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GENERAL SEMANTICS.*

IMPLICATIONS OF LINGUISTIC REVISION FOR THEORETICAL AND CLINICAL NEURO-PSYCHIATRY.

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Abstract.—The object of this paper is to call attention to the linguistic problems involved in contemporary psychiatry, not only in regard to psychiatric theory and nosology but in therapy as well. Linguistic factors are shown to be important determinants of personality structure, and cognizance of them is essential to any general theory of values upon which the rational treatment of personality deviation depends. Several contemporary leaders of psychiatric thought, among them William A. White, C. Macfie Campbell, Adolf Meyer and John T. MacCurdy, have made tentative generalizations and suggestions in this field, but it has remained for Alfred Korzybski to make a systematic investigation and evolve a general theory with specific application in psychiatric and other fields, thus relating many previously isolated areas of scientific knowledge into a synthetic "unified field theory" of what may be called general anthropology. The salient points of his work, as presented in his latest book, *Science and Sanity*,¹ are here presented with some discussion of their implications. In a later publication practical applications and clinical results will be reported.

In no branch of medicine is there such astonishing variation in terminology, and therefore apparently of theory, as in contemporary psychiatry. To judge from the linguistic formulations of so-called schools of psychiatry or "deep" psychology, there appear to be striking contrasts and incompatibilities between theoretical structures which have been derived from a more or less common

* *Semantics* means signification or meaning and is derived from the Greek root *semainein*. General Semantics may be considered a general theory of evaluation.

¹ *Science and Sanity*, by Alfred Korzybski. (Lancaster, Pa., The Science Press. An Introduction to Non-Aristotelian Systems and General Semantics.)

Instead of providing simply a book review of this significant work it seemed desirable to offer a somewhat extended discussion of Korzybski's theories and interpretations because of the definite contribution they make to psychiatric work—a discussion which might also serve as an introduction to a somewhat difficult text. This has been done upon request by Dr. Douglas G. Campbell who is making a clinical investigation of neuro-linguistic factors in behavior.—EDITOR.

substratum of clinical observation. Each school has its own metaphysics, the prototype of which may often be discerned in the classical structures of "Aristotelianism," "Platonism," "Realism" and "Conceptualism," "Monism" and "Dualism," to mention only a few. And, far from there being merely a few deeply entrenched, antagonistic schools based upon broad doctrinal differences, within each of which the individual members are in substantial agreement, there seem to be in practice about as many schools as there are psychiatrists. For it is increasingly, albeit reluctantly, admitted by experienced clinicians that personal rather than common metaphysics guide the investigation and treatment of disordered human nature by the individual psychiatrist. Because of this individualistic trend in psychiatric theory, schisms occur within the rigid and frequently authoritarian parent schools; and a confusion of tongues ensues, which renders psychiatrists not only intolerant of each other, but, because of their lack of a common basis of understanding, unable to develop that degree of cooperation necessary to place psychiatry as a whole in its rightful place in modern medical science. School psychiatry has been likened by a social anthropologist² of great standing to the structure of various religions, the differences being verbal or terminological rather than formal or structural; for indeed there are some striking parallels in the form of rituals—verbal and otherwise—hypostatization (objectification) of fictions, "acts-of-faith," and the creation of inner circles of the "initiated," to mention only a few of the similarities. Relentless critics of both school psychiatry and religious systems have perhaps been not entirely unjustified in applying such epithets as "cultism," "demonology," "rank mysticism," to the practice and theoretical structures of such doctrines.

About all that we have as a common linguistic basis within our own ranks, and as a bridge to our medical and surgical colleagues, is the terminology of an obsolete nosology. Here we find a set of terms, some descriptive and relatively free from doctrinal implications, others insidiously doctrinal and transmitting from what is now regarded as psychiatric antiquity dangerously false knowledge about the conditions they are supposed to represent. And these terms, both good and bad, are taken by some to

² A. R. Radcliffe-Brown: personal communication.

represent "disease entities" which "attack" previously sound individuals in quite the same manner as "demons" were supposed to "possess" the "righteous." By others, at the opposite doctrinal extremes, these terms are treated as verbal fictions devoid of content, useless and misleading for any purpose. Certainly, it must be admitted, these diagnostic labels are quite out of accord with most contemporary dynamic views of personality structure and deviation, and at best act as the roughest sort of guide for purposes of classification, prognosis and treatment. The recent progressive subdividing of so-called schizophrenia can only end in there being as many schizophrenics as there are patients! And where, nowadays, is the dividing line between the "schizophrenic" and the "normal" personality? As Macfie Campbell states, "general formulæ are dignified, and diagnostic terms give comfort, but they are verbal symbols which are apt to do violence to the complexity of the facts."³

But disagreements between psychiatrists over the verbalistic issues of nosology are quite minor in comparison with the confusion and differences of opinion which are apt to occur at the deeper but equally verbalistic levels of psychopathology, where embittered argument, rancor, personal animosity, disdainful intolerance or condescending superiority appear when the polemics of school psychiatry are involved. This "Tower of Babel" situation in modern psychiatry is familiar to most of us. Many psychiatrists, eager to avoid the limitations and dogmatism inherent in school psychiatry, try to solve the problem by translating the terminology of various doctrines into less objectionable linguistic formulations; or, by adopting a "middle of the road" policy or "eclecticism" they achieve some comfort in terms of personal security or superiority at the expense and often the justifiable exasperation of the schools whose doctrines they "mutilate." Old wine in new bottles.

That the problem of language should be greater in psychiatry than in other medical specialties is implicit in the subject matter of psychiatry. Psychiatry deals, in the main, with those disorders of human behavior referable to the symbolic functions of human

³ Campbell, C. Macfie: *Destiny and Disease in Mental Disorder*.

nervous systems, to those evaluational and representational processes involved at that gregarious human level of the individual-in-the-community wherein cooperation depends upon communication, and communication upon forms of representation or symbols. Not only is this the chief level, neurologically speaking, wherein disturbances belonging to the province of the psychiatrist occur, but the method of dealing with these disorders depends upon an understanding of these processes of representation and the actual utilization of them, chiefly in verbal forms, in therapy. This is to say that words or gestures are to the psychiatrist what instruments are to the surgeon. Our technology must include, then, a general theory of meaning and representation.

Gregariousness, at the human biological level, depends upon neurological mechanisms of symbol formation. Symbols may be defined as communicable forms of representation of low or high order abstractions made by human nervous systems. By means of symbols individual knowledge becomes verifiable and, thereby, collective or "common sense." Collective or racial knowledge may be stored as literature, works of art, architectural structure, scientific and mathematical formulæ, custom, tradition and so forth; and these extra-neural, phyletic storehouses of knowledge, the labor of dead individuals, may be utilized at will for contemporary purposes, revised, modified, discarded and certainly supplemented for the elective use of future generations whose destiny they have helped to shape. Symbols, as products of neuro-semantic and neuro-linguistic mechanisms unique to the human nervous organization, make it possible, theoretically at least, for each successive human generation to commence developing, in the sense of acquiring new knowledge for survival, where its predecessors left off: whereas at animal levels each generation starts where its parents commenced. This distinction is broad, of course, but it illustrates a fundamental neurological difference between animal and human biological levels, as a result of which the gregarious behavior in each field of life differs in mechanism. Korzybski has pointed out these broad distinctions, and to the uniquely human representational mechanisms underlying our forms of gregariousness he has applied the term *time-binding*.⁴ The implications for human biology, espe-

⁴ Korzybski, Alfred: *Manhood of Humanity*. Korzybski designates plant life *energy-binding*, animal life as *space-binding*, and refers to humans as *time-binders*.

cially where gregarious behavior is involved, should be obvious when it is admitted that the human organism is born into and becomes part of an environment consisting of symbolic factors as well as physcobiological factors. Biology, at human levels, acquires new dimensions—as White⁵ says, “a temporal coordinate”—for it must take into its account of human development a humanly-created representational environment.

The representational aspects of our environment are chiefly linguistic, but any adequate account of these factors in human development would have to include the rôle played by forms such as music, the plastic arts, architecture and other non-verbal productions, which are integral parts of and specific to the culture-setting of a given human organism. This is the province of the social anthropologist, who accounts for personality structure in terms of the moulding effect of customs, beliefs, technologies and other evaluational practices of the community to which the biological individual belongs. Social anthropology has come to be as important a basic science for psychiatry as physiology and other medical sciences with physico-biological orientations. The synthesis of these varying modes of approach to the problem of human nature might be termed a general anthropology, or the “Science of man” for which Carrel⁶ pleads. But the difficulties inherent in its formulation have been fully as great as those involved in producing a general or “unified field theory” encompassing both the quantum mechanics of atomic physics and the relativity mechanics of astro-physics. When, following Korzybski, we include the *time-binding* characteristics of human nervous systems in our theoretical and descriptive sciences, and recognize human agents of energy transformation as a *symbolic class of life*, the way is cleared for such a general theory to which *symbolic logic* will be as essential as is the tensor calculus to modern physics.

The evaluation of personality structure in any given case involves the recognition of these representational factors, which are chiefly linguistic, from the beginning of the social existence of the biological individual, and should include the rôle of such factors in

⁵ White, W. A.: Twentieth Century Psychiatry. In this work many of Dr. White's observations are clearly traceable to Count Alfred Korzybski.

⁶ Carrel Alexis: Man the Unknown.

the process of observation by the observer (the psychiatrist) who is also a part of the linguistic, symbolic environment. This is to say, in close analogy to the Einstein-Minkowski theory, that the individual-in-the-community exists as an object of study only in relation to the observer-in-the-community. In psychiatry, as in physics, our observations are relational, contextual, absolute only for a given field.

The term *personality labels* a complex of varieties of behavior in a human being, which exist in reference to other people in a specific culture group, and are dependent upon physico-biological mechanisms capable of analysis and description by the operational methods⁷ of the morphological, physiological and psychological sciences. If the die of heredity is cast at the moment of conception, its imprint is not only modified by the physico-biological factors of intra- and extra-uterine life, but even to a greater extent, in the human agent, by the linguistic environment. Under the influence of myths, folkways, custom, superstition, medical opinion and the scientific knowledge of the day, which are communicated mainly by language and go to make up the linguistic environment of the newborn infant, are its inborn or "hereditary" physico-biological mechanisms of adaptation profoundly modified. For example, alimentary functions of the organism, in both their receptive and eliminative aspects, may be radically affected by the cultural evaluations of eating and eliminating of the community. When gastro-intestinal disorders occur the physiologically-oriented internist has frequently to turn to the symbolically-oriented psychiatrist for assistance in the diagnosis and treatment of a stomach or bowel which are expressing in non-verbal, but none the less meaningful and frequently dramatic, behavior their reactions to the linguistic environment of the individual-in-the-community whose interests they serve.⁸ And most of us have had clinical experience of the effect of what might be termed the Lydia E. Pinkham mythology on the behavior of the female genital apparatus, not to mention the "psychic resonance" of such cultural factors apparent in so-called menopausal reactions!

⁷ Bridgman, P. W.: *The Logic of Modern Physics*.

⁸ Campbell, D. G.: *Visceral Behavior in Neurosis*. *Can. Med. Association Journal*, 34: 42-426, 1936.

Indeed, physiology as an independent science cannot exist at human levels because of the conditioning from birth by these symbolic or linguistic factors; and hence much of the reasoning by analogy, from animal reactions to human behavior, current in contemporary medicine must be fallacious when it is not actually false to fact. What the anatomists, physiologists and others observe in any human organism are relatively irreversibly conditioned mechanisms and structures (*e. g.*, posture)⁹ the conditioning factors of which are a complex of habits, beliefs, affective states, etc., consequent upon the linguistic environment and mediated by parents, teachers and others, to the developing human organism. So firm is the amalgam of linguistic and physico-biological factors in the human economy that it is merely schematic to separate them. Modern medicine, when it does not take into account the linguistic environment of its patients, remains little else than a glorified veterinary science.

Symbols determine not only our individual personality structure, but also our social structure. Through the manipulation of symbols these structures, personal and social, are controlled and modified. As a symbolic class of life we are subservient to and coordinated by those agencies or forces in the form of individuals or sanctioning groups of individuals, which control our symbols. Whether these symbols stand for the guiding fictions¹⁰ of personality configuration or the guiding fictions of political or religious social structures their *modus operandi* is similar; for they are orientators, and orientation produces organization. The symbols that stand for the conventional guiding fictions of latitude and longitude are essential for navigators; if they were disregarded or altered, without agreement by all concerned, navigation, being an organized, gregarious activity, would cease.¹¹ In the field of economics the manipulation of monetary symbols by those to whom control of

⁹ Campbell, D. G.: Posture: A Gesture Toward Life. *Physiotherapy Review*, Vol. 15, No. 2, 1935.

¹⁰ Vaihinger, Hans: *Philosophy of As If*.

¹¹ Carrol, Lewis: *The Hunting of the Snark*.

“‘What’s the good of Mercator’s North Poles and Equators,
Tropics, Zones and Meridian Lines?’

So the Bellman would cry: and the crew would reply

‘They are merely conventional signs!’”

such symbols has been "entrusted" affects group coordination and individual behavior alike. Symbol formation and manipulation in social groupings wherein the orientations are political, religious, or scientific may lead to increased social solidarity or to disastrous disintegration.

Communication, and thereby social intercourse, between two or more individuals is only possible where the symbol formation of those individuals represents collective empirical knowledge, or conventional guiding fictions. This is the basis of "common sense." Where the symbol formation is based upon private or personal evaluations, differing from the evaluations of other culturally-related people, we have the basis of so-called personality deviation, of which there are all gradations as far as the extremes of paranoia and schizophrenia. Communicability is probably the highest index of the capacity of the individual to adapt himself to communal life, and it depends upon the representational functions of the human cortex working in the organism-as-a-whole at social levels of behavior, and involving neuro-physiological, neuro-semantic and neuro-linguistic mechanisms. Upon communicability depends psychotherapy, which has as its first aim the re-establishment of lines of communication, and then, as its final goal, the development of the communication-potentials of an individual to their utmost social value. While not exclusively verbal, psychiatric techniques are mainly so, and therefore a knowledge of the higher cortical functions including evaluational (semantic) reactions, symbol formation and linguistic structure become essential for contemporary psychiatry. That psychiatrist will be most successful in therapy, who has mastered the science and art of communication.

As has already been pointed out, human gregariousness depends upon representational forms of communication. The transmission of mythology has been shown to determine the form of a society; verbalized beliefs control religious orientations; postulates of a science both direct and limit its field of investigation.¹² Experience at all levels of human life may be represented by symbols of which there are various transmissible forms providing a means of communication between contemporaneous "minds" or between sepa-

¹² See the writings of Radcliffe-Brown, Ogden and Richards, Poincaré, and Whitehead among others.

rate generations. Thus an extra-neural storehouse of human experience may be built up which overcomes the liability of the short biological span of individual human life in the interests of racial survival. As symbols, from this point of view, must stand for past or present collective experience (otherwise we are dealing with socially meaningless objects, spellmarks, or noises, which we find in schizophrenic reactions), the central problem involved in the mediating function of symbols becomes that of meaning or signification. If these forms of communication can act as representations of past or current human experience, as they actually do, wherein lies their validity? What are the connecting links between the symbols chosen and the empirical facts they are supposed to represent?

Any theory of human knowledge must include an evaluation of the rôle of neuro-physiological and neuro-semantic mechanisms involved in the acquisition of knowledge. The part played by the nervous mechanisms of the observer becomes part of the observer's knowledge. It was on this point that the new physics of Einstein and Minkowski modified the old, and a similar evolution has occurred in modern psychiatry when we admit that our interpretations of a given case are dependent upon our processes of evaluation. Neuro-physiological investigations have revealed some of the limitations of our sense organs or "analyzers," which, unaided by extra-neural instruments, do not supply sufficient data to the higher integrative levels of the nervous system for optimum survival value under the complex conditions of modern life. And neuro-physiology has also shown the mechanism of sensory projection so that the old "qualities of an object" have now to be considered as nervous constructs, phenomena dependent upon neuro-physiological processes of interpretation of inferential events. Many different levels of abstraction are involved in the acquisition of knowledge. We commence at neuro-physiological levels by making abstractions from physico-chemical events; further abstractions of higher order are made integrally with lower nervous activities at neuro-semantic levels where little-understood factors of interpretation labelled "interests," "appetites," "associations," "instincts," "drives," "purpose," "will," and other literary creations of the old psychologies operate as a unity in the organism-as-a-whole.

The only possible content of knowledge is structural. We do not know anything but the relationships between events—the events themselves being inferential. We apply the term structure to the design of the relationships between events, and the abstraction thus made is static at any given instant. But what is actually occurring, that from which our nervous system has abstracted a set of relationships, and which at macroscopic levels “seems” quite material, has been shown by contemporary science to be dynamic, changing, non-material. Human life, were it dependent today entirely upon macroscopic abstractions, would be precarious. Knowledge and conscious control of microscopic and sub-microscopic phenomena such as bacteria, viruses, vitamins and radiation are essential for survival under modern conditions of life. Primitive man, his nervous system unaided by extra-neural instrumentation and modern inferential methods, could not explore such new worlds. Each science “discovers,” that is, abstracts, certain relationships between the events it studies. These relationships form a pattern or structure which in itself is quite “intangible” but capable of description or formulation, best in mathematical terms. A “natural law” is such a representation of a structural abstraction. It labels and describes a set of invariant relationships, observed at a given date, from which predictions may be made about future events belonging to the same series. As these sciences work at different levels, with strongly contrasting sets of facts, their structural abstractions have necessarily involved the use of contrasting terminologies. Very often, in fact increasingly so in contemporary science, the formulations have to be mathematical in order to describe the multiple factors involved or the dynamic-process character of the structure observed. Ordinary language, devised at prescientific periods of empirical investigation, adequate enough for macroscopic observations, has proved wholly inadequate for the representation of structural abstractions or knowledge at microscopic and sub-microscopic levels.

Forms of communication may be regarded as the products of neuro-muscular mechanisms which represent neuro-semantic and neuro-physiological processes of abstraction. This is to say that communicable forms of representation are produced by the effector apparatus of the organism. In the simpler forms of communication we find gesture and posture of smooth and striated muscle systems

expressing evaluational or semantic reactions.¹³ In the more complex forms we find language and writing, and must not disregard the communication-value of non-verbal human fabrications as in architecture. There has been considerable scientific study of gesture amongst primitive people and civilized white infants and it is a fairly general conclusion that there is a similarity of structure between the gesture and the affective state that it represents. This is familiar ground to the psychopathologist dealing with the persistence of infantile reactions of an autonomic character in his patients. At the higher levels of communication, however, the connection is less obvious; the form of representation does not necessarily resemble in any way the thing talked or written about.

There is a striking analogy, suggested by Korzybski, between map-making and language-making. A map, be it territorial or a weather map, is used for the purposes of orientation. To be useful, which means often to have survival value for those using the map, it must be similar in structure to the territory or the data it represents. This similarity of structure depends upon order when the term order is used in the sense of "betweenness." The order of marks on the map must be similar to the order of geographical or other data. Thus it is seen that the only connecting link between the piece of paper with marks on it called a map, and the territory it is supposed to represent, is a similarity of structure based upon order. Naturally, an ideal map, if such could be drawn, would have to be multi-dimensional in order to represent in corresponding structure the multi-dimensional aspects of the territory. For purposes of the analogy it is essential to point out three obvious features about maps. The first is that the map *is not* the territory, though it represents the territory. The second is that the map represents *not all* the territory but leaves out many characteristics or negligible differences. The third is that maps are "self-reflexive" (Royce), which is simply to say that there can be a map of the map of the map, and so continuing; each order of map being a different representation produced by leaving out more and more characteristics of the original territory.

What can be said about the relationship of maps to territories can be said about the relationship between words or statements and

¹³ See footnote 2, page 790.

what they represent. The analogy holds. A word or a statement *is not* the thing, object, fact or idea talked about. Any statement leaves out characteristics of that which it represents. Statements may be made about statements; there can be a word for a word. By means of language we can talk about language. Like maps, verbal representations to be useful, to have survival value for the user, must correspond in structure to what they represent; and this similarity in structure will depend upon ordered relation. As examples of this principle of structural similarity, we have the situation in physics where for a long time the terms "space" and "time" were current, but with the new data discovered by the Einstein group these "elementalistic" (Korzybski) terms were replaced by the new, "holistic" (Smuts)¹⁴ term, *space-time*. In our own field we have only to consult the clinical data to realize the validity of the hyphenated expressions, "body-mind," "organism-as-a-whole," "individual-in-the-community." Such terms do not split verbally what cannot be split on the silent, objective, neuro-physiological, and neuro-semantic levels of abstraction. Such terms correspond in structure to the empirical data. At that, however, such terms still leave out many characteristics or negligible differences which have been abstracted or are capable of abstraction as our field of investigation widens.

With the content of knowledge consisting of structural abstractions, the aim of scientific investigation comes to be the discovery of structure. As new structure is discovered, new representations for that structure must be devised. Consequently, forms of representation need to be flexible. It is for these reasons, no doubt, that mathematical language was devised. Mathematics is a system of representation based upon the empirical data of multi-dimensionality and infinitesimals, etc. Structural abstractions are made by various forms or techniques of measurement. These abstractions are represented by arbitrary but conventional (communal) symbols which, in substance, consist of a limited range of signs (letters) to which an unlimited (infinite) series of other signs such as numerals may be attached as indices in various ordinal positions. In this way an extremely flexible system of representation may be built up in order to represent the multi-dimensional,

¹⁴ Smuts, J. C.: *Holism and Evolution*.

multiple-factor, structure-function of the empirical data. When structural abstractions are represented by such a flexible system, similarity in structure between linguistic and empirical data is possible, and then, as it is usually easier to manipulate symbols than what they stand for, it becomes possible to make predictions. Predictability is essential for optimum human survival.

Because of the similarity in structure between mathematics and empirical structures, modern engineering becomes possible. None will deny the effect of modern engineering upon contemporary western civilization. With complete confidence we rely upon the structural abstractions and mathematical representations of engineers in whose public conveyances in the forms of skyscrapers, bridges, automobiles and airplanes we travel in space-time. Our contemporary system of human relationships is dependent upon an economic ordering or system wherein monetary values depend upon engineering capacity to predict resources. Without predictability we could trust neither buildings nor trains, industrial bonds nor tomorrow's food. Upon this predictability our "civilization" has been built, and the constant aim of applied science is to make predictability more accurate. Mathematical forms of representation with their high predictability value have, as a matter of fact, been confined to the physical sciences, and it is in these sciences that the most significant advances have been made. The biological and psycho-sociological sciences have not made nearly as rapid progress; and what new structural abstractions they have made have not had the communication and predictability value that exists in the physical sciences. Yet these sciences, anthropological in purlieu, are essential for predictability in human affairs; even the engineer who thinks he restricts himself to the abstractions from a physical series of events is dependent upon "the human factor." *Homo Economicus* has more characteristics than just pockets for his money.

Predictability depends upon the discovery of structure, representation of that structure by a language with similar structural characteristics, and then the manipulation of the symbolic devices within pre-determined restrictions, or form, to see what will happen under the conditions of such structural arrangement in the future. A stage designer makes a miniature stage, manipulates the miniature scenery, actors, lights and whatnot, thus foreseeing the effect

of certain combinations of these factors without the expense and effort entailed by trial-and-error experimentation in the gross. A mathematician predicts torsion stresses in a steel bar by measuring such stresses in a soap film wherein there are characteristics of corresponding structure-function to those of the steel bar. In both examples the materials are very different but the relationships are similar and may be represented by symbols for relationships. A chain of links has a serial structure. Represent that serial structure by a serial language such as a, b, c, d, e, etc., or 1, 2, 3, 4, 5, and it becomes possible to predict the position of any link simply by "looking at," or manipulating, the serial language arbitrarily chosen as a representation of the empirically discovered structure. The laborious trial-and-error methods of investigation become unnecessary; from a few measurements structure (structure-function) is discovered; a language corresponding in structure is invented; predictability is made possible.

While mathematics appears to be a neuro-linguistic device capable of representing the structural correspondence between the invariant relations of electro-magnetic phenomena occurring outside our skins and the invariants of "colloidal aggregation change"¹⁵ at the basis of neuro-physiological and neuro-semantic reactions inside our skins, thereby permitting predictability and communicability in the affairs to which it may be applied, what may be said of the ordinary verbalistic language devices by means of which we conduct our personal, familial, national and international relationships, by means of which we educate our children and legislate our social and individual futures? As suggested above, our everyday forms of verbalization represent an extra-neural storehouse of human experience which survives the death of individual nervous systems which have in their turn drawn upon it and contributed to it. Obviously however this storehouse of structural assumptions, language, does not represent, in the main, current structural abstractions (science 1937), but rather the primitive archaic, macroscopic, prescientific sense abstractions such as those made by contemporary primitive peoples. This is the language of "animism" because of its lack of awareness that sensations, objects and symbols are nervous constructs of different *orders of abstraction*, projected on

¹⁵ Burrige, W.: A New Physiological Psychology.

the outside world. Primitive and infantile people are forced, by the structural assumptions of such a linguistic, time-binding mechanism to live, as it were, in a demonological world consisting of objectified sense-abstractions, emotions, thoughts and symbols (words).

The structure of this primitive language is such, because of its subject-predicate form among other things, that dichotomous, or two-valued, cause-and-effect relationships are implied, whereas the empirical data of contemporary scientific observation indicate integrated, infinite-valued chains-of-events within which it is wholly schematic to isolate "cause" and "effect." And by its misuse of the verb "to be," (the "is of identity" of Aristotelian logic), confusions, misunderstandings and identifications at verbal levels of communication are produced which may have serious repercussions in other levels of organism-as-a-whole behavior. Many of the evaluating terms of the old language are "multi-ordinal" (Korzybski) in that their meaning depends entirely upon their context and so, without indication of their ordinal use or context, their meaning is indefinite and they may also produce confusions and identifications with associated behavioristic disturbances, maladjustments and so forth. Certainly many of the older terms and syntax represent a static universe misleadingly unlike the "restless universe"¹⁶ revealed by modern scientific investigation. With these defects and many others this language is transmitting in an insidious way, and largely without our awareness, the structural assumptions of preexisting periods, thereby mediating not only inadequate but actually false knowledge. False knowledge lies at the foundation of most human maladjustment.

In psycho-sociological relationships, where, in economic, ethical, religious and political dealings with each other, this language is our only device of communication, it is easy to see that predictability is extremely low. The opinions of economists, the arid verbalizations of ethical systems, the inflaming utterances of religious and political leaders, not to mention our personal, individualistic, verbal predictions in such matters as love and friendship, have all shown their low predictability value, as the evidence of the changing economic order, the failure of ethico-religious systems, the frag-

¹⁶ Born, Max: *The Restless Universe*.

mentation of political parties, and the evanescence of contemporary human "emotional" relationships have amply demonstrated. Yet with all its defects, its false-to-fact assumptions, it remains our chief form of communication, particularly for the more intimate person-to-person aspects of our gregariousness. Insidiously this language has conditioned our culture in rigid, dogmatic, categorical forms of evaluation (semantic reactions) which interfere with the investigation of new structural possibilities or, at least, produce blockages and reading difficulties in the comprehension of newer formulations about current structural abstractions. Any science involves more or less laborious techniques by means of which new structure is discovered. Once discovered, the new structural abstractions can be taught even to children, for the technicalities involved in investigation may be discarded. Younger people accept the new orientations more easily than do their less flexible parents, for whom the new assumptions sometimes necessitate painful re-orientation and neural readjustments. When habits and automatisms of evaluation and representation derived from primitive or infantile orientation come into conflict with new structural abstractions resulting from the discovery of new data (science 1937), we witness frantic efforts on the part of a confused personality to make an adjustment by rationalization, repudiation, translation and other devices in an attempt to maintain the integrity of his old beliefs, orientations and functions. Where the incompatibility is too great, serious psychopathology may appear in the form of acute schizophrenic and affective reactions in the case of individuals, or in the form of mass hysterias, such as the "dancing madness" of the middle ages, New Guinea "Heady-go-Round," or religious cultism of our own era. Nor are those who have been scientifically trained spared these reactions to a disturbed *Weltanschauung*. It has been the fate of most original investigators to be ostracized when they discovered data which repudiated or altered the old structural assumptions. Thus it was with the bacteriologist Pasteur, with the psychiatrist Freud, and now, it may be, with the semantician Korzybski, only to mention original investigators of our own day.

Korzybski proposes nothing less than a complete revision of the old system of evaluation, implicit in the terms and structure of non-mathematical language, to bring it into conformity with the new structural data of contemporary sciences. The old system,

with its false-to-fact structural assumption, its two-valued, primitive, cause-and-effect logic, he calls aristotelian, more for the purpose of distinguishing it from even more primitive one-valued and contemporary infinite-valued systems, than in destructive criticism of Aristotle whose logic was, for its day, the best available. Just as Euclidean geometry and Newtonian physics deal with too limited areas of data for contemporary utility and have been replaced by broader, more general systems of geometry and mathematical physics, so must the aristotelian logic be replaced by a broader, more appropriate system of symbolic logic. The negation of false structural assumptions becomes, paradoxically, positive knowledge with survival value for its human agents. The new systems, with their unlimited range of operations, may be conveniently labelled non-euclidian, non-newtonian, non-aristotelian, etc., and thus they become free from the rigid, dogmatic and categorical characters of the antiquated.

The aim of a non-aristotelian revision of language is the adjustment of language structures to empirical structures. The map must correspond to the territory. The most important results of this, for education and psychiatry, are the elimination of false-to-fact structural assumptions which lead to individual and social maladaptation. Identifications are prevented; the principle of non-identity, now firmly established in the empirical sciences, is established and represented in linguistic structure. (There is, it must be noted, a restricted use of "identity" in mathematics.) With more precise forms of representation for the structural data of the day, the way is cleared for a new pedagogy. So-called Mental Hygiene could better be called *Semantic Hygiene* because of the structural implications of the new, *non-clementalistic* term, "semantic-reaction," which indicates evaluational processes of an organism-as-a-whole character.

The old forms of verbal representation are rendered more flexible by the application of certain mathematical devices, which Korzybski has cleverly modified in addition to the introduction of new terms.¹⁷ Taken separately they have already been used, more or less unwittingly, by precise "thinkers" and writers. Five devices are

¹⁷ For details see the works of Korzybski. Clinical reports showing the practical application of general semantics will appear from time to time.

used. They are: *indices, dates, hyphens, quotation marks* and equivalents for the expression *etcetera*. Indexing a term or a statement by numerals or qualifying terms restricts its field, putting an end to the dangers of generalization and identification. Dating a term or a statement has similar effects and implies the dynamic seriated character of any data about which static statements may be made. Hyphenation produces structural similarity by implying the "holistic" character of the empirical data. Quotation marks are extended to indicate obsolescent terminology, elementalistic words, inaccuracies of representation, which may be temporarily expedient to use, provided their indefinite meaning is indicated. By means of the term *etcetera* or its equivalents such as "and so forth," "among other things," and new punctuation devices for written language, the mathematical use of infinity as a generating process is indicated, and awareness of characteristics left out of any representational form is so introduced into our subverbal and verbal evaluations.

The application of these devices in "thinking," speaking and writing makes it possible for our evaluational and representational mechanisms to become flexible and in structural correspondence to the empirical universe of 1937. *Intensional evaluations* were implicit in the old logic: orientation was by definition and similarities as in the Socratic paradigm: "Man is a featherless biped." This is a statement which is true for all human beings but covers none. *Extensional evaluations* recognize differences as well as similarities: orientation is by "facts" or science, 1937. By extension, Man is a verbal fiction applied to a class including Smith₁, Smith₂, Smith₃, etc. Extensionally, too, Smith₁ 1936 is not Smith₁ 1937. With extensionalization of our evaluational processes identification, in its non-mathematical sense, ceases and the orientations of Smith_n may become infinite-valued. One- and two-valued orientations, characteristic of primitive and infantile "thinking," may be eliminated, thus preventing much of the identifying, dichotomizing, so disastrous to personality structure. Statements and terms such as "all women," "all men," "superior," "inferior," "right," "wrong," with their frequently dangerous repercussions in behavior, because of their false-to-fact assumptions, may now be eliminated or rendered innocuous. Changelessness, rigidity, absoluteness implicit in the old orientations give way to the implications

of fluctuation, plasticity and the possibility of ever-new horizons in a non-aristotelian revision of logic initiated by such simple linguistic devices as Korzybski suggests. These new orientations are made available to the non-scientifically trained. What this may mean for social development, when the fetters of antiquated logic and beliefs cease to limit the forms of our interpersonal relationships, is more a matter of intuitive than accurate scientific prediction at the present day.

The search for structure in the various scientific disciplines creates a common problem, that of correlation and representation. At the present time the quantum and relativity mechanics are being related by the creation of a new tensor calculus which represents structural features common to both fields.¹⁸ Investigations and representation in the fields of psychology and physiology have been apparently contradictory, or at least unavailable for each other, because of the lack of a "unified field theory" and a language with which to express it. J. T. MacCurdy¹⁹ attempted this but failed of general acceptance, less because of his material than because of his aristotelian logic. Korzybski, by means of his non-aristotelian revision of logical systems, offers extensionalized forms of representation which may further the solution of these vexing and mainly verbalistic problems.

¹⁸ Levi-Civeta, Cartan, Carnap, Eddington, Whitehead and others: Harvard Tercentennial, 1936.

¹⁹ MacCurdy, J. T.: Common Principles of Psychology and Physiology.