA (Adult Children of Alcoholics), Al-Anon (families of alcoholics), and Ala-Teen (kids) are turned off by the emphasis on "your higher power" which is generally understood to be God, "as you understood him". It can help some people to be able to offer a non-religious explanation of what is meant by higher power.

Gregory Bateson, the anthro-

pologist, pointed out in a wonderful essay, "The Cybernetics of "Self": A Theory of Alcoholism", that alcoholics are, in a particular way, crazy. In spite of having repeatedly, compulsively, gotten drunk, they think they can drink and not get drunk. Alcoholics, knowing the risks, ask themselves if they can handle a drink, and confidently answer "Yes, I think I can". (I remember my first encounter with this madness. My wife and I were in Vermont with an old friend whose boy friend was an alcoholic. After one drink together, he fixed me with a determined, serious gaze and challenged me, asking, "Are you man enough for a second drink?")

Bateson went on to say that having challenged themselves to take another drink there is nothing to do but put themselves to the test, which they usually fail. He called the sober alcoholic grandiose, omnipotent in his stance toward the world and heedless of his own needs. (AA literature calls the sober alcoholic an "egomaniac with an inferiority complex".) Bateson says the sober alcoholic holds a mistaken ecological view of the world, seeing himself as unbounded. Then, after getting drunk, the alcoholic becomes utterly helpless. Omnipotent no more, the drunk is restored to a correct ecological view. Bounded by limits, the drunk knows he needs help from others.

The idea that sober alcoholics are somehow crazy fits our experience of the amazing denial of alcoholics. And the view of drunkenness as a solution fits at least one remarkable research finding: at the NIMH father-son alcoholic pairs were hospitalized together and given free access to alcohol. When both sober, the fathers and sons interacted awkwardly. But free to drink, they developed a pattern of alternating drunkenness. Fathers would drink and sons take care of them, then sons would drink

and fathers care for them. The caretaking was tender and considerate, very different from the tensions of sobriety.

Bateson points out that the teachings of Alcoholic Anonymous provide an alternative pathway out of the alcoholic's crazy isolation. The first step in the AA twelve step program is to acknowledge one's powerlessness and need for help. The second is to enlist the help of a higher power. These are essential initial steps toward cure of alcoholic madness, to "restore us to sanity." (Alcoholics' counter arguments are dismissed as "stinkin' thinkin'.")

How can we understand "higher power" as a natural phenomena? Michael Gazzaniga, a neuropsychologist, describes experiments conducted with patients who had the connections between the left and right sides of their brains cut in an effort to control the spread of seizures.¹² He found that when the part of the brain that answered direct questions (he called it "the left brain explainer") was deprived of essential information needed to answer questions, it just made things up. (Here's how you do it: You put a key in the patient's left hand. The sensory information goes up, crosses over, and tell the right side of the brain "it's a key." If the person is asked what it is, the right brain knows--the left hand (controlled by the right brain) can then write out "key" on a slip of paper. No question, the right brain knows. But the huge number of fibers that cross the cerebral cortex are cut. The message cannot pass to the left side.

When the patient is asked what is in the left hand, the left brain explainer does the talking. Does he modestly say, "Beats me" or "Ask my right brain"? No, with conviction he gives an irrelevant answer, like "It's a watch".

Gazzaniga says the brain is

modular--in fact it works like a collection of brains. Bateson says alcoholics are crazy; we can be more specific: the alcoholic's left brain explainer is crazy, especially crazy when contemplating taking a drink and deciding, "It's ok this time." Other brain modules may not be crazy.

The anthropologist, Lionel Tiger, points out that addictions short circuit evolved brain mechanism.¹³ For example: cocaine short circuits pleasure mechanisms. Ordinarily to get a glow of pleasure you would have to perform some evolutionarily worthy task, like catching a fine beast for dinner, or securing a sexual partner. With cocaine you don't have to do anything that actually does you any good. Tiger suggests that alcohol emulates social satisfactions, without actually requiring appreciative friends or an established status in your group. Tiger argues that addictions are fundamentally novel because they short-circuit normal mechanisms.

Remember, Gazzaniga pointed out that the left brain had no way of knowing that it did not know what had been placed in the left hand. The left brain explainer had, with complete confidence, confabulated (just made something up). The brain doesn't know it doesn't know. Why? It is because the brain evolved to solve typical problems of primate life, not weird neuro-science experiments. A similar case: we can accurately locate sensations of pain in our skin, but not in our viscera. In evolution it is constructive to know when and exactly where something is nibbling at your skin. If your deep viscera is being nibbled you are doomed and the ability to sense accurately the pain is irrelevant.

Other examples: people with strokes often cannot gauge the extent of their injuries and people with brain disorders may not know it. For example, one of my teachers, a revered elderly psychiatrist, believed that

she was so exquisitely attuned to her own psyche that it would be impossible for her to have brain problems and not know it. As it happened in time she became mildly demented and didn't have any idea it was happening. She was forgetful and not thinking straight. We, her students, brought it to her attention, for which she was intact enough to thank us. The culprit was an insidious congestive heart failure. After the failure was corrected with medicines, she was her usual lucid self.

The bottom line is that we are evolved creatures with, in effect, many brains. We evolved to sense some things and not others. We are not omnipotent but creatures, like all others, bounded by our biology, with a particular place in the natural world. It turns out that we are, or some of us are, powerless to cope with substances that short circuit our evolved brain mechanisms.

The mistaken idea that brain is a single integrated unit has been dominant for a long time. In my generation (college in the 1950s), this bias was reinforced by thinking of the brain as a computer. At that time, computers had one processor and did only one thing at a time. This tidy model is not at all like the brain.¹⁴ As it happens the computer metaphor can be salvaged, but today we say the brain is like 50 computers, or 1000, all hooked up together. There are such machines--parallel processor computers. However, even these machines do not come near the (literally) unimaginable complexity of the brain.

Psychotherapists partake of this tradition of oneness. Inspired by physics and engineering, they usually try to explain everything as interaction between a few forces--sex, operant conditioning, self-esteem, etc.. There are exceptions: Jungians' emphasize diversity within the psyche. In family therapy most

schools emphasize diversity (Kantor, Minuchin, Duhls, Strategic and Milan School) but some do not (Bowen, Psychoanalytic, Behavior Modification and the currently very successful Adult Children of Alcoholics movement). In their practices, most therapists take for granted that it is desirable to encourage integration--oneness.

I am critical of our oneness tradition. Not that it isn't my own personal preference--that's the way I am. I know I like to put things together in one basket--even multiplicity I put in the single conceptual basket, modules of the mind. But is oneness everyone's cup of tea? I don't know but I suspect it is not. Back off monists! The pluralists are in ascendance!

Getting back to AA: AA members find again and again that their "higher power" helps them. When tempted to drink they may be ill served by their left brain explainer, but there is something else within them to which they can turn. They ask that mute self if they should drink, and they experience, without words, the message that they should not. In the modular brain, this is not at all surprising--at least one module has good sense. Someday, when AA members get studied by brain imaging methods that show where in the brain activity is occurring, it may even be possible to point a finger and say, "There's your higher power!"

That the functioning of the higher power may be associated with activity in non-verbal parts of the brain does not invalidate religious beliefs. Religious people are used to such dualism--God as brain, or acting through brain, or simultaneous with brain. But for not-religious or not-"spiritual" potential AA members, biology offers a way of thinking about the "higher power" that will not offend, and that rightly celebrates a remarkable human ability.

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 3. EXECUTIVE COUNCIL:
 - President: Michael R A Chance
 - President-Elect: John S Price
 - Vice President: Paul Gilbert
 - Secretary & Newsletter Editor: Russell Gardner, Jr
 - Treasurer: Leon Sloman
- At this time this "informal" organization has no official budget.
4. Gilbert P: Depression: The Evolution of Powerlessness. NY: The Guilford Press, 1992.
 5. Gardner R: "Are there language-regulating genes on chromosome 15?" Seventh Annual Meeting of the Language Origins Society, DeKalb, IL, July 18, 1991, in press.
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 b. Language evolution: evidence from historical linguistics. In (Eds) Wind i, Chiarelli B, Bichakjian BH, Nocentini A. Language Origin: A Multidisciplinary Approach. Dordrecht: Kluwer Academic Publishers, 1992.
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 b. Bickerton D: Language and Species. London & Chicago IL: University of Chicago Press, 1990
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 12. Gazzaniga M: The Social Brain: Discovering the Networks of the Mind. NY: Basic Books, 1985.
 13. Tiger L: The Pursuit of Pleasure. Boston: Little, Brown, 1992.
 14. RG note: compare to Minsky M: The Society of Mind. NY: Simon and Schuster, 1985, 1986.
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 16. Fisher H: The Sex Contract: The Evolution of Human Behavior. NY: Quill, 1983.