

PERCEIVING OUR PERCEPTIONS OF STRUCTURE*

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Some problems are so formidable that they remain largely ignored and so complex that even to consider solving them may seem irrational. Perceiving the underlying order and coherence in a multi-level, multi-dimensional, multi-causal universe is one such enormously important, enormously ignored problem. We are referring to the long-growing challenge to the capacity and resources of the human brain and nervous system; in fact, to the very intelligence of the species.

Most imperative are the problems we have brought upon ourselves in the areas of sex, politics and religion. For the mass of half-developed human beings, the critical challenge is to understand our failures to predict and act together, on time, upon the most important issues. This problem becomes increasingly crucial in the highly technological space-age which we ourselves have created.

According to this speaker's manner of viewing the current age with its complex 'factual' relationships and existing structures, the major need is for immediate new evaluations and solutions, characterized by appropriateness and adequacy.

The immeasurable benefits of specialization must be reinforced and improved if for no other reasons than to resolve present crises, the most pressing of which include the pollution of water and air, attrition of energy resources, and our widespread 'meanness' to others, leading to crime, war, drug abuse, and 'mental' ill-health.

These problems, no worse than others which mankind has resolved in centuries past, will yield only to the extent that they are widely confronted, factually accepted, eventually better understood, and acted upon with sufficient cooperation. In the midst of accelerating, almost overwhelming knowledges constantly uncovered and explored through research, there remains, in the deeper levels of human knowledge, vast ignorance about the existences with which

mankind must cope.

Premises and assumptions about what is going on do not keep up with recurring change and complexity. Chronic belief in half-truths, along with plain ignorance and superstition, leaves countless people unaware and uncomprehending of the relationships and relevance of events in an interconnected world which influence all of us.

A chief difficulty for most of us lies in the attitudes acquired from the earlier learning of specific words, sentences, and the beginnings of mathematics and failure to accept the dynamic structure of the small to the large. For we learned not only the words and the multiplication tables, but the incidental feelings and emotions and attitudes as well, favorable and unfavorable, hurtful and/or exciting as the case may have been.

The dating and indexing of the origins of these behaviors which Alfred Korzybski had us bring to bear upon the harshness and over-discipline, also the requirement that we note the significance of softness and over-praise, help in the resolutions of the difficulties caused in adults. The extensional methodology enhances the methods utilized by most authorities on learning and 'mental' health. Without such therapy whole areas of living may be restricted by negative allness, absolutism, and identification.

Some "Effects" of Fragmented Perceptions of the Unfragmented World

In the midst of accelerating, proliferating and fragmenting knowledges have come the fragmentation of 'minds', alienation from comprehension, and failures of predictability and evaluation. This has been occurring in the deteriorating situations---from person to person, from group to group, from local to global---which we must confront.

Taught without regard to their connections and

*As prepared for presentation at the annual Alfred Korzybski Memorial Meeting at New York University, The John Ben Snow Memorial Room, Bobst Library, 8 p.m., April 29, 1978.

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larger significances, the massive specializations of knowledges have made for piecemeal and alienated thinking. The result is a superficiality which daily grows less tolerable. This separatist thinking suppresses the individual's ability to synthesize, develops a proneness to over-criticize and a tendency to block out information and ideas---indeed, a gross failure of education.

The premise that the universe is one unified, interrelated organism seems correct.¹ What appears as random, chaotic and accidental is usually incidental to the vast, deep changes going on, and usually may be traced to transformations often of too short or too long range for human sensory observation.

Apparent chaos may be shown to be deceiving compared to the patterning and regularity of structures frequently revealed from longer and more profound investigations. Chaos also often occurs with certainty and regularity when underlying structures get into critical relationships, and when a wide range of presumed causal factors do not work together. Only three of countless examples are: predicting the weather, how long marriages will last, and the workings of the stock market.

The economy of a nation interacts with its energy resources, which interact through use of the technologies available, which interact with the physical and 'mental' health and the communication capacities of its people, which are tied in with government and politics, which are affected by educational and religious institutions and by traditions. These interlocked influences occur irrespective of any verbal constructs in lectures, textbooks, or libraries or our sayings to each other.

'Meanings', a word avoided by many scholars, are limited to the relationships perceived. A relationship requires at least one other object to be related to. A part is important only because of its relationship to other parts and to a whole---something more or less than a sum of parts. So are people important in different ways and degrees to each other as they interact in respect to their environments, the 'natural' as well as the linguistic-semantic. Perception of relationships requires a discipline of listening, looking, reading and other ways of sensing and observing.

Even a stone on the side of a mountain does not remain forever 'inert' in its relationships. Most relationships extend invisibly, inaudibly, indefinitely out of bounds of ordinary perceptions. Gravitational pulls, electromagnetic and chemical activities, temperatures,

humidities and other factors influence the interactions of the stone with its environment; this is aside from interventions of people, as when the stone, set flying by traffic, hits a windshield. For people, for the stone, or for anything else, parts are important only because of their specific, changing relationships.

The relationships whereby the universe carries on for better or worse are, of course, seemingly infinite. They are so vast and so complicated that they make no sense to many people. Nevertheless, order and organization are continually transforming the apparently random, the confused, the disorderly. There remains the question raised by Norbert Wiener as to what things, people or institutions will win out,² will finally survive. With loss of energy, differentiation for organization and growth disappears. However, the tendency toward death, more broadly called entropy, may possibly be defeated by the negentropy (as derived from information theory) of the growing enclaves which mankind could catalyze if it would.

Ways of Talking About Relationships: General Semantics and General Systems Theory

If we were to try for a perspective upon the entire universe, we would become aware of a realm within a realm of the existences which influence us and with which we must cope. The realm of non-human, non-verbal, and, often, apparently non-purposive relationships and situations is different from the realm of assumptions and their linguistic outcomes. Ideas and feelings, which may become revealed as language behaviors, emerge from the unconscious levels. Of paramount importance for coping with the changing world is the necessity for the assumptions to have a structural similarity with the 'existences'---the dynamic structures (many of which appear permanent) perceived within the relationships which influence us and which we influence. However, this similarity is not easily maintained; the updating of assumptions to meet the changing world requires a discipline. This discipline, which is labeled general semantics, engages another level of language, a meta-language, a language about language, for the necessary correction, by promoting awareness of major premises, which are largely hidden in the 'unconscious'.

To help bring about these objectives, two overlapping ways of viewing, with their meta-languages derived from the methodology of science, are available: namely, general semantics and general systems theory. One major contribution of general semantics is a new and powerful methodology which uniquely emphasizes the illumination of our processes of knowing about our

knowings of the specifics, especially bearing upon the assumptions, conscious and unconscious, as they surface in language behaviors. At another level of language, not sufficiently under command by the great masses of people, this methodology provides some fifteen formulations pertinent to most of our behaviors and which are applicable at laboratory, clinical, and every day living levels.

Major examples of these formulations are searches for relationships, predictability, consciousness of abstracting, non-identification, non-allness, proper evaluation, etc. As expected at its beginnings in the 1930's, to the extent that general semantics becomes incorporated in our general education and everyday living, we experience widespread improvement in both our lifestyles and in our educations.

Some ways of viewing and talking about the 'existences' may also be derived from general systems theory. Relationships may be supplemented through observation of what are called systems, sub-systems, super-systems, isomorphism (structural similarity) and their many parameters. General semantics scholars frequently substitute the word 'structure' for the word 'system'. Other words relevant to this orientation to a world of change and complexity, of complexity within complexity, are 'organization', 'hierarchies', 'transformations', 'equilibria', 'steady states', 'entropy', and 'negentropy', within and among the systems-structures. The scholars do not avoid inspection of complexity, whether or not it appears organized, but they are freed from very common Aristotelian ways of observation.

General systems theory also provides ways of viewing objects, situations and people in their relationships; that is, the connections and the assemblies that are usually seen differently by each human being. Both general semantics and general systems scholars assume what is obvious to them; namely, that the universe consists of open and relatively closed systems-structures and degrees between. These words represent their major ways of perceiving.

The importance of relationships was made crucial by Alfred Korzybski in his book, Science and Sanity³, which dealt with general semantics. Some scholars consider Ludwig von Bertalanffy's General Systems Theory⁴ as an extension of or a partial supplement to Korzybski's treatment of order, function, relationships and invariances under transformation. But Korzybski's methodology-discipline goes far beyond general systems theory into the processes of perception. Korzybski's epistemology (our knowings about

our knowings) applies in the correction and updating of the many unconscious premises from which we abstract in our everyday living. Correction to their 'fact' phenomena becomes possible as the premises concerning what is existing are brought into or 'creep' into consciousness of our language behaviors, whether oral, listened to, read, written or otherwise communicated. The keen observer of language notes what is said, if anything, about the original saying about the assumed existences. The manner of speaking, writing, observing, etc., is as revealing as what is said. It is revealing to the observer who knows what to look for in respect to both the sender and the receiver of the message.

As The Methodologies Come Together

In borrowing from general systems theory, general semantics may incorporate into its epistemology what is called isomorphism. This formulation concerning structural similarities, that is, map-territory relations, provides a neat, very helpful way of talking to correct language structures and the underlying premises into more correspondence with the presumed existing non-verbal structures, whether experienced directly or stored in memory.

Alfred Korzybski was especially concerned with our behaviors toward knowledges as expressed by the adequacy and appropriateness of our evaluations. The improvement of predictability and communicating-relating with the environments is helped by the methodology-discipline which he developed.

The basic process of communicating and learning may be described as a series of abstractings, sometimes called isomorphic transformations, that is, a 'retention' from environmental structures (situations, things, people) into language structures. Ordering of abstractings occurs in different levels as descriptions, summaries, and the perspectives of high order abstractings, often into theories, if not philosophies. Indispensable to understanding these behaviors is Korzybski's comparison of 'thought' processes making a map correspond to its geographic territory, with the processes of fitting premises and statements into correspondence with their 'fact'-territories or events. Imperative is a consciousness of the ordering of our abstractings--our partial knowings at best.

Applied to knowledges as encased in words are three non-Aristotelian premises; namely, (1) the map is not its geographic territory, the statement is not its 'fact'-territory; (2) maps or words do not say all; (3) maps and statements may be made of maps

and statements into different orderings of abstractings. This self-reflexiveness, this reacting to semantic reactions --- one triggering another reaction into another, may go on intermittently and with a measured redundancy, indefinitely. These reactions usually cease as the speaker becomes unable to draw on more relevant knowledges and experiences. The semantic reactions may take the form of a 'train of thought', serially or in parallel.

From the feedbacks of social cybernetics,⁵ comes teleology, a sub-system of general systems theory, which is another name for (presumed) purpose. Purpose opens for communication and learning some available explanations which are a major business of education to make at all levels. Purposes, often hidden silently in the unconscious levels, determine goals and directions of our behaviors.

Purpose may be regarded in light of function and structure and opens consideration of the multi-levels and dimensions by which our world presumably carries on. In many, 'purpose' comes under 'control' in a new dimension.

Called feedbacks, and feedbacks within feedbacks, from cybernetics (originally 'steersmanship') and a back and forth circularity of lower and higher level abstractings, the self-control to perceive relationships among the knowledges becomes possible. If the communicator is to correct his assumptions underlying these behaviors, he needs silently to talk to himself about his talking (communicate about his communicating). With sharp inspection for 'factual' relationships, the necessary structural similarity of language to existing 'fact'-territories may result. 'Factual' truths in the original statements require an isomorphism of the 'fact'-structures with the language structures. Whether achieved by random 'purpose' or by 'conscious' choice, this is one factor in human advance throughout history.

In the present state of neurological research, semantic isomorphism can only be posited. The basis of this, however, is in the formation of images, a neurological mirroring of the 'existences' being perceived.

Furthermore, there is need for another neurological mirror self-reflexively activated to 'map' the mirroring (the images) of the original situation. By analogy, the second mirror may be talking, 'reflecting' reflexively, about the correspondence of the ordering of abstractings to the situation referred to.

Both or one of the 'mirrors' may be 'cracked', 'clouded', 'bent', and otherwise biased, causing distortion of the images, and further distortion of the 'fact' territories.

Until neurological research tests such hypotheses, we must rely upon 'verified intuition' and experience in accepting this particular explanation of the relevance of epistemology to knowledges.

In this way of viewing the world, the general systems theory and general semantics scholars aim with new emphases to design research and teaching to ever-better reveal the 'factual' phenomena. General systems theory also posits organization, hierarchies, transformations, equilibria, steady states, entropy, and negation of entropy within and among the systems-structures as hypotheses for testing. They do not avoid inspection of the greatest of complexities whether or not they appear organized.

Korzybski posited time-binding which I have been using as an overall description of communicating--- the transmission from person-to-person, group-to-group, organization-to-organization, generation to generation of the 'ideas' and reports of experiences. Time-binding refers to our behaviors in the taking in of information, the organization of such materials, the coding, decoding, recoding, and neurological recording into language symbols and structures. Because different languages and various forms of recording experiences and technologies of mankind are supported from the memory storages, no formulations need be lost which would benefit others in the future.

Statements Concerning Multi-Dimensions Are Not the Same As the 'Existences' to Which They Refer

While the above may seem laboriously obvious, do people necessarily act in the manner I have described? How many people are able to avoid the confusions referred to?

The meta-language of general semantics based upon such formulations as consciousness of abstracting, ordering of abstracting and extensional devices enables us to understand reading, speaking and writing as partial mappings. An intense inspection of language structures may reveal the falsity, incompleteness and bias which the structure of the language itself may foster. Corrections occur as the differing and special attitudes are brought to bear upon the separation of descriptions from opinions. At the 'factual' levels, nothing exists except in its

relationships, which are very frequently falsely perceived and acted upon.

The very words used to guide us into perceptions of relationships are subject to identification of abstractings as if they were the first and primarily important fact-events. But without such words people would not know 'how' and 'what' to observe if they are to become acquainted with a world of change, of similarities and differences; particularly of differences within the similarities. Some such necessary words used in this paper as 'structures' (patterning of events), 'order' (successions and betweenness), 'function' (the diverse working together of structures), 'transformations', the 'relative invariances under transformation' (maintenance of basic similarities in their structures) label processes which appear to recur as differences arise from each generation of changes. An example is the maintenance of the species from generation to generation. Through 'mutation', diversity is introduced among the persisting structures.

Structures exist in multi-dimensions and multi-levels of order and patternings. In terms of general systems, they take the form of systems, sub-systems and super-systems.⁶ In terms of general semantics, the multi-dimensions occur on at least three levels: the macroscopic level accessible to the senses; the microscopic level accessible with the aid of devices which extend sensory perceptions; and the sub-microscopic levels, the inferred character of which has been 'established' by the scientific validation of hypotheses.⁷

What To Observe To Close the Epistemic Gaps In Our Knowledge

Knowing about the knowing processes of situations in which we listen or read, as we learn in lectures, broadcasts, references in the libraries, or in interpersonal communication in our homes, neighborhoods, schools, businesses, etc., requires a personal discipline. Without an epistemology to ascertain and correct assumptions and premises underlying the various communications, we remain helpless to deal with vast ranges of falsities with which our students and ourselves are bombarded. With a command of the epistemology we are discussing, a student may observe the language behaviors in their settings long enough and deeply enough to ascertain the patternings of language behaviors so that he may infer the unconscious premises from which the falsities are emerging.

Not until the student, or anybody else is able to recognize inferences in himself will he be able to recognize inferences in so-called information which he receives and to interpret the falsities coming from unconscious premises underlying the messages. Inferences become more valid as there is emphasis upon specific operations and relationships, and as there is care in qualification of statements. The student can generate an intense search for relationships only when he internalizes and applies something similar to the extensional orientation. This way of viewing the universe, this manner of perceiving, brings rigor into the study of human behaviors as man relates to the systems and structures of his environments which underlie whatever language structures he is exposed to. With this orientation he may become better able to close his perceptual gaps and fragmentations.

Analogy⁸, a comparison of structures, is similar to the isomorphism or structural similarity of a map to its geographic territory. The processes 'in the head' of the mapmaker illustrate the process of building analogues. Every statement of ultimate 'factual' validity is an analogue in its correspondence to the 'existence' represented. But the analogues become false as excessive differences are observed in the similarities.

Non-verbal relations occur only at so-called operational levels. They must have their counterparts in the semantic-perceptual levels. The 'pieces' become perceived in their relational connections. There is equal attention to both realms of existence (orders of abstracting); that is, the phenomena of environments outside of man, and of the 'psychic' and linguistic environments originating in the human organism. During listening and reading, there should be intense searching for the correspondence of man's private assumptions and ensuing language behaviors to the phenomena with which he must cope, phenomena which are both 'outside' and 'inside' himself. In both sorts of events, there is concern for the connections, assemblies, and relationships which make up the existence of these realms.

The extensionally oriented person⁹ is very specifically aware, as he desires to be, of many of his own and others' semantic reactions, the assumptions, the ordering of abstractings of their knowledge-getting activities, the separating of the levels of abstracting in describing, summarizing, and in the higher order abstractings. This person keeps these behaviors secondary, but ever ready for correction in his apprehension of the operations and relationships in the 'fact'-phenomena from which he is predicting the probabilities in his evaluatings.

Such phenomena of the human brain as inferences, imaginings, reasonings, fancies, etc., are called intensional (spelled with an "s"). These activities may proceed without any reference whatsoever to the 'factual' environments and without being noticed as such. The result is the destruction and falsification in the knowledges of the systems-structures. Carried to the extreme in which contact with reality is lost, grave disorders result. But when kept in an isomorphic relationship¹⁰ to the existences and included in the more 'factual' viewings of the extensional orientation, persons may become productive and creative.

By use of the extensional devices, observation of the process whereby facts are written, spoken, or diagrammed is enhanced. The semantic index attached to a higher order abstraction immediately raises questions as to the specific circumstances to which the statement refers. If crime in Omaha is given a specific index, such as crime₄₇, ambiguity is lessened as to what sort of crime it was and where it occurred. The extensional dating of the event reduces ambiguity as to when the event occurred. An example is crime₄₇^{June 8}; indexing and dating thus bringing the statements into specific space-time so as to make possible a management of the event referred to. Another aid to specificity when the speaker, writer or reader wishes to warn that a statement risks vagueness is to use it in single quotes, such as 'crime'.

Statements which may prevent piecemeal comprehension or prevent verbal splits of existences which are not split employ the extensional hyphen, as in body-'mind', space-time, capital-labor-management. Such devices demand the use of more specifics, of data, illustrations and other supporting details. They are used implicitly to help the communicator ask more 'factual' questions to enable him to break through the higher order abstractions and reduce ambiguity. In putting emphasis upon the operational and relational, the formulational fragmentation of the unfragmented is far less likely.

Fragmented perceptions characterize closed 'minds'. These superficialities and falsities may be observed in allness attitudes such as, "This is the way it is," or "These are the facts." They are statements incompatible with understanding "multi-dimensional" order and "multi-levels". Attempts to perceive relations are blocked and only static chunks are registered.

Based upon the assumption that "what I see is all," there is no comprehension that the other person

is abstracting differently, and that abstracting is only partial, or what each individual happens to notice differently. There is not room for the greys between 'black and white', 'good and evil'. The perception of the continuities of structure does not occur.

Perhaps the most common interference with understanding multi-dimensional order and multi-levels is the tendency to confuse labels of the 'fact'-structures with the 'fact'-structures themselves. Understanding is not possible when what is called "identification" occurs. That is, when the statement is acted upon as if the statement were the same as its 'fact'-territory. Such words as private enterprise, socialism, sex, and ecology evoke short-circuited thinking in many people. In their anatomizing, the fuller implications never are explored. Static connotations of many words are built into the language. The various "ises" of being are especially vulnerable. Clearing up such confusions by application of the extensional devices, especially by the use of indexing and dating, is quite practicable for these emotionally charged words. The dating of racial integration¹⁹⁷⁸ in Denver is not the same as racial integration¹⁹⁷⁴.

Flexibility in shifting into the abstractings of others is limited by flexibility in the back and forth circularity from the detailed abstractings of describing into the generalized abstracting of the 'higher' orderings. Freedom in this circularity greatly enhances perceptions of the multi-dimensional order and multi-levels of the world.

The apprehension of structures, of systems, of relationships is probably never complete in any one person. The astronauts, in returning to the earth, perceived it as a greenish sphere. As they came into the landing, this perspective was lost in a complex of things and details, few of which appeared to have coherence with each other. The multi-dimensional order and multi-levels were lost in the multi-separated things and events.

Time-binding,¹¹ With Social Negentropy, For Bringing Knowledges to the Service of Human Evaluations

Two giant formulations will help students in understanding of the smallest to the largest and the relationships in between. Since it is impossible to view everything going on simultaneously, there is need to retain what is abstracted in one area while persons are abstracting indefinitely from other areas. This ability to take in information, to analyze and organize, and to communicate from one person to another, and from generation to generation, is called 'time-binding'

by Korzybski. Time-binding permits the apprehensions of almost all people to be brought together in a more accurate, complete perception than is possible in one individual. This is accomplished through the storages of information made available by research, language, and memory. In the gathering of information from many dimensions and levels, students obtain a more adequate picture of the events with which we must cope.

In the background is another formulation emphasized by the general systems theory scholars, namely, that our situations are likely to deteriorate in an increasing tendency of a loss of organization to an entropic death unless special care is taken to negate these tendencies. This is only possible to the extent that man is able to understand what is going on in human and non-human environments and to overcome his own tendencies to confirm his errors. To this end, man needs to know himself much further, free from the fragmenting inclinations of human evaluating. The formulations from general semantics, to the extent that they become internalized, tend powerfully to defeat the unconsciously perceived falsities, half-truths, and illusions. These misleading products have become built-ins to our language structures at unconscious levels. To insure that time-binding does not transmit ideas which result in 'evil', negentropic guidance from general systems theory provides 'fact'-questions which may help negate the self-generated difficulties.

Most misunderstood is the process-structural nature of the world, and the patterning of events, as expressed in such terms as 'order', 'function', 'structure' and 'systems', and the effect of these upon each other. Most necessary today seems to be an education that will prepare students to search for the connections and associations. This will help them put together lectures, courses, and their readings in the diverse areas of a library. With this attitude toward the world, they may become conscious of their tendencies and avoid the superficialities of the fragmented and piecemeal. If what I have attempted to explain here is carried further, there might be difficulties in learning what has been suggested, but they would be no greater than is warranted for the vastly needed actualization of human potential.

Productivity Followed by Creativity

A hard-boiled perception of differences is necessary for sanity as implied by Korzybski many times. At the same time, sanity demands that a comprehension of 'factual' relationships is necessary for what

is called adjustment to our world of escalating change and complexity. The inevitable change, whether or not within the range of human perceptions of particular situations in things and people, impregnates this problem and we must rely upon the close inspection of the changes going on within the differing scope of the situations involving the people or things being related. A key to the problem at this point is in the emphasis upon comparative similarities and comparative differences; Korzybski made it plain that insufficient emphasis on differences made for unsanity, as over-emphasis on similarities runs wild.

In both of these difficulties, predictability and proper evaluation, there is often present dead-level abstracting as pointed out by Wendell Johnson in his People in Quandaries.

Creativity of course is an individual matter and can only be defined by the communicator in terms of his unique way of viewing the world, which is, in effect, his unique world.

The often sudden appearance of a new insight seems to occur at the 'edge of consciousness' from the relating, that is, the interchanges, that have been going on indefinitely at unconscious levels, often during sleep. This issue is far from being sufficiently cultivated in our various levels of education. Psychology and communicating areas of learning provide no discipline to activate and exercise these mechanisms, so basic to unusual productivity which precedes creativity. This is an important challenge for the teaching, not only of evaluating as a basis for productivity, but for developing awareness of those processes which apparently must underlie the abilities of creative persons.

If this challenge to the educational practitioner, to the more educated people in general, is accepted, there is some probability that the crises in our society will be ameliorated.

FOOTNOTES

¹Walter Buckley, Modern Systems Research for the Behavioral Scientist, Parts I and II. (Chicago: Aldine Publishers Company, 1968).

²Norbert Weiner, Cybernetics, Second ed. (M. I. T. Press, Cambridge 1948), pp. 11, 62, 64, 93.

³Alfred Korzybski, Science And Sanity: An Introduction to Non-Aristotelian Systems and General

Semantics. Part IV. 1933. Third ed., 1948. Lakeville, Conn.: International Non-Aristotelian Library Publishing Co.

⁴Ludwig von Bertalanffy, General Systems Theory. (New York: George Braziller, 1968), Chapters 1, 2.

⁵Weiner, op. cit., pp. 45-46, 78-79.

⁶Korzybski, op. cit. See Index under "Self-Reflexiveness."

⁷Irving Taylor, ed., Communication on Creativity. (London, Gordon & Beach, 1967). See article by Elwood Murray and Paul Hunsinger, "Unlocking Deep Level Analogues." See article by Alton Barbour

and Irving Taylor, General Semantics and Creativity, chapter on "The Interdisciplinary Analogues Laboratory;" also, Lee Thayer, ed., Communication Exploration (publication pending).

⁸Korzybski, op. cit. See Index under "Extension."

⁹Elwood Murray, et. al., Speech: Science-Art. (New York: Bobbs-Merrill, 1970). See Index under "Isomorphism."

¹⁰Korzybski, Manhood of Humanity. 1921. Second ed., 1950. Lakeville, Conn.: Institute of General Semantics.

¹¹von Bertalanffy, op. cit., chapters 1 - 3.

It is meaningless and utterly useless to argue whether or not the world is 'simple'; as the world is not our understanding of it; but as our 'understanding' happens to be structural, our nervous system, through its abstracting capacities, makes it simple, once its structural content is discovered. As the search for structure involves similarity of linguistic and empirical structures, we readily understand that any language, which we cannot evade teaching our children, has structure and involves structural assumptions. In the structural revision of our language and the teaching of a few structurally appropriate terms, entirely abandoning a few structurally misleading ones, we directly impart all up-to-a-date fundamental knowledge to any child. We train him automatically in the appropriate linguistic structure, which builds up in him appropriate s.r. Mankind at large does not need scientific technicalities to absorb and thereby obtain semantic benefits from the structural results of science. These results are the only ones which really matter, and which can be given in an extremely simple way, automatically abolishing the primitive metaphysics, structural assumptions, and infantile s.r.

Alfred Korzybski, Science and Sanity, p. 544.