DOWN TO EARTH EPISTEMOLOGY

Here are some of my abstractions re epistemology (from my western perspective) at this time-place. I have not put quotes around many of the “ises” since many represent actual statements of some philosophers.

We have seen that philosophy is concerned with that which is, in contrast with that which seems to be. Its aim is to reveal the reality which underlies appearances. (The Problems of Philosophy by John Grier Hibben, Ph.D., 1898, p. 14)

Metaphysics, then, is not something in a book, but something in a mind.... No one can understand for another or judge for another. Such acts are one’s own and only one’s own. Explicit metaphysics is a personal attainment. (Insight: A Study of Human Understanding by Bernard J.F. Lonergan, S.J., 1957, p. 396).

...the dynamic cognitional structure to be reached...is the personally appropriated structure of one’s own experiencing, one’s own intelligent inquiry and insights, one’s own critical reflection and judging and deciding. (p. xviii)

Traditionally, those we call “philosophers” and “metaphysicians” were concerned with exploring, and answering questions related to abstractions they classified under the broad headings (very high order abstractions) “nature, mind, and God.” They also speculated regarding the interrelationships between these three abstracted divisions. They were not only concerned with answering questions related to the nature of that which is, (‘reality’) but they also sought answers for that which should be (values). They explored and discussed ideals and standards, on which to base reason, behavior, beauty and harmony. These concerns resulted in diverse areas of philosophical inquiry: ontology, the study of the nature of being; cosmology, the study related to the origin of the universe; philosophical psychology, the study of mind; and the normative sciences – logic, ethics, aesthetics, related to the study of values.

Some of the specific questions asked can be represented as follows:

What is the nature of being?
What is the origin of the universe?
What is the purpose of the universe?
What is the origin and destiny of man.?
What is the nature of reality?
What is the nature of God, mind, nature?
What are the relationships between these three divisions of reality?
How can that which is, be encountered?
What is the nature of truth?
What are the ideals on which to base reason, truth, and falsehood?
What are the ideals on which to base right conduct?
What are the ideals on which to base the beautiful and the ugly?

In exploring these questions (never mind that many of the terms were not defined at the start, “being”, and “reality” for instance), philosophers and metaphysicians came up with
answers, generating seemingly endless, and necessarily unavoidable discussions; some of which became the foundations for many schools of sometimes diametrically opposed views.

Among these many conflicting views related to nature, mind, God, values, and their interrelationships we find the following: monism materialism, spiritualism, dualism, solipsism, objectivism, determinism, indeterminism, polytheism, deism, theism, pantheism, monotheism, occasionalism, pluralism, parallelism, primitivism, existentialism, agnosticism, atheism, utilitarianism, pragmatism, transcendentalism, to mention a few.

In defence of these many conflicting views, I would offer that this should not influence us to view philosophical and metaphysical explorations unfavorably. Philosophers and metaphysicians as unique humans, each making their particular contributions, add to our fuller understanding of ourselves in universe. We need mainly to avoid identifying any conclusion reached as representing the whole or as being the final word.

From their explorations, speculative answers, and discussions, philosophers and metaphysicians (as self-reflexive time-binders) eventually began to ask themselves questions about their questions, and “epistemology” came into being.

“Epistemology” is the name for that branch of philosophy where philosophers discuss and propose “theories of knowledge.” They ask such questions as:
What is the source of knowledge?  
What is the nature of knowledge?  
What is knowing?  
What is truth?  
What is happening when we are knowing? What is known when that is happening?  
What do we know when we know?  
What is the relationship between the knower and the known?  
What are the limits of knowledge?” among others.

Again these probings gave rise to various schools of sometimes conflicting thoughts, among which we find the following: idealism, empiricism, solipsism, rationalism, naive realism, critical realism, sensationalism, nominalism, conceptualism, positivism, criticism, experimentalism, phenomenalism, among others.

I won’t attempt to elaborate on these various views on our knowings. I will however mention two that have been most useful in providing guidelines for a world view, and standards for improving our critical evaluating skills. They consist of my abstractions from the writings of Bernard J.F.Lonergan S.J, professor of Dogmatic Theology. And the other involves my abstractions from the writings expressing Alfred Korzybski’s non-aristotelian system and general-semantics.

Bernard Lonergan in his book “Insight: A Study of Human Understanding” takes a “transcendental approach” in addressing epistemological issues. “Transcendence” as used by Lonergan does not involve any mystical, mysterious, visionary or idealistic fantasies. Lonergan’s use of “transcendence” has to do with going beyond; raising further questions; a process of individual developing through stages of differentiated consciousness; taking a
heuristic approach; a gradual acquisition and accumulation of insights (learning); a notion of progress: the above being motivated by what he calls "an innate, unrestricted desire to know."

Before going further, I'll say a few words based on my abstracting from Lonergan's writings, about some terms used above. The "heuristic approach" has to do with using the little we know of a 'fuzzy' known, to direct and guide our search toward a fuller knowing. You could think of this as kind of reiterated experimental approach: You try something. It doesn't work. But by noticing some things about how it doesn't work, you may get some clues as to how it might work, or what is needed to make it work. You use that information to guide your next try, and so on. Lonergan's metaphysics and epistemology are based on a heuristic approach. When one asks a question such as "what is the nature of knowledge", it seems to me that the more useful approach has to be a heuristic one, since one doesn't specifically know what one is looking for.

"Unrestricted desire to know" has to do with a desire (expressed in varying degrees in each individual) for complete understanding; and it involves a demand for intelligent and critical handling of every question. We not only want to know. We want to know if what we know is so. And we want to know all that can be known. Evidence for this has to do with our propensity to ask further questions, and an inability to see the end of the questioning process. (We can experience some of this by remembering times when we were not satisfied with an explanation and remained puzzled. And the infant who asks why? why? why?) Of course one must not forget what Lonergan calls "the flight from understanding." Related to this he wrote "...the flight from understanding... appears to result simply from an incomplete development in the intelligent and reasonable use of one's own intelligence and reasonableness." (p. xi)

With regard to "differentiated consciousness": 'Think' of a baby and its concerns, interests, contemplations, demands, reflections on its demands, self-criticism, and so on. Now 'think' of our concerns, interests, etc., as adults: Our conscious operations, our behaviors, are more differentiated than a baby's. A very vivid related image is one where a baby has tasted something sour or bitter. (I might add that without a more differentiated consciousness such as the "consciousness of abstracting", our ordinary differentiated consciousness can lead to great confusions, anxieties, conflicts, violence, wars, unsanity, insanity, and so on).

To return to Lonergan's epistemology as I understand it, I'll use some of his own words from time to time as they say it much better than I could.

On p. 639 "Insight" Lonergan wrote this in relation to his notion of transcendent knowledge. "Man's unrestricted desire to know is mated to a limited capacity to attain knowledge. From this paradox there follow both a fact and a requirement. The fact is that the range of possible questions is larger than the range of possible answers. The requirement is a critical survey of possible questions. For it is only through such a critical survey that man can provide himself with intelligent and reasonable grounds both for setting aside the questions that cannot be answered and for limiting his attention to the questions to which answers are possible." (With respect to this he writes in a lighter vein on p. 643: "Because man's desire to know is unrestricted while his capacity to know is limited, one does not have to be a fool to ask more questions than a wise man can answer.")
Lonergan does not support the everyday notion that "knowing is nothing more than looking." On p. 634 he wrote: "For on that view the fact of error is somewhat disconcerting: either error consists in seeing what is not there or else it consists in not seeing what is there. [I like that.] But if the first look is erroneous, the second, third, fourth, or nth may err in the same or in some different fashion. Which is to be trusted? Is any to be trusted? Does not certitude require the possibility of some super-look in which one can compare the object to be looked at and the object as seen? Would not the super-look be open to exactly the same difficulty?"

Lonergan's transcendental treatment of knowing involves a hierarchical and self-reflexive process of "intelligent inquiry, and critical reflection." This process can be further elaborated as follows. We sense, we perceive, we imagine, we wonder. We inquire, we have insights, we formulate. We come to some understanding. We reflect, we critically evaluate based on some chosen ideal or standard. We make judgments based on our chosen standards. We come to a knowing. We ask further questions, and so on.

The process is considered hierarchical based on the fact that what we perceive is what we inquire about. Our inquiries lead to some understanding. (For many humans, that "is" it. But for many others, especially those in scientific disciplines, that represents only a first stage of inquiry.) They go beyond. They formulate, talk about what they understand. They reflect on what they understand — and ask is it so? They appeal to some, criteria, ideal, or standard. Their answer constitutes a judgment. They come to knowing — and continue to ask further questions. (I don’t ‘think’ it is necessary to elaborate on the self-reflexiveness involved in the process as illustrated above.)

The question now arises. What do we know when we arrive at a knowing? According to my understanding of Lonergan, what we know is nothing more than what we arrive at through the cognitional processes outlined above. We perform certain cognitional acts, and our knowing emerges from these acts. Our knowing depends on the data of consciousness, and the standards on which our judgments are based. We cannot get outside our nervous system, to know about our knowing. What we know is related to what “we” have designated as knowing. On this account what we know is not anything outside of us. We know of and about, but we don’t know “it” whatever “it” happens to be. This may be a difficult notion to accept. But we could experience the validity of this scheme for ourselves, by asking ourselves this question — while exploring our own cognitional processes: "What do I know when I say I know someone, or something?" And keeping in ‘mind’ Lonergan’s statement, “Metaphysics, then, is not something in a book but something in a mind.”

Lonergan goes further; and this may even be more difficult to accept. He proposes that the above scheme cannot be revised. It cannot be revised simply on account of the fact that if someone says "This is not knowing" their refutation will be based on data, inquiry, reflection, judgment etc. and such a critic cannot engage in a process using data, inquiry, reflection, etc., to criticize and refute, a process described as being dependent on data, inquiry, reflection, etc. As Lonergan put it "A reviser cannot appeal to data to deny data, to his new insights to deny insights, to his new formulation to deny formulation, to his reflective grasp to deny reflective
grasp.” (Insight, p. 336) Or put another way, we cannot use our intelligence to denounce
intelligence. This has little to do with whether one person is ‘right’ or ‘wrong.’ Or whether
conclusions are true or false. Please remember now that Lonergan is referring to the process, not
the conclusions or results obtained. (This process of knowing as outlined above, could be
considered as a “relative invariant nervous system functioning” in general-semantics terms).

Lonergan’s epistemology springs from his metaphysics. He describes this as “the
detached and disinterested drive of the pure desire to know...” and which finds expression in our
intelligent inquiries, and critical reflections. And, he wrote “there is not, in human knowledge,
any possible higher viewpoint that goes beyond that framework itself, and replaces intelligent
inquiry and critical reflection by some surrogate...” (Insight p. 394)

Lonergan’s epistemology includes appreciation of common sense, science, and the arts,
as discovering in their different ways, patterns that help us understand our world. Our common
sense, “an accumulation of related insights”; “a self-correcting process of learning,” according to
Lonergan, developed out of “…the very spirit of inquiry that constitutes the scientific attitude.
But in its native state it is untutored.” (p. 175) The artist “...exercises his intelligence in
discovering ever novel forms that unify and relate the contents and acts of aesthetic experience.”
(p. 184)

Lonergan’s epistemology recognizes our knowledge as limited. He considers not just the
known, but also the knower who comes to know him/herself through a recognition of the
knowing processes in operation: We get to know ourselves as knowers through a conscious
awareness of the interdependency and interrelatedness of our sensing, perceiving, imagining,
inquiring, gaining insight, understanding, formulating, critical reflecting, judging, etc.

He calls this particular conscious awareness “explicit metaphysics” – a knowing about
ourselves, “primarily a process to self knowledge”; and “a sufficiently clear and precise grasp of
the common source of our knowing”; an “appropriation of our rational self-consciousness.” A
knowing not just of knowing, but a knowing of ourselves by experiencing that unity in us that
goes from sensing, perceiving, etc., to judgment and knowing. This is in opposition to “latent
metaphysics” where we have not experienced ourselves in our knowing processes. We claim we
know. But by not appropriating (not taking possession of, not having the experience of) what we
mean by knowing, our potentials for self-developing remain hidden from us. Not knowing about
our knowing, we don’t know ourselves.

On the possibility of grasping our own developing, Lonergan wrote this: “To grasp his
own developing is for man to understand it, to extrapolate from his past through the present to
the alternative ranges of the future... More fundamentally, it is to grasp the principles that govern
possible extrapolations; for while possibilities are many and difficult to determine, principles
may be few and ascertainable.”

Lonergan believed in the notion of progress in our individual knowing and in ourselves.
On p. 234 he wrote “In the first place, there is such a thing as progress and its principle is liberty.
There is progress, because practical intelligence grasps ideas in data, guides activity by the ideas,
and reaches fuller and more accurate ideas through the situations produced by the activity.” And on p. xiv, “...concrete situations give rise to insights which issue into policies and courses of action. Action transforms the existing situation to give rise to further insights, better policies, more effective courses of action.” (Examples of the heuristic approach.)

We could dismiss “epistemology” as just so much philosophical pie in the sky. And although the above abstractions do not represent all there is to Lonergan’s epistemology, nor all of my abstractings from his writings, I ‘think’ it is enough for us to assume that at least one epistemology has much to offer that we can use to improve ourselves and better manage situations in our everyday living. Heuristics, differentiated consciousness, transcendence, progress, appreciation for common sense, the arts, and the method of science; an awareness of the limits of knowledge, critical reflection, the importance of developing sensitive awareness towards progress in knowing; asking ourselves the simple question “How do I know”; all can contribute to our continuing developing; all have a place in our everyday lives.

Let’s now take a brief look (my look: so you are looking at some of the results of my looking) at Korzybski’s epistemology. This was abstracted from his book Science and Sanity (1933, Fifth Edition, 1994). But first a few more words from Lonergan.

“A method is a set of directives that serve to guide a process towards a result” (Insight p. 396)

If our aim is towards increasing knowledge and understanding of ourselves in the universe; continuing self-developing; maintaining satisfying relationships; acting more appropriately in our different environments; increasing our critical evaluating skills; becoming more imaginative and creative; becoming better interpreters of what we hear, read, see, etc, reducing stress in our lives, better management of our lives; and so on – I cannot think of a simpler or more practical epistemological system than Korzybski’s general-semantics, as a set of directives to guide us towards those results.

General-semantics has been described by some as “up to date epistemology.” To that I would also add: “relatively simple (not necessarily easy) down to earth, personal and practical epistemology.” What could be simpler than the following directives?

Whatever we (as individuals) hear, see, touch, smell, etc., is not all that could be heard, seen, etc. nor our way the only way to listen, look, etc. Whatever we say, think, imagine, believe, understand, etc., is not all that could be said, imagined, understood, etc. There are other things that could be said, other ways to say what we said, and so on.

Whatever we know is not all that can be known; there are limits to what we can know, since there are limits to what we can see, hear, feel, etc. We don’t know what anything ‘means’. We assign our own meanings to what we hear, see, believe, know, etc. Words do not have meanings. We give our own meanings to words. Whatever we know must not be considered elementalistically as absolute knowledge, but as a subject-object-subject relationship. The ‘known’ is not something ‘out there’, but an awareness of the results of interactions between
whatever is going on out there and whatever has been and is going on in us. (So we need to be attentive to what we are now thinking, feeling, doing etc., since our presents influence our futures).

Whatever we know can be structured in terms of structure, order, and relations; relations between nervous system structurings and non-nervous system structurings. These relations involve structural patterns of light waves, sound waves, molecular bombardment, the patterns and frequencies of neural firings, and so on. When we ignore the order of things, we are moving towards delusions, insanity, or at least a certain degree of uncomfortableness. (If we imagined the traffic light has turned green and acted on this before it had turned green, if we shut the car door before moving our fingers out of the way, we ignore order. “Don’t cross the bridge ‘til you come to it” is an old proverb of excellent wit – something I remember from infant school days).

It is to our advantage to “date” our knowings. Things change. We change. Others change. ‘Think’ of whatever is known, understood, believed, etc., as “maps.” And remember that a map is not the territory it is a map of; that a map can also be perceived as a map of the map-maker; that the ideal map would map itself; and so on.

In formulating our knowings, we should, for our sanity’s sake, remember that the words we use to express our knowings are not the knowings, or the processes they are about; that the generalization is not the inference; that the inference is not the description; that the description, or label, is not the object; that the object is not the atomic or sub-atomic happenings, or whatever else may be going on.

If there are limits to our sensings; limits to our knowings; if our words are not the process they are about; if we change; if things change; we improve our intelligence by indexing our knowings with a certain degree of uncertainty. It suits us to say-believe-act in ways that recognize that what we know may only be probably so.

From the above one can abstract many parallels between Lonergan’s epistemology and Korzybski’s epistemology. Although the terminologies are different, students of general-semantics may abstract from the above abstractions common factors related to time-binding, respect for the individual, directives for self-developing, the importance of self-reflexiveness, critical evaluating, respect for scientific method and method in general, a sensitivity to order, a probabilistic attitude, a vision of the possibilities for progress, the individual as transcendent, and much more.

If the quality of our living, if what we do, and how we do what we do, depends on what we know or ‘think’ we know, then epistemology is not just for professional philosophers or metaphysicians. It is also for the ‘philosopher’ and ‘metaphysician’ in ‘all’ of us. We can don those epistemological caps by seeking to “appropriate our rational self-consciousness” by becoming more “conscious of our abstractings.” And we can start with the simple heuristic question, “How do I know?”

Milton Dawes/95
ON TIME-BINDING

by Milton Dawes

Time binding: A non-aristotelian operational definition of humankind. It incorporates theoretical foundations for: species ethics (human relationship); critical evaluation (critical ‘thinking’, ‘thinking’ about our ‘thinking’, and the individual and social consequences of different ways of ‘thinking’); and racial and individual sanity.

Time-binding emphasizes the importance of “times” (not excluding places) - present times as a function of passed times; and future times as a function of present times. This makes explicit, opportunities for continuing species self-review-self-corrections-self-improvements.

Time-binding emerges from many contributing factors. Among these we find memory, signs, symbols, language, rules, rituals, artistic expressions, myths, beliefs, knowledge, schools, churches, buildings, bridges etc., and self-awareness.

Time-binding describes unique behavioral characteristics of the human species. An individual group, etc., has certain experiences, makes certain inquiries, discoveries, mistakes, decisions, creates certain structures etc., lets say at ‘time₁’. At ‘time₂’ these experiences, discoveries etc., can be represented by memory, symbols, rituals, physical structures and so on. And at ‘time₃’, these ‘time₂’ representations, when experienced by the individual (intrapersonal time-binding), or others (interpersonal time-binding), become inputs - starting points for further inquiries, explorations and so on. In a sense, then, ‘time₁’ experiences, though symbolic representations at ‘time₂’ are incorporated as part of the experiences of a ‘time’ experience. And it has the potentials for influencing many other future times experiences. (We don’t have to keep inventing the wheel or keep making similar mistakes over and over).

This transmission of representational structures from an individual to him/herself, to others and across generations provides us with tremendous opportunities to learn from ourselves and others. And if by “learning” we intend “modification of behavior in the light of experience”, and are concerned to improve the quality of our personal and other relationships, we need to be more critical in evaluating information we receive, and more concerned with the quality of the representations we pass on.

Children learn from adults - what we say, how we say what we say, what we do, how we do what we do; the way we behave with each other; the institutions we create, and so on. An overview of present human affairs suggests that we have a great deal to learn. But more urgently, we need to take a good critical look at what we have been learning and doing.
GENERAL-SEMANTICS AS A SYSTEM
FOR IMPROVING HUMAN RELATIONSHIPS

by Milton Dawes

General-semantics was developed by Alfred Korzybski, a Polish mathematician and engineer; some 50 years ago. It was the culmination of many years of research into, and observation of, our human behaviors in their diverse forms of expression. The system was designed as a general theory of sanity – toward continuing improvements in all areas of human interactions and relationships. It is concerned not only with our relationships with others but also our relationship with ourselves. General-semantics is based on the postulate that the structure, method, psycho-logics of science and the principles of mathematics are demonstrations of the human nervous system functioning at optimum efficiency and effectiveness. Furthermore, if we study and apply the method and principles of science and mathematics to our everyday interactions and relationships, and to all our human affairs, we will achieve a measure of success comparable to that achieved by scientific and mathematical activities. From a general point of view, one need not be a scientist to have a scientific orientation.

General-semantics can be considered as an explicit formulation and generalization of characteristics that are implicit in scientific and mathematical activities. The following represents a brief outline of some of these characteristics.

In science, we find that there is a tacit validation of the “principle of non-allness”. This says that “We cannot know, understand, perceive, say, etc., all about anything.” The acknowledgment of this principle is indicated by “continuing observation and inquiries which often lead to review and upcating of accepted theories” as new information comes to light. (This can be considered as “learning” at the species level and can be applied to all areas of human behavior.)

The sharing of ideas, insights, information, knowledge, etc., between individuals, and across generations, and the resulting exponential increase of knowledge, are fundamental features of scientific and mathematical activities. Korzybski called this unique human behavior time-binding. He cautioned that we retard the development of our individual and species potentials, and that we jeopardize our individual sanity, and concomitantly the survival of human beings, when we individually or collectively disregard or suppress this special talent.

Science is concerned with how things are related to each other. And in quantum physics, but not yet in science generally, how we relate things to each other. General-semantics is a system fundamentally concerned with how we relate things to each other, and the problems that occur when we forget that we construct the models, and when we forget to differentiate between map, map making and whatever it is we think we are mapping.

General-semantics is concerned with our human values and our evaluations. What we do and how we do what we do depends on the values-knowledge-beliefs-hopes-fears-expectations, etc., that motivate our decisions and responses. In a world (including people) which operates on its own
tems and in which action/reaction is a fundamental feature, the values, etc. which motivate our behavior should be based on reasonably accurate and up-to-date knowledge – if they are not to be in conflict but in harmony with cosmic structures and codes of operation. Science and scientific methods provide us with the most reliable methods so far for gaining and applying “accurate” and up-to-date maps and models of the world we live in, to all aspects of our human relations.

General-semantics can be considered as a system that sets standards for very high order of critical awareness and evaluating. This very high order of critical behavior is also a fundamental feature of scientific activities although its applications are presently more restricted than is expressed in general-semantics. This very brief outline must not be taken as expressing the final statement about the system called general-semantics. The fact that “nothing says it all” is one of the fundamental formulations of the system.
CREATING MORE SATISFYING RELATIONSHIPS:

*An on-going process...*

by Milton Dawes (1991)

*To be ............... is to be in relationships*

When we think of the conflicts ... confusions ... anger ... disappointments ... insecurities ...
uncertainties ... each one of us experience with our own selves from time to time ... should we be
surprised that our relationships with others are not always easy or smooth sailing?

We cannot escape relationships ... Even if we each lived on desert islands - we would each be in
relationship with our surroundings. But most importantly we would be in relationships with our
selves.

The quality of a relationship depends a great deal on the levels of general knowledge, intelligence,
sanity, respect, caring, willingness to learn, openness to continuing selves-education, forgivingness,
humor ... achieved by parties in the relationship.

Science and mathematics activities provide us with good examples of human relationships which
have lasted over several hundred years; have survived many changes, emerging improved. Science
and mathematics constitute relationships based on continuing learning and self-correction. They
constitute relationships that are constantly growing, and continuing to work well.

General-semantics, through its principles and formulations, provides us with translations of science
and mathematics relationships, which we can use to help us understand and improve our everyday
relationships.

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The following is a list of some factors that are important for creating more satisfying relationships.
The list is necessarily incomplete. You are invited to add to this list insights you have gained from
your own experiences in relationships.

Relationships tend to be more satisfying when each member in a relationship:

- Considers the relationship important and valuable, and wants to make it work.
- Makes fun and laughter important parts of the relationship.
- Respects other members of the relationship as unique individuals, having their own needs,
  values, beliefs, fears, ways of doing things, etc.
- Rejects force, violence, power, or control as justifiable ways to influence others.
• Has up-to-date and reasonably accurate maps of themselves and others.

• Takes some responsibility for the meanings she/he gives to what she/he sees, hears, feels, experiences, etc. in the relationship - but is not afraid to express emotions.

• Is open and willing to learn from another, or others in the relationship.

• Recognizes the inevitability of change, and strives to meet the challenges of change.

• Is willing to seek outside help when differences seem irresolvable and irreconcilable. Strives to be fair and reasonable.

• Works at improving his/her skills in communication - especially in listening and interpretations; works at developing skills in managing conflicts, negotiating, and reaching compromises, managing stress, managing change, solving problems......

• Is able to make distinctions between what someone does, what she/he says they are, and the immensely complex processes that they are being.

• Accepts that others were not born in this world to live up to their expectations; or make their hopes, dreams, and wishes come true. Sees themselves as part of a team.

• Recognizes that there are many differences between what she/he thinks is going on - and ‘what are’ going on.

• Seeks to broaden his/her range of general knowledge and interests.

• Accepts that there are some kinds of relationships that cannot be satisfying.

• Enjoys a great deal of freedom in expressing him/herself; and does not feel put down or crushed.

• Is sensitive to the role that self-concept plays in perceptions, attitudes, behaviors.

• Remembers that any relationship is a structure within a complex of many other interrelated and interacting relationships...

Thinks less about what she/he can get out of the relationship - and more about what she/he can contribute to the relationship.
There are no unrelated relationships.

Relationships are part of and interact with other relationships.

A human being is considered to be the most complex process known in the universe. Human relationships constitute still higher levels of complexities.

Each one of us has our own likes, and dislikes, ways of thinking about, feeling about, talking about, and doing things ... In our everyday relationships, we are sometimes helpful to each other ... at other times, we get in each other's way.

We do not expect apple trees to produce oranges. We do not expect Michael Jackson to sing like Pavarotti, or Madonna to sound like Jessye Norman. We do not expect our cats to bark like dogs ... But we often expect others to produce behaviors that may not only be very uncomfortable for them - but behaviors that they may be incapable of producing ...

We often do not realize what tremendous pressures we put on someone when we want or expect them to be different ... How easy is it for anyone of us to change our ways - even when we want to

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Relationships, like anything else in our lives, have their ups and downs ... The following are some questions we could ask ourselves, when certain things in our relationships do not seem to be going well (or to our suit) and we would like some changes.

- Are my demands, requests, expectations, reasonable?

- Would other parties in the relationship also consider them reasonable?

- Is the 'problem' worth making a fuss about?

- Are there things I have been saying, doing, etc., ... or may say, do, etc., which may be contributing to the 'problem' ... or could antagonize a resolution?

- Am I willing to consider other points of view? ... Am I open to negotiation?

- Am I thinking in terms of win/lose, win/win, joint venture, teamwork? ...

- Will this change improve the relationship? ... Could it make matters worse?

- Could this change create new problems? ... other problems? ... More 'problems' than it resolves?

- What other things may change in the relationship, if this change occurs?

- Can I live with these new changes? If 'YES' - Can I know for sure?
• Remembering that relationships interact with other relationships, if this change occurs, how might it affect other relationships?

• If there is no ‘change’ ... Will this be unbearably stressful? ... Will this jeopardize the relationship? ... Could I drop the matter and move on?

• Is it easier for me to give up wanting the other/s to change - or for them to?

• What are some other ways I could think-feel-interpret-evaluate, the ‘problem’?

• What would make this relationship ‘perfect’ for me? ... Would that make it perfect for others?

• If I were in some other relationship which I considered worse than the one I am now in, and a guardian angel offered me the present one - with all its faults - Would I take it???

It’s worth repeating that the above questions, and factors for improving relationships mentioned earlier on, are necessarily incomplete. As individuals in a wide range of relationships, we have ongoing opportunities to learn from our relationships: ‘What’ make (plural ‘what’) them work well; ‘what’ make them work badly. Becoming more extensional, less intensional, more self-reflexive, can help us better understand ourselves in relationships. A better understanding of how we are relating can help us improve our relationships. And since our lives constitute interrelated and interactive relationships, improving our relationships is tantamount to improving our lives.
Scientific v. Prescientific Orientations

BASIC FEATURES OF PRESCIENTIFIC ORIENTATION

1. Fundamental notion of the static character of reality. A static reality involves essential consistency (there is nothing new under the sun). Main attention is given to similarities; differences are minimized or ignored. Consequently, the individual is not especially important except as he represents a type.

2. Rigidity, or conservatism, the tendency to maintain established beliefs and habits regardless of changing conditions, is fostered by these basic notions of static constancies. Thus, traditions are cherished, and authority of age and precedence is extolled, seldom challenged; experimentation is discouraged. The Old Man is honored and obeyed. As a result of all of this, individual infatilism and social retardation are fostered.

3. The basic method of problem-solving, which we call authoritarian, involves mainly the practice of abiding by advice obtained from some vested authority, such as a parent, teacher, priest, or judge. Authority sometimes resides also in a book or code of rules. The pronouncements of such authority are not to be revised. This authoritarian method works in practice to maintain unchanged the traditional beliefs, customs, and rules of conduct. If problems are not solved, they are "explained" in terms of "fate," or "nature," or the "supernatural"; and toward the language used in such "explanations" there is a dominant attitude that is naive and unreflective.

4. The language of a prescientific orientation is designed to control behavior by virtue of the vested authority it represents. If it is not clear, a properly appointed authority will interpret it, and his interpretation is to be believed. The validity of authoritarian pronouncements is not to be questioned. Statements of asumptions and statements of fact tend to be regarded as the same.

5. Prescientific language tends to make for questions that are frequently vague and quite often meaningless factually. Attempts to answer such questions give rise to misunderstandings and disagreements, to misinformation and misleading theories, with the result that predictability and foresight are achieved slowly, or not at all, and individual and social maladjustments are thereby fostered.

BASIC FEATURES OF SCIENTIFIC ORIENTATION

1. Fundamental notion of the process character of reality. A process gives rise to a never-ending series of differences. As much or more attention is paid, therefore, to differences as to similarities. As one important consequence, the individual is regarded as an individual, not merely as an example of a type.

2. Adaptability, a readiness to change as changing conditions require, is fostered by these basic notions of process differences. Thus there is a tendency to challenge authority systematically; to experiment, to test traditional beliefs and customs against actual observation and experience. The Old Man is respected, but evaluated critically. As a result of all of this, individual and social maturity is stimulated.

3. The basic method of problem-solving, which we call scientific, consists of four main steps: (a) the asking of questions which direct one's (b) observations so as to answer the questions clearly in such a way as to test one's beliefs or assumptions, (d) which are revised accordingly. Of these four steps, three (a, c, and d) involve mainly the use of language. This scientific method works in practice toward the continual improvement of specific techniques, refinement of beliefs, and "modernization" of customs and rules of conduct. If problems are not solved, new theories and methods are devised to solve them.

4. The language of a scientific orientation is designed to be factually meaningful, directly or indirectly, and clear and valid. It is intended to satisfy two important tests: "What do you mean?" and "How do you know?" Moreover, assumptions are sharply differentiated from statements of fact.

5. Scientific language is oriented around factually clear, answerable questions. Vague or meaningless questions are abandoned as being misdirected of human energy. On the principle that the terminology of the question determines the terminology of the answer, only clearly stated questions are tolerated. Because of this, mutual understanding and agreement are facilitated, pre-dictability and foresight are improved steadily, and individual and social adjustment is thereby fostered.
6. In a prescientific orientation, the natural process of projection is carried out unconsciously (relative lack of "to-me-ness"). It is realized only vaguely, or not at all, that every statement conveys information about the speaker as well as about whatever the speaker may seem to be talking about; and the degree of self-reference is largely ignored in evaluating the statement's factual significance.

7. In a prescientific orientation, there is a marked tendency to speak as though with the voice of another (ventriloquizing). For example, the voice of The Law is not recognized as the voice of the Judge himself. The speaker tends to ventriloquize both unconsciously and deliberately (as in the planned use of "ethical proof"). Only the more artful and deliberate ventriloquizers seem to realize that, after all, it is their own evaluations that they are expressing.

8. Accurate prediction, or foresight, is not a particularly well-recognized objective in a prescientific orientation. At least, theories and specific statements are not evaluated primarily in terms of their usefulness in making predictions. In a prescientific orientation there are, strictly speaking, no scientific submicroscopic theories; there are, rather, beliefs regarding the "supernatural." These tend not to be changed, because they are considered not as theories but as statements of fact. Faith in these beliefs and obedience to the authority which represents them—obedience expressed by participation in prescribed rituals, for example—are prized as the means of control over natural and human events.

We may gain a clearer notion of what we mean by a scientific orientation or way of life by contrasting it in this way with a prescientific orientation or way of life. It is to be realized, of course, that we are referring here to science not as highly specialized and refined laboratory techniques but as general method. What technical laboratory science adds to the above features of the scientific orientation are, in the main, three things: (a) precision apparatus and techniques of measurement, (b) a high degree of control over the conditions under which the observations and measurements are made (experimental controls), and © quantitative or mathematical reporting and analyzing of the data obtained. These are refinements. They have made possible the highly developed sciences, such as physics and chemistry. They characterize science in its most efficient forms. But they are not to be mistaken, as they so often are, for the fundamental method of science. We cannot use these refinements to any important degree in our ordinary daily conduct, but science, as method, we can use from moment to moment in our everyday affairs.

SOME NOTES ON THE HUMAN BRAIN

Compiled by Robert P. Pula
(via Dr. James Brodus, Transylvania College, Lexington, KY, Russell Meyers, M.D., neurologist,
Scientific American, 1979 and other more recent publications)

Cerebral cortex: c. 1/10" thick
20" x 20" if stretched out

Nervous system cells do not replace or repair; they are constantly being sluffed off. Shortly after
birth, some cells "specialize" to become neurons; then they lose usual characteristics of living cells
except conductivity and irritability.

10^{11} neurons (100 billion), primarily in the brain, plus vast numbers of glial cells whose activity is
only now being explored.

We lose c. 50,000 brain cells per day; between the ages of 20 and 70 we lose 10^{9} brain cells. (1
billion brain cells, but no excuse for senility; still plenty left.)

10^{14} (100 trillion) synapses.

Brain uses 25% oxygen intake of the body; 20% of the blood supply.

Weighs c. 3 pounds.

Characterized as "...a flower at the top of a three-foot stem."

Receives signals from 86 nerves ('connections', 'portals' re 'environments').

1/60 oz. sugar per pint of blood - normal sugar level; variation in either direction leads to coma or
convulsions (ref. Pfeiffer's 'tightrope').

Each of the 10^{11} brain cell has c. 127,000 neighbors. Neurons operate in groups.

Nervous system operates on (or 'puts out') c. 10 watts of electrical power. Nerve cells produce and
conduct electrical charges (i.e., electrical-chemical charges) made up of oxygen and sugar; they fire
often, but need recovery time.

Impulse transmission rate in small nerve fibers equals 1 ft/second, 2/3 m.p.h. In large fibers, c. 225
m.p.h. The point: rate of transmission along nervous system is finite and must be respected.

Single neurons operate on binary principle; but nervous system as a whole not considered a binary
system.

Process note: even bones (the most 'inactive' tissues) are constantly undergoing change.

* Some very recent (1995) research suggests that this 'law' of neurology may have to be re-legislated.
Neuroscience Update

by Robert P. Pula


Since my first scheduled lecture at an Institute seminar (1967) I have urged participants to keep abreast of developments in the neurosciences. Given the neurological underpinnings of Korzybski’s *neurolinguistic/neurosemantic* formulations, that has seemed to me a necessary minimum for our ongoing evaluations of general-semantics derived (mainly) from what Korzybski wrote in 1933. We accept the responsibility to re-formulate whatever in his early text seems no longer compatible with recent findings in *any* of the sciences he drew on to build his system — and to re-evaluate and re-formulate whatever in the derived/invented system may seem flawed, given those new findings.

Parallel to those lectured urgings, I have written much on the subject, most notably in reviews of neuroscientific books. [*I* propose to do that here, not limiting myself to one text, but evaluating the three variably recent publications listed above.

First, a general evaluation, reflected in the not-chronological order in which the books are listed. All three make important reading and study for the general-semantics practitioner. Edelman’s book, however, strikes me as the most rigorously scientific, the most daring, and the one that most strongly and specifically validates Korzybski’s discussions of neurology in general, the mechanisms of abstracting, and his still revolutionary and structurally sound neurolinguistics. Let’s examine the books in sequence.

Gerald Edelman, a Nobel Laureate (1972, for work on the immune system) is Director of the Neurosciences Institute and Chairman of the Department of Neurology at the Scripps Research Institute. He knows whereof he speaks, but more importantly, he knows what *not* to say. This frees him from neo-Cartesian and mystical attempts to ‘explain’ the ‘mind’. Beginning with clearly understood notions, hunches and hypotheses, he is vigorously satisfied to describe what he has done, what he has seen, and to draw conclusions and formulate subsequent hypotheses and theories strongly derived from his activity, the better to proceed to further investigation, further hypothesizing, testing, etc. Dr. Edelman seems consistently aware that it is he who speaks/writes and, therefore, takes responsibility for it. His neurolinguistic sensitivity leads me to suspect that he knows that “the word is not the thing” and that “structure is the only content of knowledge.” He comes across as a forthright non-essentialist.

In his brief Preface he claims that “this is not a scientific book, at least not in the strict sense.” By that I understand (as he says) that he deems the book not as technical and cautious as a more severely formal exposition might be. Nevertheless, I wish he hadn’t made that disclaimer, because I see his
presentation as permeated with scientific orientation and rectitude. He does, though, still have the useless term ‘mind’ in his active vocabulary; perhaps in later work he will be content to limit himself to the structurally appropriate term “brain,” since that’s what he’s talking about. Similarly, I regret his misleading, poetic title (but not the punning subtitle); the title seems one that might show up in the “New Age” section of a bookstore. Well, perhaps that might be a good thing, those readers being much in need of extensional instruction.

Part I of _Bright Air, Brilliant Fire_ is called “Problems” with the sub-chapters named “Mind,” “Putting the Mind Back in Nature,” and “The Matter of the Mind.” I was pleased to see a ‘quote’ from me in the abstract that introduces Part I: “... there has never been a solidly established demonstration of a mind without a body,...” Of course, Edelman isn’t quoting me (he’s never even heard of me), but I have repeatedly said those very words in teaching general-semantics students to combat the elementalism of “mind and body” with, at minimum, the hyphenated “mind-body.” I have evolved to the point now where I recommend dismissing the term ‘mind’ from one’s vocabulary altogether; it’s neither appropriate nor necessary and only generates confusion. “Brain” (evaluating mechanism, semantic reactor, etc.) serves well.

Chapter 1 (“Mind”) is a fine historically based statement of the “problem.” Ranging from Descartes to Brentano, William James and Darwin, he addresses the question of why we are concerned about this stuff anyway. On pp. 5-6 he states “... we want to find out how the mind relates to matter, particularly to the special organization of matter that underlies it.” (Those are my italics.) In my view, reflecting my accelerating tendency toward what I call “unisubstantialism,” [?] no matter, no ‘mind’: i.e., if there be no matter, there be no ‘mind’. (Please note that this is quite different from the famous, dismissive “No matter, never mind.”) As far as I’m concerned (1995), ‘spiritual’ experiences constitute nervous-system events. When the nervous system goes (death), they go too.

Chapter 2 returns to the “beginnings of modern science” with the post-Copernicans Descartes and Galileo, emphasizing the developing dominance of self-challenging scientific _method_ over the prior (but still with us) free-wheeling ‘philosophical’ approach traceable in the West back at least to the pre-Socrates. Of greatest interest for a general-semacist reader might be the evaluation (pp. 13-15) of “cognitive science,” its reliance on Chomskyan notions, and, crippingly it would seem, the assumption of many of its practitioners that they can formulate responsibly (in a structurally sound way) without a central concern for the bio-physical structures and mechanisms of the brain. “One of its most curious deficiencies is that it makes only marginal reference to the biological foundations that underlie the mechanisms it purports to explain. The result is a scientific deviation, ... . The critical errors underlying this deviation are as unperceived by most cognitive scientists as relativity was before Einstein and heliocentrism was before Copernicus.” (p. 14) – or neurolinguistic issues before Korzybski. Let’s re’mind’ ourselves of John Searle’s caveat: “... all sorts of disciplines that are quite unlike physics and chemistry are eager to call themselves ‘sciences’. A good rule of thumb to keep in mind is that anything that calls itself a ‘science’ probably isn’t – for example, Christian science, or military science, and possibly even cognitive science or social science.” [?] Or political science. Or theology (the “Queen of the Sciences”). Or economics. Or, as too-often practiced, general-semantics.

“The Matter of the Mind” (Chapter 3) is a central one, for here Edelman bravely faces up to affirming the ‘material’ (unisubstantial, say I) character of the brain and all its processes. Some of his concluding statements (pp. 29-30): “These [brain] dynamics result from a special chemistry. Alterations of that chemistry or destruction of its anatomical substrate can lead to temporary or
permanent mental changes from elation to unconsciousness to death.”; “... it is the dynamic arrangement ["structure" in the Korzybskian sense] of these substances to create mental processes, not their actual composition, that is essential. It is dynamic morphology all the way down.” And, having questioned the value of explaining ‘mental properties’ at the quantum level (though, surely, that remains the ‘lowest’ level of analysis which subsumes ‘mental properties’), he concludes:

If strict biochemical chauvinism is out, however, so is the liberalism of the computer scientist who assumes a brain software that actually does not exist a priori and then claims that it doesn’t matter what structure [organized hardware: RPP] this software runs on. He makes two fundamental errors, for there is no such thing as software involved in the operation of brains, and the evidence overwhelmingly indicates that the morphology of the brain matters overwhelmingly.

I would like to watch Noam Chomsky reading that.

Having laid his turfwork, Edelman presents Part II, “Origins,” with its chapters (4 through 7) entitled “Putting Psychology on a Biological Basis,” “Morphology and Mind: Completing Darwin’s Program,”* “Topobiology: Lessons from the Embryo,” and “The Problems Reconsidered.” The abstract to Part II contains these telling statements: “... Darwin proposed that minds arose by evolution. What this means is that minds have not always been around [my italics: RPP]: they appeared at some definite time in a series of graded steps.... At the ‘brain of the matter’ is the most complicated arrangement in the known universe.”

A bonus in *Bright Air, Brilliant Fire* is the quoted material that heads each chapter. The header for Chapter 4, “Putting Psychology on a Biological Basis,” includes this: “The mania for handling all sides of every question, looking into every window, and opening every door, was, as Bluebeard judiciously pointed out to his wives, fatal to their practical usefulness to society.” (Henry Adams) Ah, “You can’t say all about anything.” Determine (limit) your domain of investigation and discourse – and remember that you’ve done it.

The thrust of this chapter is that sound psychology as a study, discipline, and practice must be anchored in biology, lest it become and remain (as J. Allen Hobson claims for, at minimum, Freudian psychoanalysis) a form of literary criticism. [*] Edelman adds that “The phenomena of psychology depend on the species in which they are seen, and the properties of species depend on natural selection.” (p. 40) So much for Walt Disney. “The fundamental basis for all behavior and for the mind is animal and species morphology (anatomy) and how it functions.” (p. 41) Edelman is not maintaining here that there are not social, cultural, etc., determinants of behavior, but that the fundamental determinants are precisely the stuff out of which behavior emerges.

Those two quotes from the book lead to Edelman’s updating of Charles Darwin’s contributions, “Morphology and Mind: Completing Darwin’s Program” (Chapter 5), itself a preparation for presenting the core of Edelman’s program, “Neural Darwinism” in Chapter 9 (pp. 81-98). Readers who want to study Edelman fully will do well to see his earlier book, *Neural Darwinism.* [*]

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* “what we need to know in order to understand the evolutionary origins of the human mind ... how the morphology underlying behavior arose during evolutionary history, and how behavior itself alters natural selection.” (pp. 44-45)
Chapters 5 through 11 present much of what we can call Edelman's 'hardware' descriptions, without implying acceptance of the computer (hardware/software) analogy of the brain (which, as we've seen, Edelman doesn't either). And herein we see many of his most original and most daring formulations related to the structure/function of neural stuff. He quite explicitly describes what he has abstracted during and after his laboratory work. And, a main reason why I selected this book for review, he specifies neural behavior in ways that are remarkably supportive of the neurolinguistic analyses and assumptions of general-semantics. I won't re-present his rich, rich pages here. You will (ought to) read them for yourself. What I will do is list some Korzybskian insights and hunches which are congruent with Edelman's recent laboratory-derived formulations. But first, here is a quote that might send general-semanticsists rushing from their studies to buy the book:

Neuronal group selection occurring within maps leads to the production of new kinds of signals, which can then be reentered into earlier maps along with signals from the outside world. This property of reentry allows for what I have called recursive synthesis: Not only are events correlated topographically across different maps without a supervisor, but new selectional properties emerge through successive and recursive reentry across maps in time. (p. 89).

[See also Hofstadter's discussion of loops and recursive structures listed in reference 1 in the endnotes.]

And, again on p. 89:

How can reentry account for perceptual categorization, the function that TNGS [Theory of Neuronal Group Selection] takes to be fundamental in any attempt to relate physiology to psychology? The brief answer is: By coupling the outputs of multiple maps that are reentrantly connected to the sensorimotor behavior of the animal. This is achieved through a higher order structure called a global mapping. A global mapping is a dynamic structure containing multiple reentrant local maps (both motor and sensory) that are able to interact with nonmapped parts of the brain. ... a global mapping allows selectional events occurring in its local maps to be connected to the animal's motor behavior, to new sensory samplings of the world, and to further successive reentry events.

The specificity that Edelman is capable of is demonstrated in an explanatory footnote, also on p. 89 – what a page!

When a visual stimulus of the right type (a lit bar moving up and to the right) is present, the responses of the neuron and its neighbors all oscillate at the same frequency (forty hertz, or forty cycles per second). When the stimulus is removed, the spikes and field potentials no longer correlate.

Here are some congruent Korzybskian formulations (not 'all') as I choose to state them in 1995:

The brain is a multi-level mapping system.
A map is not its presumed territory.
A map does not (cannot) represent all of the presumed territory.
Maps are self-reflexive, i.e., recursive and self-referring. We can make coordinated maps of maps indefinitely.
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“Structure is the only ‘content’ of knowledge.” (Korzybski)

The understanding of multiordinal terms, structures and mechanisms is necessary for adequate evaluating/formulating.

The nervous system/brain manifests feedback mechanisms, (Edelman’s “reentrant circuits, connections, pathways, signaling,” and “reentrant cortical integration model”) including neuro-linguistic feedbacks, which modify (restructure) the brain, all this expressed as further recursive behavior, attitudes, perceptions, orientations, etc.

Understanding of “combinations of higher order” (not merely statistical masses) is necessary for understanding the combinatorial functions of the brain (nervous system as a whole).

Categories emerge from behavior.
Categories constitute behavior.
Abstracting is neuro-structurally determined.
Et cetera. [6]

The titles of the Chapters in Part II that I have just alluded to are “Topobiology: Lessons from the Embryo” and “The Problems Reconsidered,” (Chapter 7) i.e., the problems related to how to formulate about the brain. Within Part III, “Proposals”, ar.: “The Sciences of Recognition” (Chapter 8), “Memory and Concepts: Building a Bridge to Consciousness” (Chapter 10), and “Consciousness, The Remembered Present” (Chapter 11). In Chapter 10 he quotes Wittgenstein as affirming ‘Concept’ is a vague concept,” and comes close to my contention that ‘consciousness’ qualifies as a characteristic of complex neural systems, just as relative ‘hardness’ is said to be a characteristic of certain rocks, and ‘color’ a resultant from the interaction of extra-neural frequencies and the frequencies of the visual centers of some brain; in other words, that ‘consciousness’ can be understood as a characteristic quite like ‘eye color’, and not beyond the realm of bio-physics, surely not a-physical or ‘supernatural’. [7]

But I can’t just allude to Chapter 9, “Neural Darwinism,” which Francis Crick prefers to call “Neural Edelmanism.”

A key notion of neural Darwinism is that brain science is a science of recognition but that “… recognition is not an instructive process. No direct information transfer occurs, just as none occur in evolutionary or immune processes. Instead, recognition is selective.” (p. 81) Apparently, stuff happens. As Shakespeare wrote, perhaps ‘knowing’ more than he recognized, “We are such stuff as dreams are made on, ….” Here we have Edelman at his most theoretical, most daring, and, therefore, most important.

As the dust jacket to his Neural Darwinism has it, “Its central idea is that the nervous system in each individual operates as a selective system resembling natural selection in evolution.” Here we have a highly specified (but related to genuine ‘deep structures’) formulation of (personal) “ontogeny recapitulates phylogeny.” And, if individual nervous systems act as selective systems, we have a strong neuroscientific underpinning and ‘validation’ for the inevitability of individuality and individualism within the human species given (eventually) to the communal-cooperative behavior that Korzybski called “time-binding.” Nervous system, is not nervous system, etc., even if they do co-operate within the ‘same’ group.

But what does Edelman intend by “selection” in this context? First, we must consider “population thinking” (Chapter 8), a mode of ‘thought’ in biology “developed largely by Darwin” in which variation
is seen not as an 'error' but as a prerequisite source of "... diversity on which natural selection acts to produce different kinds of organisms."

As Jacob Bronowski observed in *The Ascent of Man*:

This contrasts starkly with Platonic essentialism, which requires a typology created from the top down; instead, population thinking states that evolution produces classes of living form from the bottom up by gradual selective processes over eons of time. (p. 73) ["].

Other key terms Edelman uses in special ways for his purposes are "instruction," "recognition," and "memory" or [n.b.] "heritability." By "recognition" he intends "the continual adaptive matching or fitting of elements in one physical domain to novelty [my italics: RPP] occurring in elements of another more or less independent physical domain, a matching that occurs without prior instruction." [Again, my italics. Consider dynamic map-territory relationships at this level as constituting a process whereby changes are elicited, teased out, derived (synthesized) ex post facto. An interactive, reciprocal bottom up and top down system; "top down" since what is adapting-selecting must be structurally 'predisposed' to so adapt-select: RPP.] "The process of adaptation occurs by selection on those organismal variants that are on the average fittest, and what makes them fittest does not require prior explicit information ("instruction") ..." It is important that we, especially we general-semantics readers, remember levels (orders) of abstracting as we read this. What Edelman seems to be saying here is that at this level "selection" represents the blind operation of a matching (structural compatibility) mechanism of evolution, both group and individual. A sort of dynamic bio-templating, powered by the structure-eliciting effects of the sun.

Evolution works by selection, not by instruction. There is no final cause, no teleology, no purpose guiding the overall process, the responses of which occur ex post facto in each case. (p. 74)

And further:

"... evolution, acting by selection on populations of individuals [statistically relevant: RPP] over long periods of time, gives rise to selective systems within individuals. Such selective systems acting in one lifetime in one body are called somatic selective systems. Thus, an evolutionary selective system selects for a somatic selective system! (p. 74)

Levels. Orders. An example of evolved, selected, consciousness of multiordinal abstracting.

Chapter 9, "Neural Darwinism" presents one of the best arguments I know of against the "homunculus" acting as chief programmer and referee in the brain: [7]

A potent additional reason for adopting a selective rather than an instructive viewpoint has to do with the homunculus. You will remember that the homunculus is the little man that one must postulate "at the top of the mind," acting as an interpreter of signals and symbols in any instructive theory of mind. If information from the world is processed by rules in a computerlike brain, his existence seems to be obliged. But then another homunculus is required in his head and so on, in an infinite regress. Selectional systems, in which matching occurs ex
post facto on an already existing diverse repertoire, need no special creations, no homunculi, and no such regress. (p. 82)

Again on page 82, Edelman summarizes his position and its theoretical implications:

If we assume that brain functions are built according to a selectional process, we must be able to reconcile the structural and functional [structural-functional: RPP] variability of the brain with the need to explain how it carries out categorization. To do so we need a theory with a number of essential characteristics. It must be in accord with the facts of evolution and development; account for the adaptive nature of responses to novelty; show how the brain’s functions are scaled to those of the [rest of the: RPP] body as the body changes with growth and experience; account for the existence and functions of maps in the brain – why they fluctuate, how multiple maps lead to integrated responses [cortico-thalamic integration?: RPP], even in the absence of language. Eventually, such a theory would also need to account for the emergence of language itself. And finally, such a theory must account for how the various forms of perceptual and conceptual categorization, of memory, and of consciousness arose during evolution.

To be scientific, the theory must be based on the assumption that all cognition and all conscious experience rest solely on processes and orderings occurring in the physical world. The theory must therefore take care to explain how psychological processes are related to physiological ones.

The theory I have proposed to account for these matters is known as the theory of neuronal group selection (TNGS).

We can call this “Edelman’s Program.” He spends the rest of the book specifying it and making what I see as a very strong case for its viability. I argue that I have detailed enough so far to convince a general-semantics readership that Dr. Edelman’s book qualifies as an immediate ‘must’ for their current reading. In the remaining space that I can take for this part of my review (I can see Editor Mayper looking skyward), I will list the chapters not yet referred to and point to a few formational, general-semantics-related highlights not yet touched on: “Language and Higher Order Consciousness” (Chapter 12); “Attention and the Unconscious” (Chapter 13); “Layers and Loops: A Summary” (Chapter 14). Chapters 8 through 14 constitute Part III of the book.

Part IV, “Harmonies” comprises “A Graveyard of Isms: Philosophy and Its Claims” (Chapter 15); “Memory and the Individual Soul: Against Silly Reductionism” (Chapter 16); “Higher Products: Thoughts, Judgments, Emotions” (Chapter 17); “Diseases of the Mind: The Reintegrated Self” (Chapter 18); “Is It Possible to Construct a Conscious Artifact?” (Chapter 19); and “Symmetry and Memory: On the Ultimate Origins of Mind” (Chapter 20). These are followed by an “Epilogue” and “Mind Without Biology: A Critical Postscript.” As we might expect from such a tour-de-force, there is an ample annotated “Selected Readings” section, but there are few notes other than some footnotes and a “Credits” section acknowledging sources of quotations and illustrations.

I wrote in 1970, “That language structures reflect neural structures and, by feedback mechanisms, may ALTER neural structures, is one of the eminently plausible speculations of Korzybski in support
of which we have, as yet, insufficient data." Much of what follows in Edelman’s book provides additional support for what Korzybski was writing from the 1920’s through 1950.

Here are some of the remaining highlights: The formulation of “primary” and “higher-order consciousness,” with animals in general limited to primary consciousness, humans showing both, and both specified in terms of neuronal structures.

It is curious that we, as human beings with higher order consciousness, cannot “see the world” with our primary consciousness alone. Creatures with primary consciousness, while possessing mental images, have no capacity to view those images from the vantage point of a socially constructed self. Yet one who has such a self as a result of higher-order consciousness needs it to link one mental image to the next in order to appreciate the workings of primary consciousness! Higher-order consciousness cannot be abandoned without losing the descriptive power it makes possible. (I often wonder whether this abandonment is what some mystics seek.) (p. 124)

The second major nervous system organization is quite different [from the limbic-brain stem system]. It is called the thalamocortical system. (The thalamus, a central brain structure, consists of many nuclei that connect sensory and other brain signals to the cortex.) The thalamocortical system consists of the thalamus and the cortex acting together. ... It is very fast in its responses (taking from milliseconds to seconds), although its synaptic connections undergo some changes that last a lifetime. ... its main structure, the cerebral cortex, is arranged in a series of maps, which receive inputs from the outside world via the thalamus ... It does not contain loops so much as highly connected, layered, local structures with massively reentrant connections. (p. 117)

(Cf. Korzybski's descriptions of animal and human abstracting (Science and Sanity, pp. 331-334), and his "rough and oversimplified hypothetical diagram," (Science and Sanity, pp. 193-194), and related discussions of cortico-thalamic integration.)

Inasmuch as human beings are the only species with language, it also means that higher-order consciousness has flowered in our species. But there are strong indications that we can see at least some of its origins in chimpanzees. Both species can think, not just have concepts, and chimpanzees also seem to have some elements of a self-concept. Certainly, the basis for recognizing a subject-predicate relationship in humans requires an emerging consciousness of the distinction between the self (in the social sense of “selfhood”) and other entities classified as non-self. Chimpanzees have behaviors indicating that they make the distinction, but they lack true language and so I claim that what I call higher-order consciousness cannot flourish in them, as it does in us. (p. 125)

Nor, presumably and observably, can time-binding.

Embodiment imposes ineluctable limits. The wish to go beyond these limits creates contradiction, fantasy, and a mystique that makes the study of the mind especially challenging, for after a certain point, in its individual creations at least, the mind lies beyond scientific reach. Scientific study recognizes this limit without indulging in mystical exercises or illusions. The
reason for the limit is straightforward: The forms of embodiment that lead to consciousness are unique in each individual, unique to his or her body and individual history. (p. 136) [14]

Chapter 15 (the first of Part IV) “A Graveyard of Isms: Philosophy and Its Claims,” briefly addresses some of the distinctions that can be made between those social behaviors called philosophizing and those that involve engaging in self-challenging, self-testing, value-driven scientific formulating. Edelman (like Korzybski) rejects the notion of a value-free science, at least for biology: “A biologically based epistemology has no such luxury.” (p. 162)

The last chapter, unnumbered, is titled “Mind Without Biology: A Critical Postscript,” in which Edelman states, “My goal is to dispel the notion that the mind can be understood in the absence of biology.” (p. 211) He points out that this chapter is not just tacked on at the end but presents extensions of points made in the body of the book, “... intended for the experts, but also for the curious who may want to know more.” Indeed, this 42-page chapter qualifies as a monograph in its own right. It, and the text, conclude with this rather Korzybskian clarion: “... through its connections to what makes us uniquely human, a biologically based epistemology will enrich our lives.”

This concludes my extended report on and observations about Gerald Edelman’s Bright Air, Brilliant Fire. I have not covered ‘all’ of what he has to say. The reader may find that what I have left out is more personally instructive than what I have included in this review. There’s one most useful way to find out.

Let’s move now to Patricia Smith Churchland’s Neurophilosophy, the most epistemologically focused of the three books under consideration here. The Bulletin reader may see this one as, at least initially, a primer of contemporary neuroscience. Part I, “Some Elementary Neuroscience”, can serve as a sophisticated text for undergraduates. Like Edelman, she accepts, though perhaps not as flatly, Hippocrates’ ancient formulation of embeddedness: “One ought to know that on the one hand pleasure, joy, laughter, and games, and on the other grief, sorrow, discontent, and dissatisfaction arise only from the brain. It is especially by it that we think, comprehend, see, and hear, that we distinguish the ugly from the beautiful, the bad from the good, the agreeable from the disagreeable. ...” (unnumbered p. ix).

I observe here that she also (who doesn’t?) includes Descartes’ reflex-‘explaining’ drawing, as does Edelman above and Rose below, and most others who give a survey of notions in brain study. This gives us further evidence of Descartes’ central position in the long development of modern neuroscience, even if we reject his unfortunate mind/body dualism. As I asked when introducing Karl Pribram at the 1984 Alfred Korzybski Memorial Lecture, “Is it time to put the hearse before Descartes?”


Now I must admit here, that a respected associate, Dr. Russell Meyers (see endnote 1), has opined that there seems much in Patricia Churchland’s presentation that seems ‘amateurish’. But I must also admit that I don’t agree with that evaluation. Though Churchland is trained in philosophy and is not
herself a hands-on (laboratory-trained) neurologist and certainly not a neurosurgeon (as was Dr. Meyers before his ‘retirement’), she seems to have well absorbed what such people have to teach; at the suggestion of her husband, Paul M. Churchland, also a noted philosopher of science [17], she has consulted with many leading researchers. I suspect that Russell Meyers’ quiet lack of enthusiasm may be related to Patricia Churchland’s disparaging of “outdated and discredited positivist ideas” (p. 4) and to her assertion that there is, for neuroscience, “... no Governing Paradigm in the Kuhnian sense.” (p. 6) Russell Meyers would probably insist that we have such a paradigm, though a not-yet “governing” one: general-semantics. [14] We can claim for general-semantics a ‘governing’ role in the sense that it applies to all human evaluating, but we well know that it does not ‘rule’. In any case, it seems to me that Churchland’s presentation constitutes a fine place to start if you haven’t already been there — and even if you have. Her Part I, almost as long as Edelman’s entire book, provides an extensive description of the dynamic ‘hardware’ of the nervous system/brain, in language informed by modern (Korzybski-like) neurolinguistic sensibility. If her language evolves (or is jolted) to a Korzybskian mode, we can expect most structurally sound formulating from her.

For our (well, my) purposes, Parts II and III, where she presents extended discussions of “Recent Developments in the Philosophy of Science” and “A Neuropsychological Perspective,” seem most pertinent. Together (almost page for page) they constitute the second half of the text, and, especially Part III, expose us to Churchland’s original contributions coming from her neuroscience-influenced philosophical background.

Chapter 6 (the first of Part II) gives an “Introduction and Historical Sketch,” much of which will seem familiar to those who have heard Dr. Stuart Mayper’s Institute seminar-workshop lectures. We sometimes see in students of general-semantics an insufficient awareness of the long tradition of philosophical and scientific writings that Korzybski acknowledged drawing on when, over a period of at least twelve years of intensive labor (1921-1933), he developed and formulated his system. I deem it impossible to put into perspective and to appreciate Korzybski’s (and our) position in the broad sweep of “paradigm shifts” that characterize human formulative evolution, without at least a survey knowledge of that evolution. Dr. Churchland provides some of the necessary information in her sixth chapter.

Chapter 7, “Reduction and the Mind-Body Problem,” addresses a central issue for the neurosciences and for any respectable, up-to-date ‘philosophy of mind’; namely, so-called reductionism.

Inevitably the naturalistic approach leads us to inquire into the possibility of a unified theory of the mind-brain, wherein psychological states and processes are explained in terms of neuronal states and processes. [I would like some single quotes there: RPP.] A fundamental question concerning this possibility can be put as follows: Can mental states and processes be reduced to brain states and processes? Can one be a reductionist? [You’d better: just don’t identify, i.e., confuse orders of abstracting: RPP.] ... This is central to my program, for obviously, if reductionism is a hopeless cause, then it would be foolish to search for an explanation of mental states and processes in terms of brain states and processes. (p. 277)

That, I affirm, is tough. Facing up to the issues, clearly, openly, po prostu: (straight from the shoulder).
Patricia Churchland sharply eyes difficulties with the term "reductionism." In a fine aside, she says, "Sometimes it is used as a synonym for 'behaviorism' (which is a case of the vague hounding the vague) or as a synonym for such sins as 'materialism,' 'bourgeois capitalism,' 'experimentalism,' 'vivisectionism,' 'communism,' 'militarism,' 'sociobiology,' and 'atheism.'" Despite these potentially distracting 'connotations', she insists that "reduction" is the most appropriate term for what she intends, namely, a relation between theories such that one theory (or set of phenomena) reduces to (can be explained in terms of) another, more basic, more general theory. She is concerned, by means of this "intertheoretic reduction", to "assess the prospects for reduction of psychological theories to neuroscience." (p. 278)

A consequence of intertheoretic reduction is explanatory unification, and in the sciences such unification is considered a good thing. If one theory can be explained by another and thus reduced to it, then our understanding of the phenomena described by the theory is greatly enhanced. (p. 279)

I suggest here that our notion of reductionism can be enriched and clarified by examining the writings of Tadeusz Kotarbinski on "reism" (i.e., "thingism") and "concretism," and its derivative linguistic methodology which he calls "semantic reism," which, through reductive transformations, generates "reistically meaningful" sentences. In keeping with its anti-"metaphysical" stance, Kotarbinski's position represents a stern call to responsibility in formulating -- a heroically anti-blather position. [1]

Again on page 279, her affirmation that "... there do not yet exist fleshed out neurobiological theories with reductive pretensions," seems on target with relation to neurobiology in general, but Dr. Churchland, apparently not aware of the work of Korzybski and, by extension, Russell Meyers, might find such a fleshed out theory in their writings. Perhaps she has now read Science and Sanity and her more recent writings show it. I will need to search them out. Meanwhile, in the rest of Chapter 7 (indeed, throughout the book), she does an excellent job of engaging the reader in a consideration of how the details of neuroscience (data) can and should inform the generalities of philosophy, particularly "neurophilosophy."

In Chapter 8 Churchland raises a central question, "Are Mental States Irreducible to Neurobiological States?" The reader by this point is likely to be confident that her answer is "No", they are not irreducible, i.e., they are reducible. She fairly, though (and sharply), describes two main schools of objection, the "boggled skeptics" who claim that the brain is too complex for us brains to ever understand 'it', and the substance dualists who claim either that the 'mind' is a nonphysical substance, different altogether from the brain, or that 'mind' represents emergent properties of (from) the brain which are substantially different from the brain; sophisticated Cartesianism taking refuge in the notion of "qualia," i.e., introspective experiences that are not reducible to neural states. (p. 327) Her descriptions are detailed and rigorous and seem to me to fully justify her "Concluding Remarks" on pages 346-347:

The common theme uniting the objections to intertheoretic reduction considered in this chapter has been that mental states are not physical states, either because they are the states of a nonphysical substance or because they are emergent nonphysical states of the brain in the sense that they cannot be explained in terms of neuronal states and processes. None of these objections seems to me compelling. Surprisingly, perhaps, some physicalists have generated
antireductionist arguments of their own from within a broadly physicalist framework. ... these newer arguments share with the older arguments a devotion to the idea that it is because mental states have meaning and because mental states enjoy logical relations to one another that the reductive program is forever thwarted. ... The antireductionist arguments are perhaps more subtle than Popper’s variety [see pp. 259-60, 286, 338-342, 377, and 379. RPP], but their root motivation derives from a common conviction about the irreducibility of intentionality. [Their objections, I take it, would also encompass Korzybski’s “intensionality” with an “s”: RPP]

Since we have (via Stuart Mayper) incorporated discussion of some of Popper’s views in our Institute summer seminar-workshops, I should give some indication of how Churchland treats him.

Karl Popper is an unorthodox logical empiricist who resisted the idea that the body of scientific knowledge accumulates by the confirmation or verification of hypotheses. In a startlingly different picture of the dynamics of science (1935, 1963), [sic] he argued that hypotheses are worthy of acceptance only if they resist falsification. His point was devastating and simple: it is easy to find confirming instances of hypotheses – too easy for this to be the right methodology. ... in general, I should try as hard as possible to falsify my hypothesis. ... Popper’s claim was that if the scientist accepts hypotheses by finding [only] confirming instances, he will end up believing a great many false hypotheses and following a great many dead ends. On the other hand, if he has a hypothesis that has withstood tough attempts at falsification, then he can accept that hypothesis – not as true, not as confirmed, but as the best hypothesis available so far. (pp. 259-260)

That pretty much encapsulates the aspect of Popper we cover in the seminars; a strong statement of the mechanism, the method of Korzybski’s principle of general uncertainty. Churchland goes on to relate Popper’s exaggerations (“hypotheses are interesting only [my italics: RPP] if they are bold”) and the difficulties in inventing crucial, potentially disconfirming experiments.

She shows Popper to hold that, if disconfirming experiments are difficult, intertheoretic reductions must be even more difficult and, therefore, suspect. But we of the Institute have recognized Popper’s regressive Aristotelianism, not to mention Platonism. So does Patricia Churchland:

The crux of Popper’s argument against reductionism depends on his idea [sic!] that there exists a world of abstract, nonphysical objects with which we interact when we reason, discover a proof for a theorem, find consequences for a physical theory, use language, think about arithmetic or quantum mechanics or Gödel’s incompleteness results. He calls this realm of abstract objects “World 3,” and its denizens include arithmetic objects such as the integers, the irrational numbers, and the relations between them, mathematical objects, logical objects, and relations between them, scientific theories, the as-yet undiscovered proof for Goldbach’s conjecture, and the as-yet undeduced consequences of theories in physics, neuroscience, and so forth. It also contains some “embodied” objects such as books and musical scores. Popper calls the physical world that conforms to physical laws “World 1,” and he claims that mental events and processes belong to a distinct “World 2.” (p. 338)

Churchland continues (pp. 338-340) to detail and critique Popper’s trinitarian formulations. Bulletin readers may find this section especially useful as a cautionary tale, a benchmark of failure against which we may rate ourselves as formulators who strive to be conscious of our own abstracting.
Chapter 9, "Functionalist Psychology" says much about the insufficiencies of "folk psychology". Indeed, throughout her book she addresses the limitations of almost exclusively intuitive (unanalytical, non-experimental, reluctant to challenge itself) folk psychology, "folk physics", and "folk theory." These seem particularly important passages for those general-semanticists who may be inclined to rely uncritically on press and television accounts of scientific happenings, reports of 'studies', etc. – and their own in-head preferences. (The reader may avow that a general-semanticist shouldn't rely uncritically on any reports, studies, etc. I agree.) While showing respect for these "folk" methodologies, pointing out that 'they' are where our more sophisticated, evolved methodologies begin, ("Some of the theory may be acquired as we learn the language, ...") she is concerned to demonstrate how they can be revised and improved. That's not a bad description of the goals of science in general.

Again, as in Chapter 8 and throughout the book, Churchland's concern is whether or not psychological levels of description will reduce to neurobiological levels of description, a question that "functionalist" psychologists answer in the negative.

The core idea of functionalism is the thesis that mental states are defined in terms of their abstract causal roles within the wider information-processing system. ...

In general, functional kinds [of states] are specified by reference to their roles or relational profiles, not by the material structure in which they are instantiated. (p. 351)

Functionalist psychologists, in Churchland's description, do not deny the material realization of 'mental' states (i.e., they do not maintain the Cartesian split); they accept that 'mental' states are implemented in "neural" stuff, but claim that "types of mental states could have too many distinct material realizations for a reductive mold to fit." (p. 352) Functionalism, Churchland says, is the dominant theory of 'mental' function among contemporary philosophers. She also points out that it shares and is sympathetic to some of the assumptions of the computer metaphor of brain function. Like Edelman, while recognizing the usefulness of the computer metaphor for some levels of analysis, Churchland considers the "brain is like (or is) a computer" theory inadequate, or not a theory at all:

The dominant metaphor of our time likens the brain to a computer, though this dominance is owed perhaps less to tight-fitting similarities than to the computer's status as the Technological Marvel of our time. Only in a very abstract sense is the brain like a computer: ... there are profound dissimilarities between brains and standard serial electronic computers. ... Most pernicious, perhaps, is the suggestion that the nervous system is just the hardware and that what we really need to understand is its "cognitive software." The hardware-software distinction as applied to the brain is dualism in yet another disguise. ... Metaphors can certainly catalyze theorizing, but theories they are not. (p. 408, in Chapter 10)

She concludes that the claims for the autonomy (irreducibility) of psychology are "misbegotten."

If, as Churchland tells us, functionalism is the dominant theory of 'mental' function among contemporary philosophers and the computer analogy the dominant metaphor (or simile), it behooves general-semanticists to evaluate them. Patricia Churchland's Chapter 9 provides an excellent guide and analysis for that purpose.

The final full chapter of Neurophilosophy, Chapter 10 ('Chapter' 11 is two pages 'long') is called "Theories of Brain Function." Here Churchland's goal is to reach beyond (extrapolate from and
interpolate to) the cellular level of nervous system dynamic structure to theories of how brains work as systems – systems of neurons and attending structures. Chapter 10, as we might expect, represents the culmination of her book.

In this chapter she summarizes some (not ‘all’) present-day theories of how brains may work. She does it thoroughly, clearly and consciously, i.e., with a rich awareness of what she’s doing. Here is her chapter program: 10.1, “Introduction,” in which she sets the scene, suggesting necessities and risks involved in theorizing about brain functions. This section is rich in epistemological insights and observations; highly recommended. In 10.2, “In Search of Theory,” she addresses (again) the question of whether or not “anywhere there was a kind of ‘Galilean combination’: the right sort of simplification, unification and, above all, mathematization – not necessarily a fully developed theory, but something whose explanatory beginnings promised the possibility of real theoretical growth.” (407) A hearty welcome to the world of general-semantics. 10.3, “Tensor Network Theory,” presents her first theory for consideration. She shows some lingering elementalism here, willing as she is to tolerate the “co-evolution” of “functional and [italics mine: RPP] structural hypotheses.” Even “co-evolution” is not sufficient, suggesting as it seems the evolution of two separate ‘things’. What I say here does not constitute a quibble. Churchland so often comes so close to a Korzybskian neurolinguistic sensibility, it seems mildly sad that she doesn’t quite make it. Again, as I suggested above, maybe when she reads Science and Sanity .... Nevertheless, sound descriptive writing.

10.4, “Cartoon Story of What a Tensor Does in Sensorimotor Control,” describes a Hofstadterian robotics fantasy involving “Roger,” a “very simple crab-like critter.” The concern here is to mimic sensorimotor coordination as a way to ‘explain’ some aspects of brain function. A detailed, somewhat mathematized exposition: necessary, since, as has been reported, “the devil is in the details.” 10.5, “Tensor Network Theory and the Vestibulo-Ocular Reflex,” gets more explicitly neurobiological. “The VOR [vestibular-ocular reflex] is the neuronal arrangement whereby a creature can continue to look at an object even though the head moves in any of its possible directions ....” (p. 433)

10.6, “Phase Space Sandwiches,” constitutes “A further demonstration of the fertility of the tensor network ....” (p. 441) “Phase space” can be understood by us general-sematicists as levels (orders) of abstracting located. Don’t be shy about that. A. R. Luria ‘legitimized’ that sort of insight decades ago. [17] And it seems to me that a uni-substantialist orientation requires that we overcome whatever ‘localization’ (minus identification) inhibitions we may have. Again, a well specified, suggestively diagramed section. (A not so unimportant aside: note how well uni-substantialism correlates with non-elementalism.)

10.7, “Tensor Network Theory: Further Questions” addresses, among others, the question, related to learning, “whether the tensor network theory approach can accommodate some kinds of plasticity.” (p. 446) Of course, to be worth a darn, it had better. Andras Pellionisz, whom Churchland has been much drawing on here, “envisages a hierarchy of nested geometries that interact with one another and with the external geometry.” (p. 448) 10.8, “What Has Motor Control to Do with Mental States?”, seems so obvious to me that, at first, I abstracted a mild shock in reading it. (Given our organism-as-a-whole orientation and our recognition that all living constitutes action, the general-semanticist reader might not be surprised at my mild shock.) Yet it needs to be asked in such a presentation as Churchland’s. As she says, “higher functions are surely not discontinuous with lower functions; they are not a sphere unto themselves.” (p. 451)
10.9, "Computational Models of Neuronal Computation," begins with the statement, pace Sejnowski, Hinton, et al., although she does report some of their work approvingly, "Within the AI [Artificial Intelligence] community there is a growing dissatisfaction concerning the adequacy of sequential models to simulate the cognitive processes of creatures with brains." (p. 458) She details why this is so ("... they have been disappointing in the simulation of fundamental cognitive processes such as pattern recognition and knowledge storage and retrieval,"), and proceeds to discuss connectionist approaches, the growing disappointment with "top-down" (potentially Platonic) orientations, etc. These presentations might well be read in conjunction with Gerald Edelman's primarily "bottom-up" formulations. An interesting notion appears in the section titled "Relaxation: Searching for the Best Hypothesis," in which "relaxation" appears as a kind of benign collapse: "The general idea of relaxation is that a network converges on a global result on the basis of local interactions, where units have access to the responses of their neighbors and adjust their own responses according to how their neighbors are responding." (p. 464) The notion of "iterative modification" (cf. Edelman) is introduced as a mechanism that provides for the eventual "relaxation" of a given network into "a stable, optimal state," or, as we might say, dynamic equilibrium. 10.10, "The Neurobiology of an Attentional Operation," Churchland's final example of recent theoretical developments, deals with Francis Crick's speculations about the neurobiological mechanisms that subserve visual attention. (pp. 474-478)

She begins her account with a statement of the 'problem' of what I have called (in lectures) emerging or constructed gestalts: how is it that our perceptions, which are unitary (images, etc.) arise from dispersed cellular activity of the (in this case, visual) cortex? The possibility of these combinations being "hard-wired in" is ruled out because there's not enough neuronal hardware to account for the brain's observed plasticity in image generation. Crick's suggestion is that there must be temporary associations of cells that generate gestalts, which allows the same cells to participate in the generation of other gestalts at another 'time'. Combinations of various orders under the rubric of space-time dynamism. One more welcome to the world of Alfred Korzybski.

There's more to this section of Chapter 10 (accounting for relatively 'permanent' cell assemblies subtending word recognitions, etc.) but enough has been reported to suggest that here, too, is material important for a general-semanticist to evaluate.

Chapter 11, "Closing Remarks," is appropriately short -- two pages. Among her observations here is that the current formulative revolution resulting from brains studying brains "will be at least the equal of the Copernican and Darwinian revolutions." Korzybski thought so in the 1920's.

Chapter 11 is followed by few but useful notes for the whole book. There is a very extensive bibliography (834 items, including Edelman but not Rose) for those who want to check Churchland out and/or study further.

As recorded in endnote 1, I reviewed Steven Rose's earlier, excellent book, The Conscious Brain, in 1978. I sent him a copy and he responded with a gracious letter of thanks and demurrers about how laudatory the review was. This time around we might not have that problem.

I do recommend that Bulletin readers study Rose's The Making of Memory: From Molecules to the Mind. In my earlier review I remarked that "Rose discusses these issues [social implications of neurobiology] from the point of view of what might be called a gentle Marxism -- not at all doctrinaire,
but concerned. The non-Marxist reader seems not likely to experience any violent aversive response here.” [4] That may not be the case with The Making of Memory. His first chapter seems filled with semiparanoid populist, communitarian assertions that might be more appropriate in a high school debate where the affirmative side is defending the proposition, “The establishment (parents in disguise, authority in general) plans our misuse. ‘They’ are not to be trusted — like, ever.” Rose opts for the ‘collective’ as the proper subject of scientific study, while downplaying the importance of the individual. Clearly, the ‘collective’ representing a high order abstraction (formulation) generated by interactive individuals, both must be studied with equal concern and assiduity. He also presents a view of ‘classical’ science which verges on caricature and which, if ever appropriate, surely hasn’t been so for the last hundred years. (Roentgen discovered X-rays in 1895; Becquerel, Marie Sklodowska-Curie and Pierre Curie radioactivity (which Marie named) in 1896; Łukasiewicz (indeterminacy), Korzybski and Heisenberg formulated “uncertainty” during the first three decades of our century; Popper called for “disconfirming” attempts as tests of scientific claims in the 1930s, etc. etc.)

Here are some of Rose’s sentences and phrases which I deem inappropriate in what is ostensibly a report to the general public on what he’s been up to as a neuroscientist: “...profound chasm that has developed within the fragmented culture of a western industrialized society, a chasm that the very power and professed objectivity of science are seen by some as deepening.” (p 7); “...the sciences that can account for its [human openness to environments] consequences are no longer those of individual psychology and neuroscience, but of the collective of individuals who comprise human society.” (p. 7); “We may feel superior to those who prefer astrology and tarot cards to astronomy and statistics, but it is a superiority tinged with anxiety.” (p. 10); “As one of the radical critics of a reductionist science in the last decades, I have taken my own part in these debates, and I have lived the best part of my life with a feminine sociologist of science whose searching exposure of the nature of a masculinist and largely white science as it is practiced in western capitalist societies will soon reveal the weak places in any uncritical defence [British spelling] of a science which refuses to recognize its limitations.” (p. 11); “Democracy is about the control of power. I am sufficiently a political product of the 1960s to continue to believe that if knowledge is not democratized, power can never be — ...” (p. 11); no mention of the requirement that the ‘democratization’ of knowledge requires study among the democrats.

When these attitudes surface in Rose’s text, I experience unintegrated dissonance, unexpected in this context; the difference between dissonance in, say, Mozart and some ‘modern’ composer who hasn’t fully digested the role of dissonance in music, and makes mere empty noise. I am not objecting to Rose’s announced intent to reveal how he functions as a neuroscientist, laboratory behavior, the politics of grant reception, etc. Indeed, that constitutes for me a fascinating, honest aspect of his presentation. I do object to being proselytized along with my dose of neurobiology. Rather like having to listen to a sermon at the Salvation Army shelter while cooking aromas fill the dining room.

This caveat aside, there is much to learn and admire in Steven Rose’s well-written book. Let’s look at some of it.

Early on he states a position that I have touched on in this review:

... when I talk about ‘the methods of science’ in this somewhat formal way I certainly don’t mean ‘the methods of nineteenth-century physics’ as if there were only one science — as if a slightly old-fashioned view of physics, actively propagated by traditional philosophers of
science and all school teaching, was what every different science, from chemistry to psychology and economics, aimed to become. [See John Searle’s warning, p. [31 ] above.]

What I mean by science and its methods is something a good deal broader and less restrictive: a commitment to a unitary materialist [uni-substantialist?] view of the world, a world capable of exploration by methods of rational inquiry and experiment. ... 

The workings of the mind, I repeat, are to be described in terms of the properties, structures and processes of the brain. (p. 4)

Rose makes a disclaimer with regard to an attempt on his part to ‘explain’ the workings of the ‘mind’. Apparently, for him, “description” does not equate with “explanation.” Perhaps that’s because he can still (1992) make such statements as this: “The simultaneous translation offered by the Rosetta stone became a code-breaking device, and for me it is a metaphor for the task of translation that we face in understanding the relationship between mind and brain.” [My italics: RPP] That elementalism that I have highlighted by italicizing between suggests that Rose is not yet a uni-substantialist, though committed in his research to describing only ‘material’ structures. And it is his very descriptions that I recommend for study by practitioners and students of general-semantics. However, he seems at a neurolinguistic, neuroepistemological crossroad, from which he might find his way through a thorough reading of Science and Sanity.

Rose’s main concern in The Making of Memory is to describe the dynamic structures/mechanisms of remembering. After important chapters dealing with methods, history, epistemological considerations, metaphors for memory, etc., the descriptions begin in earnest with Chapter 5, “Holes in the Head, Holes in the Mind.” The chapter begins with strong examples of eidetic (sharply visual) memory. He relates these to the need to forget in order to function, i.e., memory must be selective for the job (or day) at hand. This is further illustrated by a consideration of the differences between child and adult remembering.

Many, if not all, young children apparently do normally see and remember eidetically, but this capacity is lost to most as they grow up. What is in young children an apparently general capacity has become a remarkable rarity in adults. This change in the quality of memory perhaps also helps to account for the very different ways we remember our childhood experience and our adulthood. (pp. 103-104)

Rose characterizes this as a “dramatic change in what would seem to be a fundamental human activity.” (p. 104) He describes the selecting/filtering process whereby memories are constructed:

... for humans, to memorize something is an active process. ... we select salient information that we need to commit to memory from the blooming, buzzing confusion of the environment around us. To help in the process, we possess quite elaborate blocking or filtering devices to prevent new information from cluttering up our memories.

For instance, there is a mechanism called perceptual filtering which ensures that, of all the information arriving at one’s eyes or ears at any given time, only a small proportion is actually registered ... (p. 104)
As we general-semanticists know, sometimes that works well—we abstract. [19]

The mechanism of perceptual filtering is described as a mechanism of mapping; let’s call it neuromapping. The description will likely sound familiar to readers of this journal. The necessary, individual focusing it represents is, of course, potentially distortive of the relationship between the environment and the mapping organism: how close is the match between the map and the territory is what counts.

As a function of the maturing of these space-time process-mechanisms, memories become more and more linear. (Let’s remember that even “non-linear” equations qualify as a subset of meta-linear [i.e., overarching linear] space-time formulations. Life is an irreversible process. Old ways of talking need to be replaced.

Rose proceeds to specify the relationship between behavior and neuro-structure by examining cases of Alzheimer’s and Korsakoff’s syndrome. (I [RPP] once jotted down a ‘definition’ of ‘schizophrenia’: Rimsky—had Korsakoff’s Syndrome, but -Korsakoff did not.)

...the brains of Alzheimer’s sufferers shrink and the neurons themselves change their appearances; their internal structures become disorganized, forming patterns which, because of their appearance under the microscope, are called jungles and plaques. (p. 111)

This can deepen our understanding of Korzybski’s “Structure is the only ‘content’ of knowledge.”

On page 121 Rose makes the point that tissue trauma ‘generates’ functional deficit but, careful scholar that he is, reminds us that much remains to be specified in this relationship. His wariness in these circumstances may derive from his persistent elementalism. Here are some things he says, all on one page (123):

...the person who owns that brain...
...the brain is embedded in a person...
These properties are intrinsic to brains and the humans who possess them...

Such expressions mystify the presentation and seem the likely source for his shyness in accepting the ‘fusion’ of structure-function. (I put ‘fusion’ in quotes to emphasize my Korzybskian view that we are not dealing here with a fusion of discrete phenomena, but a structured totality mistakenly [historically] split by long-established linguistic convention.)

Chapter 6, “Animals Also Remember,” can be read with profit in conjunction with Edelman’s evolution-as-selection discussions, especially as a correction for what might be seen as Rose’s incipient Lamarckianism. Nevertheless, I found instructive the formulating on page 138 about genes involved in (as I would put it) relative invariance under transformation (the stable ‘background’ [specificity] that allows change [plastic restructuring] to happen without collapse into ‘chaos’). On page 139, Rose gives us a clue to the neurostructure of abstracting: “The fact that there are many more retinal cells than optic nerves to which they connect means that each nerve integrates information from many individual cells.” This is a very Lurian and, it seems to me, sound observation.

One more passage from this chapter can (many more could) focus our attention:
If the brain is to interpret images arriving at the retina of the eye, these pathways, with their compressions and expansions, have to be organized in an orderly manner – and indeed it can be shown that there is a precise topographic mapping of the retina onto the neurons of the lateral geniculate and a further mapping of these cells onto those of the visual cortex. That is, there is a type of map of the retina in the lateral geniculate, and a further map, albeit transformed at least as much as Mercator’s projection transforms the globe of the world into a two-dimensional plan on a classroom wall [my italics: RPP], in the visual cortex. At each level of mapping, from the retina to the geniculate to the cortex, analysis of the information occurs so that it is classified in terms of signals for edges, angles, movement, light of different wavelengths (colour), etc. In the cortex further mapping and classification by increasingly complex criteria occur to generate the pattern of neural activity which we define as vision and perception. (p. 139)

Chapter 7, too, “The Evolution of Memory” can be read alongside Edelman’s evolutionary formulations. Like Edelman, Rose rejects the quantum level of analysis as useful for a starting ‘place’ for describing evolutionary processes, particularly as related to brains. They don’t say why. Perhaps it’s because they see quantum level stuff as the same (un-evolved) since the presumed ‘big bang’. Something like that must be the assumption of cosmologists who make far-reaching inferences about the age and history of the ‘universe’ based on present observations. Be that as it may, Rose selects the molecular level as fundamental. Thus the subtitle of his book and the title of Chapter 8, “Molecules of Memory.” Here the emphasis is on the biochemistry of brain function (Rose describes himself as primarily a biochemist), the biochemistry of memory in particular. The subtle complexity of such considerations is indicated in a footnote to page 199:

...that even a simple chemical interference with a complex biochemical process results in multiple effects is a graphic example of the folly of the pharmaceutical industry’s way of speaking about the ‘side effects’ of drugs. Introducing an exogenous chemical like a drug into the body has a multitude of biological consequences, some anticipated, others unexpected – but never ‘side-effects’. The phrase [sic: should be “phrase”] is a misnomer, concealing the reality that such consequences are inevitable, even though they are ones that the researcher or the clinician doesn’t want or hadn’t thought about. No drug is a ‘magic bullet’ with only a single target.

A great strength of this chapter in particular is that Rose makes his presentation as a series of questions to which he gives historical and current answers, then raises questions about the answers, including his own. Indeed, this may be the greatest strength of Steven Rose’s entire book: his persistent willingness to expose himself as research scientist-epistemologist at work. He repeatedly show us “that man behind the curtain” and, unlike the Wizard of Oz, urges us to pay attention to him.

Chapter 9, “God’s Organisms? Sea Slugs and Sea-Horses,” sets out and details criteria Rose formulated to guide his research in the biochemistry of memory. These seem so instructive to me that I will list them here for you, dear reader, to reflect on:

[1] There must be changes in the quantity of the system or substance, or the rate of its production or turnover, in some localized region of the brain during memory formation. (p. 207)
[2] The time course of the change must be compatible with the time course of memory formation. (p. 208)

[3] Stress, motor activity or other processes which accompany learning must not, in the absence of memory formation, result in the structural or biochemical changes. (p. 210)

[4] If the cellular or biochemical changes are inhibited during the period over which memory formation should occur, then memory formation should be prevented and the animal [or human] be amnesic; and vice versa. (p. 211)

[5] Removal of the anatomical site at which the biochemical, cellular and physiological changes occur should interfere with the process of memory formation and/or recall, depending on when, in relation to the training, the region is removed. (p. 212)

[6] Neurophysiological recording from the sites of cellular change should detect altered electrical responses from the neurons during and/or as a consequence of memory formation. (p. 213)

Again, reading this chapter and its detailed explanations of research on particular organisms-with-nervous-systems provides us non-laboratory readers with sturdy data which we can use as we consider correspondences between among neural structure-functions and behaviors such as formulating ('thinking'), painting, musicing – even attempts to escape ('transcend') ourselves as nervous systems: mysticism.

The discussion (still in Chapter 9) of long-term potentiation (LTP), pp. 227-240, seems particularly instructive, especially as a cautionary tale about what I'll call “premature specificity”: rushing to inferences already implied in your research questions, then identifying (in the Korzybskian sense) your conclusions with what you're describing. Taking your inferences for facts. We are reminded here of the need to maintain a probabilistic, uncertainist stance, even in the presence of the most 'successful' research.

The “Six Criteria” generate in Chapter 10 (“Nobody Here But Us Chickens”), on pp. 247-271, detailed descriptions of their application in Rose's laboratory work on chick brains.

Chapter 11, “Order, Chaos, Order: The Fifth Criterion,” returns to the concern for situations in which brain lesions do not produce expected deficits. [29] I was reminded here of Edelman's strong statements about the uniqueness of brains, particularly human ones. Generalized expectations may not always apply. This is perhaps, for a general-semanticist reader, Rose's core chapter, for here he most forthrightly brings together the epistemological, procedural and self-challenging stances that energize his research and show his position as of 1992. And here he plainly faces up to his struggle with 'reductionism', of which more below.

Chapter 12, “Interlude: Laboratories Are Not Enough,” is again autobiographical and interesting, but will not detain us here. I can recommend it for those who are interested in the methods and politics of science practice, especially for young readers who may be about to embark on a career therein.

The final chapter, 13, “Memories Are Made of This” (thus, quoting a popular song, Rose reminds his readers of his populist impulses), summarizes the main points of The Making of Memory. Steven Rose reminds us, too, that his mission has been as much literary as 'scientific'. He quotes Gayle Green as saying that “All writers are concerned with memory, ...” But, writes Rose:
... this book is about memory seen from the, *perhaps peculiar* [my italics: RPP] – perspective of the neuroscientist. (p. 308)

I wrote in the margin of my copy, "Don’t apologize, Steve. Not peculiar; more structurally sound." Then Rose writes this:

... the brain processes that are in increasingly well-understood ways responsible for memory (even, I would maintain, *are* memory) – (p. 308)

That, despite Rose’s prior and later disclaimers, sounds pretty reductionist to me – precisely what Edelman called “silly reductionism” and what I have referred to earlier in this review as “reductionism with identification.” But Steven Rose is nothing if not flexible, a flexibility seemingly born of what general-semanticists call “consciousness of abstracting”:

Why should I worry if I abandon my lab persona and its reductionist epistemology when I close the door of the animal house and switch off the centrifuge?

...I have no option but to accept that we do indeed all live with such different epistemologies; when I try to remember the name of the person who phoned me a few moments ago I don’t consciously do so in terms of protein phosphorylation or neuronal bursting. But I have no difficulty in accepting that these processes are going on as I make my memory and that in some way which I still only partially understand they can be translated into that memory.

Let’s conclude this review with some observations about reductionism and metaphor, a double concern of all three of our writers. I deem it the case that any neuroscientific attempt to describe/explain the ‘mind’/brain must be inescapably reductionist in the sense that Patricia Churchland uses that term: the explaining of one domain of discourse in terms of another. Despite their reservations, both Edelman and Rose are doing it. The hitch comes with the problem of *identification*, i.e., confusing orders of abstracting; something evaluating brains routinely do. What seems needed is a mathematized, probabilistic, uncertainist, non-identifying reductionism – clear-eyed but tentative.

Explaining one domain of discourse in terms of another (a deeper yet broader) domain of discourse inescapably involves us in metaphorical behavior, i.e., metaphor-making and simile-making behavior. If I struggle to formulate so that the structures of (relationships of) my formulations fit-match (are ‘like’) the structures/relations of the eventually non-verbal stuff I’m talking about, I will be engaged in metaphor and simile production. The question, then, becomes what metaphors, what similes seem structurally appropriate – and can I consistently operate under the rubric of consciousness of my own abstracting.

Edelman and Rose reject the computer model (information processing machine, logically-functioning neural networks, etc.) of the brain, not because they deny that brains do those things that computers do (after all, computers are designed by human brains), but because they consider that ‘reduction’ too limited and, in Edelman’s case, object to the notion that there is a priori ‘software’ which runs on neural ‘hardware’. I have indicated above the models they struggle with. Patricia Churchland is less aversive, yet also wary:
The computer metaphor should be handled with extreme caution. As we have seen, the theory of levels borrowed from computer science defines prematurely and inappropriately the levels of organization of the brain. (Churchland, p. 384)

That seems anachronous: theories of levels preceded and contributed to the development of computer science (cf. Russell, Chwistek, Korzybski, et al.), but the metaphor point seems valid.

An important job for serious students of general-semantics is to read their texts, discover why they say what they say, then 'put it up' on the Structural Differential.

Endnotes


2. See the header quote to Chapter 19 (p. 188) from Julien Offray de la Mettrie, which begins: “It is clear that there is but one substance in the world, and that man is its ultimate expression.”


6. I claim that all of this and more is abstractable from Science and Sanity and Korzybski’s other writings. See especially two remarkable chapters in Science and Sanity, XVIII, "Mathematics as a Language of a Structure Similar to the Structure of the World," and XIX, "Mathematics as a Language of a Structure Similar to the Structure of the Human Nervous System."

8. Jacob Bronowski, The Ascent of Man. Boston/Toronto: Little, Brown and Company, 1973. Bronowski gave the sixteenth Alfred Korzybski Memorial Lecture before the Institute of General Semantics (or members thereof) at the Harvard Club, New York, April 7, 1967. In contrast to Edelman, Bronowski does see ‘error’ at the heart of evolution, but fortuitous error: “The nature of life is only expressed in its perpetual evolution, which is another name for the succession (and the success) of its errors.” He further states, “The principle of natural selection is the second strand in evolution; it is what gives the observations a structure and turns them into a theory. Selection is not strictly a causal mechanism, but a statistical one; and evolution is therefore the work of chance.” See “Towards a Philosophy of Biology,” General Semantics Bulletin, No. 34, 1967. (1968), pp. 17-22.


12. The next time your physician (who took the Hippocratic Oath) tells you, “It’s all in your mind,” say “Yes. Now let’s get on to fixing it, if we can.” The quote from Hippocrates (c. 460-377 BCE) reminds us of how long this insight and its related debates have been around.

13. Paul Churchland is well-enough known to have been quoted in Scientific American speaking against what is known as “folk psychology” in favor of “...an entirely new kinematics and dynamics with which to understand human cognitive activity, one drawn perhaps [contra Edelman: RPP] from computational neuroscience and connectionist A.I. [Artificial Intelligence].” Dr, Churchland is also credited with urging the application of advanced mathematical formulations to modeling higher order human brain functions, a la Korzybski’s call related to “combinations of higher order.” See Scientific American, Special Issue, Mind and Brain, September, 1992, p. 80.


15. There is much of value to see in the noble Kotarbiński’s work (he was a genuine hero of civilization). These are some of the most conveniently available sources for English-reading scholars:


__________, The Development of Mathematical Logic and Logical Positivism in Poland Between the Two Wars. London: Oxford University Press, 1945.

__________, Philosophy and Ideology: The Development of Philosophy and Marxism Leninism in


19. For a brief summary of Korzybski's view of abstracting, see Robert P. Pula, "A General Semantics Glossary (Part III)," ETC.: A Review of General Semantics, Vol. 49, No. 4, Winter 1992-93, pp. 470-473. It begins: "A most useful thing to do when first encountering the term abstracting as used in general-semantics is to divest yourself of your accustomed reactions to the term as used in the culture-at-large. ... First and foremost, abstracting is intended to describe the major mechanisms by which human nervous systems/brains respond to and organize behavior. [my italics: SAM] Abstracting, then, details a process, i.e., an activity with specifiable phases: ..."

general uncertainty. In my thirty years of teaching general semantics I have encountered enthusiasts who seemed to see general-semantics as an appropriately certain system designed to replace all former inappropriately certain systems. They were usually among those who understood "non-Aristotelian" as "anti-Aristotelian." Part of my job has been to instruct them otherwise.

Korzybski said more than once that all statements are only probable in varying degrees. (1) Sometimes, if we work hard, if we take pains to examine and formulate in a structurally sound way, we can make statements which check out well. But as a matter of orientation, of day-to-day and long-term expectations, we do well to take an uncertainist stance.

* Robert Pula edited the General Semantics Bulletin from 1977-1985 and served as Director of the Institute of General Semantics from 1983-1986. He was recently named Director Emeritus by the Board of Trustees of the Institute of General Semantics.
On March 7, 1918 Jan Łukasiewicz, the Polish logician who formally originated multi-valued logics, delivered a speech at Warsaw University on the need for "indeterminacy" in formal logical systems. His was among the earliest recognitions that, in a process, space-time world, we must commit to what I call gradient evaluating; that gradient evaluating must become our dominant mode, with two-valued evaluations relegated to the subdomain of "special cases."

By 1924, Korzybski, who knew the work of Łukasiewicz, had already extended Łukasiewicz’s formal indeterminacy views to a principle of general uncertainty to cover all human evaluating; given the characteristics of human symbol systems and nervous systems — we abstract. Drawing on Einsteinian insights, he affirmed that "all we know and may know is a 'joint phenomenon' of the observer and the observed." (2)

In 1927, the German physicist Werner Heisenberg, limiting himself to measurements attempted within the emerging field of quantum mechanics, enunciated his "principle of uncertainty," derived from his realization that, because of the disturbing effect of the measuring instrument (the new electron microscope and its human manipulator), he could not specify at once the position and velocity of sub-atomic particles. An element of uncertainty was recognized at the subtlest level of observation and measurement yet achieved by humans.

By 1933, in Science and Sanity, Korzybski formulated Heisenberg's uncertainty as restricted, a special case of Korzybski’s principle of general uncertainty.

Korzybski did not say that we cannot make relatively secure statements; he maintained that, becoming conscious of abstracting, we can attend to structure, we can achieve greater degrees of extensionality and make quite secure statements at a given date — and be prepared to revise those statements should new structural data require it. Loss of certainty does not imply the impossibility of confidence. Indeed, we become more secure if we adopt an uncertaintist, prob-
abilistic orientation because our statements will become more likely to make structural matches with the (eventually) non-verbal domain we're talking about. Greater predictability → greater security.

Let's specify again (3) this, at first, mysterious seeming but rather simple notion of the structural, relational match between language events and non-verbal events.

Bob's Left Hand, Dorsal View

Here we have a non-verbal structure represented and, of course, I have labeled it. Now I make a statement about the 'hand': "There are eleven digits to Bob's left hand." My statement posits a structure (complex of relations) not found on the drawing and, if the drawing is structurally sound, not found on my non-verbal "left hand." The structure of the language does not match the structure of the non-verbal event. (Yes, in a process, space-time world, my hand qualifies as an event.)

Eventually, in a given lifetime, the most insecure formulator must be the certaintist who is consistently buffeted by unpredicted, unanticipated, unexpected events; nervous systems do not take well to such repeated structural mismatches/insults.

We can summarize what I have said and the implications of those words with a labeled drawing I have used at Institute seminars: "The Uncertainty Umbrella."
I note first that umbrellas are for protection, prophylactics against inclemency. Our recognition of and acceptance of uncertainty (probability, ‘fuzziness’) allows us to huddle with a smile under the Uncertainty Umbrella which represents an orientation, an expectational set more in keeping with events/structures in extra-neural space-time.

But once committed to uncertainty, we conscious abstractions can exert ourselves to ‘local’ precision, the lower-order responsibility to get it as ‘right’ as we can. Knowing that “the map is not the territory” in no way excuses us from making the very best map we can at space-time S-T (1 ... n). As we learn from Fuzzy Logic, Sets, etc., the acceptance of gradients related to temporality leads to greater precision in observation, and predictive map-making becomes more structurally congruent with what we’re mapping.

A quarterly report (map) of departmental activity within a corporation cannot represent ‘all’ of what happened during that quarter. It probably won’t represent all who made useful inputs (or otherwise) during that period. The report is not the quarter. The report-maker needs to remember that. But the report had better be as sharp and inclusive as it can be made,
otherwise, relatively secure predictions cannot be made on its basis; the department and the corporation may be headed for trouble.

The *balance* between uncertainty at the orientation level and precision at the here/now level of action, is what Korzybski recommended. The usefulness of this balance applies to all human evaluating— even to playing. (4)

NOTES AND REFERENCES


ADDENDUM

My use of quotation marks in this glossary is in conformity with the conventions of the General Semantics Bulletin. To wit:

SINGLE QUOTES (Extensional device)

1. To mark off terms and phrases which seem to varying degrees questionable for neuro-linguistic, neuro-physiological, methodological or general epistemological reasons.

2. To mark off terms used metaphorically, playfully, etc.
   a. 'mind,' 'meaning,' 'space,' or 'time' used alone, etc.
   b. "...the semantic reaction formulation could serve as a 'bridge'... between Pavlovian classical conditioning and Skinnerian operant conditioning." (Silverman)

SINGLE QUOTES (Standard usage)

To indicate a quote within a quote.

DOUBLE QUOTES (Standard usage)

1. To indicate a term or phrase used by some referred-to person but not necessarily indicating a direct quote. Example: What Korzybski referred to as the "semantic reaction."

2. To indicate a direct quotation from a named source.


[Robert Pula's response to "Glossing Over Feminism" (see pages 440-454 in this issue) will appear in the Spring 1996 ETC.]
Knowledge, Uncertainty and Courage:  
Heisenberg and Korzybski

by Robert P. Pula

In 1940 Gaston Bachelard published a statement which nicely focuses one of the human points I wish to make in this paper:

The psychological and even physiological conditions of a non-Aristotelian logic have been resolutely faced in the great work of Count Alfred Korzybski, Science and Sanity. ¹

An avowed continuator of Korzybskian formulations in the fields of neurology and medical epistemology, Russell Meyers, made a similar psycho-logical observation in 1958:

Now that we are able to stand a little apart from historical developments and view his life’s work in some perspective, it can hardly be doubted that he grasped, as few had done before him and certainly none had so systematically and comprehensively treated, the abiding significance of linguistic habits and the communicative processes-in-general to all of Man’s thinking-and-doing, from his loftiest metaphysical, epistemological and mathematical efforts to the most casual, trivial and mundane performances of his everyday living. ...Korzybski’s position was wholly comparable to that of Copernicus and Galileo, who had been impelled by their private inquiries during the Renaissance to challenge the popular ptolemaic cosmology and aristotelian mechanics of their day. It required an uncommon personal integrity, an unusual brand of courage and a plenum of physical energy to spell out the overt and covert effects produced by these widely-pervading, pathologic neuro-semantic processes in the community of humans. Korzybski was, as we now know, quite up to this formidable task.²

Quite different responses to the dawning non-Aristotelian age can be noted in the behavior of two of its hesitant giants in the 1920’s: Max Planck and Albert Einstein.

Kurt Mendelsohn, in The Quest for Absolute Zero (wherein he repeatedly notes the formational and relative character of ‘absolute zero’ even if ‘it’ should be achieved) described some of the preferences of Planck the man which inevitably affected the formulating and on-going semantic reactions of Planck as scientist:

The great success of the quantum theory which was demonstrated by Einstein’s and Bohr’s work at first over-shadowed the emptiness of the quantum concept as such. Only Planck himself remained reticent and cautious, realizing from the beginning that his great theory was sadly incomplete. As he saw it, there were two ways out of the dilemma: either the quantum concept was a mathematical oddity or it must have a deep physical meaning. For a long time he favored the first alternative. [Italics mine: RPP] His strong feeling that the laws of nature must be ‘absolute’, required that relations between physical quantities should be free from ambiguity.... He much disliked Boltzmann’s statistical approach because, to his way