

INTRODUCTION TO THE SECOND EDITION

1941

There is what may perhaps be called the method of optimism, which leads us either willfully or instinctively to shut our eyes to the possibility of evil. Thus the optimist who treats a problem in algebra or analytic geometry will say, if he stops to reflect on what he is doing: 'I know that I have no right to divide by zero; but there are so many other values which the expression by which I am dividing might have that I will assume that the Evil One has not thrown a zero in my denominator this time.'

MAXIME BOCHER*

*God may forgive you your sins
but your nervous system won't.*
OLD MAXIM.

When in perplexity, read on.
OLD MAXIM.

Section A. Recent developments and the founding of the Institute of General Semantics.

Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics, first published in October, 1933, was intended to be a textbook showing how in modern scientific methods we can find factors of sanity, to be tested empirically. Although a great many scientific discoveries have been made since the first publication, it did not seem necessary to revise the text for this second edition because the methodological data given, important for our purpose, have not changed. However, the list of books in preparation for the Non-aristotelian Library has been revised, and in this introduction I indicate some new developments in general semantics and include a short new bibliography, supplementing the bibliography of 619 titles given on page 767 ff.

In 1935 I began to conduct seminar courses in general semantics in schools, colleges and universities, and before various groups of educators,** scientists, and physicians, including psychiatrists. In the same year a group of students of *Science and Sanity* organized the First Amer-

* *Congress of Arts and Science*, St. Louis, 1904, Vol. I, p. 472.

** I use the word 'educator' in its standard English sense; namely, 'one who or that which educates'. I use 'educate' in the sense of: 'to rear . . . bring up from childhood, so as to form habits, manners, mental and physical aptitudes . . . To provide schooling for . . . train generally . . . train so as to develop some special aptitude, taste, or disposition.' Etc. (*The Shorter Oxford English Dictionary on Historical Principles*, Oxford, at the Clarendon Press, 1933.) In this sense any teacher from nursery school through university professors are 'educators'. From a *life point of view* this would include even parents, nurses, etc.

ican Congress on General Semantics at the Washington College of Education at Ellensburg, where a number of papers from various fields were presented. The present writer delivered three addresses on the application of general semantics to education and medicine, which are printed in the proceedings of the Congress.* The Second American Congress on General Semantics will be held at the University of Denver in August, 1941. This Congress is organized by Professor Elwood Murray of the University and M. Kendig, Educational Director of the Institute.

In 1938 the Institute of General Semantics was incorporated in Chicago for neuro-linguistic, neuro-epistemologic, scientific research and education. Since that date, as director of the Institute, my major efforts have been concentrated on further research and co-ordination of rapidly accumulating empirical data, along with the conduct of seminar courses to train in the new extensional methods for application in personal adjustment, and in the respective special fields of the students. At present several universities are offering accredited courses in general semantics, and in a number of other universities and colleges general semantics is incorporated in the presentation of other courses.

From scientific necessity this book was written inductively; the seminar courses are presented deductively, and so the two complement each other. The seminars include much illustrative empirical material accumulated in the five years of application of the system by my co-workers and myself, together with the pertinent, factual, newest findings of other sciences.

The non-aristotelian system presented here has turned out to be a strictly *empirical* science, as predicted, with results which have greatly surpassed even my expectations. General semantics is not any 'philosophy', or 'psychology', or 'logic', in the ordinary sense. It is a new extensional discipline which explains and trains us how to use our nervous systems most efficiently. It is not a medical science, but like bacteriology, it is indispensable for medicine in general, and for psychiatry, mental hygiene, and education in particular. In brief, it is the formulation of a new non-aristotelian system** of orientation which affects every

* Distributed by the Institute of General Semantics, Lakeville, Connecticut.

** The terms 'era', 'epoch' and 'system' will frequently appear here, and to avoid confusion it may be advisable to indicate in what sense these terms are used. 1) *Era*: 'A date or an event, which begins a new period in the history of anything; an important date. . . . A period marked by the prevalence of some particular state of things.' Etc. 2) *Epoch*: ' . . . a period of history defined by the prevalence of some particular state of things. . . . A period . . . in the history of a process.' Etc. 3) *System*: 'A set or assemblage of things connected, associated, or interdependent, so as to form a complex unity; a whole composed of parts in orderly arrangement according to some scheme or plan. . . . A set of principles, etc.; a scheme, method. The set of correlated principles . . . or statements belonging to some department of knowledge . . . considered as an organized whole; a comprehensive body of doctrines, conclusions . . . An organized scheme or plan of action; an orderly or regular method of procedure. . . . A formal, definite or established scheme or method . . . systematic form of order.' Etc. (*The Shorter Oxford English Dictionary on Historical Principles.*)

branch of science and life. The separate issues involved are not entirely new; their methodological formulation *as a system* which is workable, teachable and so elementary that it can be applied by children, is entirely new.

The experience of my co-workers, mostly educators and psychiatrists, and my own, shows that about ninety per cent of those who train themselves seriously in the new extensional methods definitely benefit in various degrees, and in ways so varied as to be unpredictable.

Theory and empirical results show that these new methods involve psychosomatic factors which help the balancing and integration of the functions of the nervous system, while the prevalent and traditional intensional methods of evaluation tend to disintegrate these functions. The nervous mechanisms involved work automatically one way or another, harmfully or beneficially, depending on the methods with which we utilize them. This has not been fully realized before.

The new methods eliminate or alleviate different semantogenic blockages; many 'emotional disturbances', including even neuroses and psychoses; various learning, reading, or speech difficulties, etc. ; and general maladjustments in professional and/or personal lives. These difficulties result to a large extent from the failure to use 'intelligence' adequately so as to bring about proper evaluation.

It is well known that many psychosomatic symptoms such as some heart, digestive, respiratory, and 'sex' disorders, some chronic joint diseases, arthritis, dental caries, migraines, skin diseases, alcoholism, etc., to mention a few, have a semantogenic, and therefore neuro-semantic and neuro-linguistic origin. In general semantic training we do not go into the medical angle as such. We eliminate the harmful semantogenic factors, and in most cases the corresponding symptoms disappear—provided the student is willing to work at himself seriously.

Section B. Some difficulties to be surmounted.

1. *THE ATTITUDES OF 'PHILOSOPHERS', ETC.*

'Philosophers', 'psychologists', 'logicians', mathematicians etc., are somehow unable to comprehend that their work is the product of the

working of *their own nervous systems*. For most of them it is only detached verbalism such as we often find in hospitals for 'mentally' ill. For instance, a very gifted, well-minded mathematician and professor of 'philosophy' wrote to me: 'I do not, however, think that neuro-psychology is relevant to the analysis of the nature of meaning. . . . I do not believe in confusing logic with neuro-psychology'. These professionals would be shocked if they would study the many volumes of verbal rationalizations by patients in hospitals. They would find very quickly that the words interplay with the other words somehow, but they have very little, if any, connection with the facts, and that is one reason why the patients are confined. Why speculate on academic verbal definitions instead of investigating facts in such hospitals, where patients also pay no attention to the functioning of their own nervous systems? Even a gramophone record undergoes some physical changes before words or noises can be 'stored' and/or reproduced. Is it so very difficult to understand that the extremely sensitive and highly complex human nervous system also undergoes some electro-colloidal changes before words, evaluations, etc., are stored, produced, or reproduced? In the work of general semantics we deal with the *living neuro-semantic* and *neuro-linguistic* reactions, not mere detached verbal chatter in the abstract. In our experience we have found that even seriously maladjusted persons benefit considerably if we can succeed in making them 'think' about themselves in neurological electro-colloidal terms (see chapter IX).

Most 'philosophers' who reviewed this book made particularly shocking performances. Average intelligent readers can understand this book, as they usually have some contact with life. It is not so with those who indulge in mere verbalism. I can give here only a classical example of some 'philosophical' performances. A reviewer in the *Journal of Philosophy*, February 1, 1934, writes:

'Except for his stimulating discussion of the mathematical infinite (p. 206) and his hints on the nature of theory (p. 253), he contributes nothing to the clarification of meanings by definite analyses of special problems. Indeed, he only adds to the confusion when he declares that hypotheses contrary to the fact are meaningless (e.g., p. 168); if his views were correct, science would come to an end. His theory of meaning, like his theory of social causation, is very naive, to say the least.'

I suggest that the reader verify whether on page 168 there is such a statement, or even a hint at such a notion, which I could not possibly have. Besides, I do not give any theories of 'meaning' or of 'social causation'!

Most 'philosophers', 'logicians', and even mathematicians look at this non-aristotelian system of *evaluation* as some system of formal non-aris-

totalitarian ‘logic’, which is not the case. They are somehow not able to take the natural science point of view that all science, mathematics, ‘logic’, ‘philosophy’, etc., are the product of the functioning of the human nervous system, involving some sort of internal orientations, or evaluations, which are not necessarily formalized. The analysis of such *living reactions* is the sole object of general semantics as a natural *empirical science*.

These ‘philosophers’, etc., seem unaware, to give a single example, that by teaching and preaching ‘identity’, which is empirically non-existent in this actual world, they are *neurologically* training future generations in the pathological identifications found in the ‘mentally’ ill or maladjusted. As explained on page 409, and also Chapter XXVI, whatever we may *say* an object ‘*is*’, *it is not*, because the statement is verbal, and the facts are not.

It is pathetic, if not tragic, that society should invest millions of dollars to support such specialists who train future generations in maladjustments just because they disregard the unavoidable neuro-linguistic and neuro-semantic effects of their teachings on the lives of their pupils.

Most scientists and educators are either entirely innocent of these problems, or indifferent and passive, or even negativistic. Like some animals that can outwit humans because of their keen observations, the cunning, often pathological, thoroughly ignorant present day totalitarian leaders are not unaware of the academic shortcomings based on inertia, verbalism, etc., and openly proceed to utilize these human nervous weaknesses destructively, with very telling results. Nazism, wars *of and on nerves*, wars of *verbal distortion*, etc., with their following disasters are in 1941 only too obvious examples. I will return to this subject at the end of this introduction.

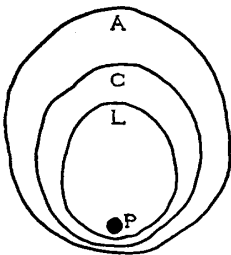


FIG. 1

The terms ‘philosophy’, ‘system’, etc., as ordinarily used, stand for too broad generalizations. Different ‘philosophies’ represent nothing but *methods of evaluation*, which may lead to empirical mis-evaluation if science and empirical facts are disregarded. Different systems may be very broad and general, such as, say, the aristotelian system (A) (see Fig. 1), within which is a more limited and less general system such as ‘christianity’ (C), within which is, for instance, the leibnizian system (L), and within which there are individual, personal systems (P). Every Smith₁ has an individual interpretation of broader systems, and so in actuality has *a*

system of his own. As a rule, personal systems are a part of, and influenced by, larger systems, which in turn are influenced by still more general systems. Such problems can be handled at present only by the methods of general semantics and by topological methods.*

‘Mental’ illness and every form of maladjustment are to be considered as mis-evaluations, involving some ‘philosophies’, public or individual, one within the other, as usual. ‘Philosophers’, etc., who wish to become aware of such dangers, would do well to study the verbalizations and mis-evaluations of the ‘mentally’ ill in hospitals.

2. PERPLEXITIES IN THEORIES OF ‘MEANING’

There is a fundamental confusion between the notion of the older ‘semantics’ as connected with a theory of *verbal* ‘meaning’ and words defined by words, and the present theory of ‘general semantics’ where we deal only with *neuro*-semantic and *neuro*-linguistic *living reactions* of Smith₁, Smith₂, etc., as their reactions to neuro-semantic and neuro-linguistic *environments as environment*.

The present day theories of ‘meaning’ are extremely confused and difficult, ultimately hopeless, and probably harmful to the sanity of the human race. Of late in the United States some members of the progressive education movement have written much on ‘referents’ and ‘operational’ methods, in the abstract, based on verbalism. Let us consider some facts, and how the theories of referents and operational methods fit *human evaluations*. Here is, for instance, Smith₁ who, through family, social, economic, political, etc., conditions has become ‘insane’. Smith₁ finally, in ordinary parlance, kills Smith₂. From a human point of view it is a very complex and tragic situation. Let us account for it in terms of referents and operations. The body and the heart of Smith₂, the hand of Smith₁, the knife, etc., are perfectly good referents. The grabbing of the knife by Smith₁ and plunging it in the heart of Smith₂, the falling down on the ground by Smith₂ and the kicking of his legs are perfectly good operations. However, where is *human evaluation* ? Where is concern with ‘sanity’ and ‘insanity’ ? Here we deal with some of the deepest human and social tragedies which, in this case, involve not only the killing of Smith₂ by Smith₁, but the sick, unhappy, twisted life of Smith₁, affecting all his life connections, and with which we must be concerned if we are to be *human beings* and different from apes.

* Lewin, Kurt. *Principles of Topological Psychology*. McGraw-Hill, New York, 1936.

Such an example is of course extreme and over-simplified, although it illustrates the principles. However, officially teaching such *methods* which are *inadequate* to handle evaluation, and so human values, has a definite sinister effect, among others, on the 'sex' life of the students. Many of them are taught to orient themselves generally by referents and operations only; and so mere physiological performance is often *identified* with mature love life, etc., and is a causative factor in the widespread marital unhappiness, promiscuity and other lowerings of human cultural and ethical standards.

Thus, theories of 'meaning' or still worse, 'meaning of meaning', based on 'referents' and 'operational' methods are thoroughly *inadequate* to account for human values, yet they do affect the nervous systems of humans. We must, therefore, work out a *theory of evaluation* which is based on the optimum electro-colloidal action and reaction of the nervous system.

There is no doubt that a civilized society needs some mature 'morals', 'ethics', etc. In a general theory of evaluation and sanity we must consider seriously such problems, if we are to be sane humans at all. Theory and practice show that healthy, well-balanced people are naturally 'moral' and 'ethical', unless their educations have twisted their types of evaluations. In general semantics we do not 'preach' 'morality' or 'ethics, *as such*, but we train students in consciousness of abstracting, consciousness of the multiordinal mechanisms of evaluation, *relational* orientations, etc., which bring about cortico-thalamic integration, and then as a result 'morality', 'ethics', awareness of social responsibilities, etc., follow automatically. Unfortunately our educational systems are unaware of, or even negativistic toward, such *neuro-semantic* and *neuro-linguistic* issues. These are sad observations to be made about our present educational systems.

May I suggest that readers consult *Apes, Men and Morons* and *Why Men Behave Like Apes* by Earnest A. Hooton; *The Mentality of Apes* by W. Kohler, *The Social Life of Apes and Monkeys* by S. Zuckerman, and many other studies of this kind. They might then more clearly understand how the aristotelian type of education leads to the humanly harmful, gross, macroscopic, brutalizing, biological, animalistic types of orientations which are shown today to be *humanly inadequate*. These breed such 'fuhrers' as different Hitlers, Mussolinis, Stalins, etc., whether in political, financial, industrial, scientific, medical,* educational, or even publishing, etc., fields, fancying that they represent 'all' of the *human*

* See Carrel's *Man The Unknown*.

world! Such delusions must ultimately be destructive to *human* culture, and responsible for the tragic 'cultural lag', stressed so much today by social anthropologists.

Existing theories of 'meaning' of any school do not take into consideration that any definition of words by words must be based ultimately on *undefined terms*. To the best of my knowledge this problem is not considered at all in present day educational systems, outside of some sciences, and so the existing theories run in a vicious circle, just like a dog chasing his tail, and are bound to be ineffective, if not harmful.

As Professor Keyser aptly formulates the problem: 'If he contend, as sometimes he will contend, that he has defined all his terms and proved all his propositions, then either he is a performer of logical miracles or he is an ass; and, as you know, logical miracles are impossible.*'

Similarly the theorists in the 'theory of meaning' as described above disregard the *inadequacy* for human orientation of the subject-predicate form of representation. I must refer the reader to my chapter on relations, page 188 ff., for further information.

In principle, a type of orientation which restricts formally everything to subject-predicate forms of representation can account only for symmetrical relations, and we may beat in the bush about 'meaning'; in principle, however, a theory of evaluation is then impossible. *Evaluation* must be based on asymmetrical relations such as 'more' or 'less', etc., which cannot be dealt with at all adequately if restricted formally to subject-predicate forms of representation, that harmfully affect our orientations.

What I have said here is correct in principle; however, in practice, in the neuro-semantic and neuro-linguistic development of the white race we had to invent, by living necessity, some asymmetrical relations such as 'more' or 'less', etc. The difficulty lies in the fact that these methods of escape from a subject-predicate grammatical structure of language were used only haphazardly, and not formulated generally into a workable system based on asymmetrical relations, which would be *teachable*.

Similarly with the problem of intensional orientation by verbal definitions and extensional orientation by facts (see p. 173); there is also confusion about it. 'Pure' extension is humanly impossible; 'pure' intension is possible, and is often found in hospitals for 'mentally' ill, and in some chairs of 'philosophy'. These issues and problems are seriously confusing to the average person because they have not been formulated before in a methodological system.

* Keyser, Cassius J. *Mathematical Philosophy*. E. P. Dutton, New York, 1922, p. 152.

3. INADEQUACY OF FORMS OF REPRESENTATION AND THEIR STRUCTURAL REVISION

It is not generally realized what serious difficulties an *inadequate, unduly limited form of representation or theory* brings about. This is well known in science. Thus, for instance, the euclidean and newtonian systems cannot deal successfully with electricity and so it was imperative to produce non-euclidean and non-newtonian systems, which do apply to the sub-microscopic electrical levels and also to the macroscopic gross levels. Similarly in life, the two-valued aristotelian system could not deal adequately with the electro-colloidal sub-microscopic levels of the functioning of our nervous systems, on which sanity depends. Thus the formulation of the present infinite-valued non-aristotelian system became also an imperative necessity.

I must stress that as the older systems are only special limitations of the new more general 'non' systems (see p. 97), it would be incorrect to interpret a 'non' system as an 'anti' system.

Such a non-aristotelian system is long overdue. It was retarded because of persecution by the church and other influential bodies, the general belief that 'Aristotle said the last word', etc., and particularly because of the inherent difficulties of such a revision.

The problem of inadequacy in the forms of representation has handicapped science and life a great-deal until relatively adequate systems were produced. In life the situation is much more aggravated, for if our orientations and evaluations are inadequate, our predictability is impaired, and we feel with the poet Housman, 'I, a stranger and afraid, in a world I never made'. If we have a more adequate or proper evaluation, we would have more correct predictability, etc., (see p. 58 ff. and p. 750 ff.). We would then feel, 'We are *not* strangers, and *not* afraid, in this *human mess* you and I have made'.

Another of the main difficulties is that a language or a system of a given structure can be somewhat altered from within, but cannot be *revised structurally* without going *outside* the former system. For instance, all the attempts to revise the structure of the euclidean and newtonian systems from within were ineffective. Those who revised these systems structurally had to go outside the systems first, after which they were able to produce different, independent, new systems. Only then did an effective evaluation of the former systems become possible.

Similarly the aristotelian, two-valued, intensional system can be revised structurally and evaluated properly only by building independently a non-aristotelian, infinite-valued, extensional system. This verifies the contention of Bertrand Russell made in 1922 that there is a 'possibility'

that 'every language has . . . a structure concerning which, *in the language*, nothing can be said, but that there may be another language dealing with the structure of the first language, and having itself a new structure'.* What Russell calls a 'possibility' becomes a fact once a system of *different structure* is built. Then the issues become clear.

Russell limits himself to the structure of a language, and disregards the fact that this limitation is artificial, and that any language involves structural assumptions which build up a *system of orientations* that may be racial, national, personal, etc.

4. IDENTIFICATIONS AND MIS-EVALUATIONS

The problem of *general* identification is a major problem which does not seem to be understood at all even by specialists. Psychiatrists know professionally the tragic consequences of identifications in their patients. But what even psychiatrists do not realize is that identifications in daily life are extremely frequent and bring about every kind of difficulties.

As a matter of fact we live in a world in which non-identity is as entirely general as gravitation, and so *every identification* is bound to be in some degree a mis-evaluation. In a four-dimensional world where 'every geometrical point has a date', even an 'electron' at different dates is not identical with itself, because the sub-microscopic processes actually going on in this world cannot empirically be stopped but only transformed. We can, however, through extensional and four-dimensional methods translate the dynamic into the static and the static into the dynamic, and so establish a similarity of structure between language and facts, which was impossible by aristotelian methods. Unfortunately even some modern physicists are unable to understand these simple facts.

To communicate to my classes what I want to convey to my readers here, the following procedure has been useful. In my seminars I pick a young woman student and pre-arrange with her a demonstration about which the class knows nothing. During the lecture she is called to the platform and I hand her a box of matches which she takes carelessly and drops on the desk. That is the only 'crime' she has committed. Then I begin to call her names, etc., with a display of anger, waving my fists in front of her face, and finally with a big gesture, I slap her face gently. Seeing this 'slap', as a rule ninety per cent of the students recoil and shiver; ten per cent show no overt reactions. The latter have seen what they have seen, but they *delayed their evaluations*. Then I explain to the students that their recoil and shiver was an *organismal evaluation* very

* Wittgenstein, Ludwig. *Tractatus Logico-Philosophicus*, with an introduction by Bertrand Russell. Harcourt, Brace, New York, 1922, p. 23.

harmful in principle, because they *identified* the seen facts with their judgements, creeds, dogmas, etc. Thus their reactions were entirely unjustified, as what they have *seen* turned out to be merely a scientific demonstration of the mechanism of identification, which identification I expected.

Such identifications are very common. The late Dr. Joshua Rosett, formerly Professor of Neurology in Columbia University, and Scientific Director, Brain Research Foundation, New York, gives an example from his own experience. 'A vivid picture on the cinema screen represented a boy and a girl pulling down hay from a stack for bedding. I sneezed—from the dust of the hay shown on the screen.'^{*}

The problem of identification in values is neurologically strictly connected with the pathological reversal of the natural order of evaluation, which is found in different degrees in the maladjusted, neurotics, psychotics, and even in some 'normal' persons. Thus, the supposedly innocent 'shiver' and the sneezing in the examples above, or the attack of hay fever when *paper* roses are shown (see p. 128), etc., may as well in other cases end in a sudden death or in a neurosis or psychosis. The neurological mechanisms are similar, involving identifications in values of different orders of abstractions, and therefore the very common reversal of the natural order of evaluation.

In the evolution of the human race and language there was a natural order of evaluation established; namely, the life facts came first and labels (words) next in importance. Today, from childhood up, we inculcate words and language first, and the facts they represent come next in value, another pathologically reversed order, by which we are unconsciously being trained to identify words with 'facts'. Even in medicine we much too often evaluate by the definitions of 'diseases' instead of dealing with an individual sick patient, whose illness seldom fits textbook definitions.

The foregoing considerations deal directly with aristotelian orientations by intension, or verbal definitions, where verbiage comes first in importance, and facts next. By non-aristotelian methods we train in the natural order; namely, that first order empirical facts are more important than definitions or verbiage. It should be noticed that the average child is born extensional, and then his evaluations are distorted as the result of intensional training by parents, teachers, etc., who are unaware of the heavy neurological consequences.

These are key problems involved in the passing from aristotelian to non-aristotelian orientations, which affect our future personal, national

^{*} Rosett, Joshua. *The Mechanism of Thought, Imagery, and Hallucination*. Columbia University Press, New York, 1939, p. 212.

and international adjustments. For a detailed discussion the reader is referred to this text, see index under the terms 'identification', 'order', 'natural order', etc.

5. METHODS OF THE MAGICIAN

Another very serious difficulty arises due to the fact that our knowledge of the world and ourselves involves unavoidable factors of deception and self-deception. A scientific study of magic with its methods of psycho-logical deception is most revealing, as it shows the mechanisms by which we are continually and unknowingly being deceived in science and daily life.* The stock in trade of the magician to fool the public consists of methods of misdirection, of mis-evaluation, half-truths, etc., used to play on the ordinary associations and implications, habits of hasty generalizations, etc., of the audience, thus leading to misinterpretations, identifications, lack of predictability, etc. These general, and so common, psychological mechanisms are very deep, and to a large extent are connected with the aristotelian type of intensional, subject-predicate orientations, which ultimately may become harmful.

For maximum adjustment, and therefore sanity, we need neurological methods to prevent and counteract these heretofore unavoidable old deceptions and self-deceptions. In a non-aristotelian system these difficulties are recognized and empirical methods are discovered to eliminate them step by step. Such methods of prevention and counteraction culminate in training in consciousness of abstracting (see Chapters XXVI, XXVII, XXIX and p. 499 ff.).

I must stress that as far as we humans are concerned, we cannot possibly be entirely ignorant about ourselves; we may have only *false knowledge* or *half-truths*. It is psychiatrically known that in many instances false knowledge, particularly about ourselves, breeds maladjustments, often of a serious character, just because it is based fundamentally on self-deception. In the meantime we react and act '*as if*' our half-truths or false knowledge were 'all there is to be known'. Thus we are bound to be bewildered, confused, obsessed with fears, etc., because of mistakes due to our mis-evaluations, when we orient ourselves by verbal structures which do not fit facts.

Section C. Revolutions and evolutions.

One of the gravest difficulties facing the world today is the passing from one historical era to another. Such passings, as history shows, have

* Kelley, Douglas M. Conjuring as an Asset to Occupational Therapy. *Occupational Therapy and Rehabilitation*. Vol. 19, No. 2, April, 1940.

always been painful, and pregnant with consequences. To illustrate: the transition from papal control to non-papal control, passing through murderous religious persecutions and slaughters, including the devastating Thirty Years, War, etc.; from French royalism to republicanism, passing through the ferocious French Revolution and Commune; from czarism to state capitalism, passing through the latest bloody Russian Revolution and a period of so-called 'communism'. Now we are witnessing the struggles of 'democracies' with 'totalitarian states', passing as yet through the recent ruthless Spanish War, second World War, etc., etc.

Similarly we can give illustrations of painful transitions from one system to another from the history of science, which were also accompanied by bewilderment and labour: for instance, the passing from the ptolemaic to the copernican, from euclidean to non-euclidean, newtonian to non-newtonian (einsteinian), etc., systems.

In all these transitions it took one or more generations before the upheaval subsided and an adjustment was made to the new conditions.

No matter how painful and disturbing these transitions were, they were still changes and revisions *within* the then most general, intensional aristotelian system. This system was imposed on the white race by the 'church fathers'. Its strength and influence was due to its academically rationalized general verbal formulations which were set forth in textbooks, and thus became teachable. From the beginning the aristotelian system as formulated was inadequate and many attempts at corrections were made. The white race was impressed by the church that 'Aristotle spake', and there was nothing more to be said. In fact, attempts to revise this system were prohibited even up to very recent times. Just the same, new facts which would not fit the aristotelian and church patterns were accumulating and so new methods, languages of special structure, etc., were required.

Perhaps an illustration from the history of mathematics will help. For more than 2,000 years by necessity mathematicians differentiated and integrated in some clumsy fashion in order to solve individual problems. But only after the formulation of a *general theory* by Newton and by Leibnitz did the *general method* become teachable and communicable as a general practical discipline (see p. 574) which provided the foundations for future developments in mathematics.

The aristotelian system had been formulated in a very rationalized way. Non-aristotelian attempts have been and are being made continually in limited areas. The difficulty was that no methodological general theory based on the new developments of life and science had been formulated until general semantics and a general, extensional, teachable

and communicable, non-aristotelian system was produced. The main difficulties ahead are neuro-semantic and neuro-linguistic because for more than 2,000 years our nervous systems have been canalized in the inadequate, intensional, often delusional, aristotelian orientations, which are reflected even in the *structure of the language* we habitually use.

It may be helpful to indicate some historical facts of the development of our orientations since Socrates (469-399 B.C.). Socrates was the son of a *sculptor* and himself did *some work with the chisel and his hands*. He became an important founder of a school of 'philosophy'. In brief, this school had very high standards for science, seeking the application of the science of the time to life, so that it became what may be called a 'school of wisdom'.

One of his students, Plato (427-347 B.C.), who came from an *aristocratic family*, became the founder of a different school, called the 'Academy', and the 'father' of what may be called 'mathematical philosophy'. Unlike his teacher, he began, in his 'Doctrine of Ideas', to verbally split humans into 'body' and 'mind', as if they could be so split in living beings. He built a system of '*immaterialism*' or '*idealism*'.

Aristotle (384-322 B.C.), the son of a *physician*, was the student of Plato, and particularly interested in *biology, other natural sciences*, etc. He founded the most influential of the three schools, which is called by his name. He was undoubtedly one of the most gifted men mankind has ever known. As usual in such cases, the study of one branch of knowledge leads to another, so Aristotle was led to the study of 'logic', *linguistic structure*, etc., about which he produced scholarly treatises or textbooks, ultimately formulating the most complete system of his time. Because of the completeness of the system, backed by powerful influences, it has moulded our orientations and evaluations up to the present. The man on the street, our education, medicine and even sciences, are still in the clutches of the system of Aristotle, a system *inadequate* for 1941 yet perhaps satisfactory 2,300 years ago, when conditions of life were relatively so simple, when orientations were on the macroscopic level only, and knowledge of scientific facts was practically nil (see p. 371 ff.).

In Aristotle's system *as applied*, the split becomes complete and institutionalized, with jails for the 'animal' and churches for the 'soul'. Now we begin to realize how pernicious and retarding for civilization that split is. For instance, only since Einstein and Minkowski do we begin to understand that 'space' and 'time' cannot be split empirically, otherwise we create for ourselves delusional worlds. Only since their work has modern sub-microscopic physics with all its accomplishments become possible.

Similarly, and tragically, this applies to medicine. Until recently we have had a split medicine. One branch, general medicine, was interested in the 'body' (soma) the other was interested in the 'soul' ('psyche'). The net result was that general medicine was a glorified form of veterinary science, while psychiatry remained metaphysical.* However, it has been found empirically that a great many 'physical' ailments are of a semantogenic origin. Only a few years ago general physicians began to understand that they cannot deal with humans without knowing something about psychiatry, and psychosomatic medicine began to be formulated. I cannot go into further detail here, except to mention that this is another constructive step away from the aristotelian system, which as applied trains us in artificial, verbal splits.

If we train in methods which in principle lead to splitting the personality, we obviously train or prepare the ground for dementia praecox or schizophrenia, which very often involves a split personality. At any rate, it does not seem to be advisable for sanity, and so proper evaluation of 'facts' and 'reality', to train our children in delusional methods. Personally, the author is always profoundly shocked that parents, who after all care for their children, can tolerate educators, physicians, scientists, etc., who train their children in such pernicious and hopelessly antiquated methods. I also always wonder whether educators, physicians, scientists and other professionals realize what harm they can do by disregarding factors of sanity, or by ignoring them.

It is pitiful to watch how even some of the most outstanding scientists in the world are unable to understand what a passing from one system to another means. Thus, for example, an Encyclopedia of Unified Science was projected. A number of very scholarly treatises were published in it, and yet because the difficulties were not faced squarely the authors are missing the point that neuro-semantic and neuro-linguistic mechanisms are involved and that we are passing from one system to another.

One of the tremendous obstacles in the revision of the aristotelian system is exactly the excellence of the work of Aristotle based on the very few scientific facts known 2,300 years ago. The aim of his work *circa* 350 B.C. was to formulate the *essential nature of science* (350 B.C.) and the forms and laws of science. His immediate goal was entirely *methodological* (350 B.C.), and he aimed to formulate a *general method* for 'all' scientific work. He was even expounding the theory of symmetrical relations, the relation of the general to the particular, etc. In his days these orientations were by necessity two-valued and 'objective'; hence

* Korzybski, Alfred. Neuro-semantic and Neuro-linguistic Mechanisms of Extensionalization. *American Journal of Psychiatry*, Vol. 93, No. 1, July, 1936.

follows his whole system, then more or less satisfactory on macroscopic levels. A modern revision of the aristotelian system or the building of a non-aristotelian system involves, or is based on, similar aims; namely, the formulation of a *general method* not only for scientific work, but also life, as we know it *today* (1941).

Modern scientific developments show that what we label ‘objects’ or ‘objective’ are mere nervous constructs inside of our skulls which our nervous systems have abstracted electro-colloidally from the actual world of electronic processes on the sub-microscopic level. And so we have to face a complete methodological departure from two-valued, ‘objective’ orientations to *general, infinite-valued, process orientations*, as necessitated by scientific discoveries for at least the past sixty years.

The aim of the work of Aristotle and the work of the non-aristotelians is similar, except for the date of our human development and the advance of science. The problem is whether we shall deal with science and scientific methods of 350 B.C. or of 1941 A.C. In general semantics, in building up a non-aristotelian system, the aims of Aristotle are preserved yet scientific methods are brought up to date.

Section D. A non-aristotelian revision.

In an attempt to convey the magnitude of the task we are now confronting, I can do no better than to summarize roughly in the following tabulation some of the more outstanding points of difference between the aristotelian system as it shapes our lives today, *and is lived by*; and a scientific, non-aristotelian system, as it will, perhaps, guide our lives sometime in the future.

OLD ARISTOTELIAN ORIENTATIONS (circa 350 B.C.)	NEW GENERAL SEMANTIC NON-ARISTOTELIAN ORIENTATIONS (1941 A.C.)
1. Subject-predicate methods	Relational methods
2. Symmetrical relations, inadequate for proper <i>evaluation</i>	Asymmetrical relations, indispensable for proper <i>evaluation</i>
3. <i>Static</i> , ‘objective’, ‘permanent’, ‘substance’, ‘solid matter’, etc., orientations	<i>Dynamic</i> , ever-changing, etc., electronic <i>process</i> orientations
4. ‘Properties’ of ‘substance’, ‘attributes’, ‘qualities’ of ‘matter,’ etc.	Relative invariance of function, dynamic structure, etc.
5. Two-valued, ‘either-or’, inflexible, dogmatic orientations	Infinite-valued flexibility, degree orientations
6. Static, finalistic ‘ <i>allness</i> ’; finite number of characteristics attitudes	Dynamic <i>non-allness</i> ; infinite number of characteristics attitudes

ARISTOTELIAN ORIENTATIONS	NON-ARISTOTELIAN ORIENTATIONS
7. <i>By definition</i> 'absolute sameness in "all" respects' ('identity')	Empirical non-identity, a natural law as universal as gravitation
8. Two-valued 'certainty', etc.	Infinite-valued maximum probability
9. Static absolutism	Dynamic relativism
10. <i>By definition</i> 'absolute emptiness,' 'absolute space,' etc.	<i>Empirical</i> fullness of electro-magnetic, gravitational, etc., fields
11. <i>By definition</i> 'absolute time'	<i>Empirical</i> space-time
12. <i>By definition</i> 'absolute simultaneity'	<i>Empirical</i> relative simultaneity
13. Additive ('and'), linear	Functional, non-linear
14. (3+1)-dimensional 'space' and 'time'	4-dimensional space-time
15. Euclidean system	Non-euclidean systems
16. Newtonian system	Einsteinian or non-newtonian systems
17. 'Sense' data predominant	Inferential data as fundamental new factors
18. Macroscopic and microscopic levels	<i>Sub</i> -microscopic levels
19. Methods of magic (self-deception)	Elimination of self-deception
20. Fibers, neurons, etc., 'objective' orientations	Electro-colloidal <i>process</i> orientations
21. Eventual 'organism-as-a-whole', disregarding environmental factors	Organism-as-a-whole- <i>in-environments</i> , introducing new unavoidable factors
22. Elementalistic <i>structure</i> of language and orientations	Non-elementalistic <i>structure</i> of language and orientations
23. 'Emotion' and 'intellect', etc.	Semantic reactions
24. 'Body' and 'mind', etc.	Psychosomatic integration
25. Tendency to split 'personality'	Integrating 'personality'
26. Handicapping nervous integration	Producing automatically thalamo-cortical integration
27. Intensional <i>structure</i> of language and orientations, perpetuating:	Extensional <i>structure</i> of language and orientations, producing:
28. Identifications in value:	Consciousness of abstracting
a) of electronic, electro-colloidal, etc., stages of processes with the silent non-verbal, 'objective' levels	} Extensional devices
b) of individuals, situations, etc.	
c) of orders of abstractions	
29. Pathologically reversed order of evaluation	Natural order of evaluation
30. Conducive to neuro-semantic tension	Producing neuro-semantic relaxation

ARISTOTELIAN ORIENTATIONS	NON-ARISTOTELIAN ORIENTATIONS
31. Injurious psychosomatic effects	Beneficial psychosomatic effects
32. Influencing toward un-sanity	Influencing toward sanity
33. 'Action at a distance', metaphysical false-to-fact orientations	'Action by contact,' neuro-physiological scientific orientations
34. Two-valued causality, and so consequent 'final causation'	Infinite-valued causality, where the 'final causation' hypothesis is not needed
35. Mathematics derived from 'logic', with resulting verbal paradoxes	'Logic' derived from mathematics, eliminating verbal paradoxes
36. Avoiding empirical paradoxes	Facing empirical paradoxes
37. Adjusting empirical facts to verbal patterns	Adjusting verbal patterns to empirical facts
38. Primitive static 'science' (religions)	Modern dynamic 'religions' (science)
39. Anthropomorphic	Non-anthropomorphic
40. <i>Non-similarity of structure</i> between language and facts	<i>Similarity of structure</i> between language and facts
41. Improper evaluations, resulting in:	Proper evaluations, tested by:
42. Impaired predictability	Maximum predictability
43. <i>Disregarded</i>	Undefined terms
44. <i>Disregarded</i>	Self-reflexiveness of language
45. <i>Disregarded</i>	Multiordinal mechanisms and terms
46. <i>Disregarded</i>	$\frac{\text{Over}}{\text{Under}}$ defined character of terms
47. <i>Disregarded</i>	Inferential <i>terms</i> as <i>terms</i>
48. <i>Disregarded</i>	Neuro-linguistic environments considered as environment
49. <i>Disregarded</i>	Neuro-semantic environments considered as environment
50. <i>Disregarded</i>	Decisive, automatic effect of the <i>structure of language</i> on types of evaluation, and so neuro-semantic reactions
51. Elementalistic, verbal, intensional 'meaning', or still worse, 'meaning of meaning'	Non-elementalistic, extensional, by fact <i>evaluations</i>
52. Antiquated	Modern, 1941

THE NEW NON-ARISTOTELIAN ORIENTATIONS DIFFER AS MUCH FROM THE ARISTOTELIAN AS THE ARISTOTELIAN DIFFER FROM THE PRIMITIVE TYPES OF EVALUATION.

The old orientations are being perpetuated, as a rule unknowingly, through the aristotelian structure of our language, our institutions, etc. The new orientations are simpler than the old because they are closer to empirical facts, and so are even more easily absorbed by children—provided parents, teachers, etc., are themselves aware of the new methods and so can give the children guidance.

The difficulties we are now facing, with the many important new factors introduced in a non-aristotelian system, listed roughly in the tabulation, cannot be evaluated effectively unless we understand the role that *new factors* play in our generalizations.

Section E. New factors: the havoc they play with our generalizations.

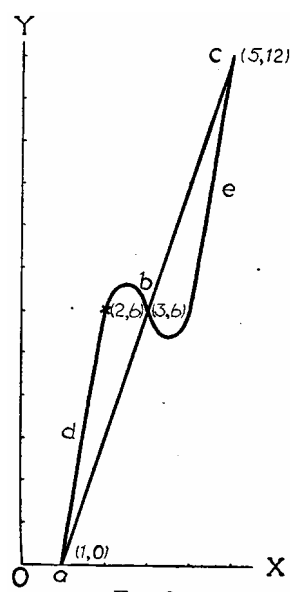


FIG. 2

In mathematics and science we use extensively the method of interpolation. In building curves we do not have all the points or data. We have a number of them and then connect the points with a smooth curve. The equation of that curve is given on the basis of the actual data at hand. The nervous processes which are involved in interpolations and building up equations are also involved in producing *ordinary generalizations* in daily life; that is, we interpolate from the data we have and then generalize in words instead of equations. It is well known that sometimes when a new datum is discovered it transforms the curve entirely, with a corresponding change in the equation (generalization).

Fig. 2 as an illustration will make this clearer. If we measure the experimental points (1,0), (3,6), (5,12), we would find them to lie on the line *abc* with the equation $y=3x-3$, and we might conclude therefrom that further similar experiments would confirm the linearity of the relationship being studied. But if a further analysis yields the point (2,6), the simplest curve fitting these data is now the curve *adbec*, expressed by the equation $y=x^3-9x^2+26x-18$, which is different and much more complex than before, because it is a cubic equation instead of a linear equation.*

* I am indebted for this example to Dr. A. S. Householder, University of Chicago.

It is not generally recognized what havoc the discovery of a single new, important, structural factor may play with our generalizations. In science and ordinary life we are coming across such new factors quite often, and we have to change our equations or generalizations, and so our standards of evaluation, if we do not want to build up delusional situations for ourselves.

As an example I can suggest here the work of Professor W. Burrige,* who in his physiological investigations introduced the new unavoidable factor of the electro-colloidal structure of life. In this case it does not matter whether the particular colloidal theory suggested by Burrige is correct or not. The fact that he introduced an important new structural factor leads to entirely different interpretations, generalizations, etc., although the first order empirical facts remain. Such an introduction requires a complete revision of the generalizations of biology, physiology, neurology, etc., and therefore even medicine and psychiatry. Incidentally, psychosomatic results become at least intelligible.

Other examples may be given, such as the work of Professor William F. Petersen,** who introduced the new factor of weather into medicine; or of Freud, who introduced the 'unconscious', etc.; or of Lorentz, Einstein and others, who introduced the finite velocity of light into the newtonian system, etc., etc. As is well known, the introduction of these new factors revolutionized constructively the older theories.

The scientific requirements of a new theory are very exacting. A new theory must account for the known facts and predict new facts following the new generalizations, which in turn depend upon the new factors or structural assumptions introduced. The predicted new facts must then be verified empirically.

In general semantics we introduce a number of new unavoidable structural factors; among others, our neuro-semantic (neuro-evaluational) and neuro-linguistic *environments as environment*. Such introductions also require a radical revision of what we know, and have wide applications in daily life, as well as in sciences, including the foundation of mathematics (see chapters XIV, XV, XVIII, and XIX) and physics (see chapter XVII). These new factors should particularly interest parents, educators, medical men, psychiatrists, and other specialists.

The introduction of new factors may at first produce seeming diffi-

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** Professor of Pathology, University of Illinois, College of Medicine.

culties because of the unfamiliarity of a new terminology which embodies the new structural assumptions, and because of the necessity of a re-canalization of our neuro-linguistic habits, etc. Yet after the new orientations are acquired, the new issues become much simpler than the older, because they are better understood (see p. 97).

In at least one historical case, it was the omission of an unnecessary artificial assumption that brought about a transformation of the whole system. I speak here about euclidean geometry, which assumes the equal distance of parallels, and the non-euclidean geometries, which eliminated this equal distance postulate as unnecessary. The results were very striking. Thus, in the euclidean system we build curves out of little bits of 'straight lines'. We do the opposite in the newer geometries—we start with curves, shortest distances, etc., not 'straight lines' (as no one knows what that means), and build up 'straight lines' as the limit of an arc of a circle with an 'infinite radius' (see p. 590).

Further explanations are given in the text, but I hope that I have conveyed to the reader the fundamental character of these problems and some of the difficulties encountered at first when new structural factors are introduced. Even the elimination of a postulate may be translated into an introduction of a new negative factor. This translation is important in life, although it may be unimportant in technical mathematics. In science as well as in life we deal all the time with this kind of problems, and when they are not understood structurally, we are only plunged into paradoxes and bewilderment, and potential maladjustment.

Section F. Non-aristotelian methods.

1. NEUROLOGICAL MECHANISMS OF EXTENSIONALIZATION

There is an especially broad generalization, already referred to, which empirically indicates a fundamental difference between the traditional, aristotelian, intensional orientations, and the new non-aristotelian extensional orientations, and in many ways summarizes the radical differences between the two systems. This is the problem of *intension* (spelled with an *s*) and *extension*. Aristotle, and his followers even today, recognized the difference between intension and extension. However, they considered the problem *in the abstract*, never applying it to human *living reactions* as *living reactions*, which can be predominantly intensional or predominantly extensional. The interested reader is advised to consult any textbook on 'logic' concerning 'intension' and 'extension', as well as the material given in this text (see index).

The difference can be illustrated briefly by giving examples of 'defini-

tions'. Thus a 'definition' by intension is given in terms of aristotelian 'properties'. For instance, we may verbally 'define' 'man' as a 'featherless biped', 'rational animal', and what not, which really makes no difference, because no listing of 'properties' could possibly cover 'all' the characteristics of Smith₁, Smith₂, etc., and their inter-relations.

By extension 'man' is 'defined' by exhibiting a class of individuals made up of Smith₁, Smith₂, etc.

On the surface this difference may appear unimportant; not so in *living life applications*. The deeper problems of neurological mechanisms enter here. If we orient ourselves predominantly by intension or verbal definitions, our orientations depend mostly on the cortical region. If we orient ourselves by extension or facts, this type of orientation by necessity follows the natural order of evaluation, and involves thalamic factors, introducing automatically cortically delayed reactions. In other words, orientations by intension tend to train our nervous systems in a split between the functions of the cortical and thalamic regions; orientations by extension involve the integration of cortico-thalamic functions.

Orientations by extension induce an *automatic* delay of reactions, which *automatically* stimulates the cortical region and regulates and protects the reactions of the usually over-stimulated thalamic region.

What was said here is elementary from the point of view of neurology. The difficulty is that this little bit of neurological knowledge is not applied in practice. Neurologists, psychiatrists, etc., have treated these problems in an 'abstract', 'academic', detached way only, somehow, entirely unaware that living human reactions depend on the working of the human nervous system, from which dependence there is no escape. No wonder 'philosophers', 'logicians', 'mathematicians', etc., disregard the working of their nervous systems if even neurologists and psychiatrists still orient themselves by verbal fictions in the 'abstract'.

If we investigate, it seems appalling how little of the vast knowledge we have is actually applied. Even the ancient Persians showed their understanding of the difference between *learning* and *applying* in their proverb: 'He who learns and learns and yet *does* not what he knows, is one who plows and plows yet never sows'. In this new modern non-aristotelian system we have not only to 'know' elementary facts of modern science, including neuro-linguistic and neuro-semantic researches, but also to *apply* them. In fact, the whole passage from the aristotelian to non-aristotelian systems depends on this change of attitude from intension to extension, from macroscopic to sub-microscopic orientations, from 'objective' to process orientations, from subject-predicate to relational evaluations, etc. This is a laborious process and months of self-

discipline are required for adults before these new methods can be applied generally; children as a rule have no difficulties.

If we stop to reflect, however, it seems obvious that those who are trained in two-valued, macroscopic, ‘*objective*’, aristotelian orientations only, are thoroughly unable to have modern, electro-colloidal, sub-microscopic, infinite-valued, *process* orientations in life, which can be acquired only by training in non-aristotelian methods.

It is sad indeed to deal with even young scientists in the colloidal and quantum fields who, after taking off their aprons in the laboratory, relapse immediately into the two-valued, prevalent aristotelian orientations, thus ceasing to be scientific 1941. In many ways these scientists are worse off than the ‘man on the street’, because of the artificially *accentuated* split between their scientific and their life orientations. Although they work in an infinite-valued, non-aristotelian field, even they need special training to become conscious of how to apply their own scientific non-aristotelian methods to life problems.

Empirically the consequences of training in the new methods are astonishingly far-reaching. This is easily understood after reflection, because the integrating of the functions of the cortical and thalamic regions brings about better functioning of glands, organs, etc. Although general semantics is not a medical science, we can understand why the non-aristotelian extensional thalamo-cortical methods bring about a great deal of stabilization and even psychosomatic consequences, as the empirical results achieved by my psychiatric co-workers and myself indicate.

2. NEURO-SEMANTIC RELAXATION

The optimum working of the nervous system depends, among other things, on ‘normal’ blood pressure, which is predominantly a thalamic function, supplying the nervous system with necessary blood circulation. As both affective, or ‘emotional’, responses and blood pressure are neurologically closely connected, it is fundamental for ‘emotional’ balance to have ‘normal’ blood pressure, and *vice versa*.

In general semantics we utilize what I call ‘neuro-semantic relaxation’, which, as attested by physicians, usually brings about ‘normal’ blood pressure; that is, it lowers abnormally high pressure and raises abnormally low pressure, thus regulating the essential *blood circulation*, and so blood supply. The standards for ‘normal’ are given in statistical averages and are not accurate for the given individual, and at different times. These conditions and beneficial consequences are strictly empirical, and must be taken into account, regardless of the fact that the present scientific theories on this subject are not yet clear. It must be

realized that for the ‘normal’ working of the nervous system we must have a proper blood circulation, which may be affected by the *tension* of blood vessels, and is also connected with ‘emotional’ *tension*. We are never aware of this particular steady kind of ‘emotional’ tension, which involves hidden fears, anxieties, uncertainties, frustrations, etc., and through the nervous mechanisms of projection colour harmfully our attitudes toward the world and life in general. Such conditions result in *defensiveness*, which is *no defense*, but a wasteful, useless drain on the limited nervous capacities.

Some details of the mechanisms and techniques involved, as they affect, among others, so-called ‘speech difficulties’, (stuttering, etc.) are given by Professor Wendell Johnson, University of Iowa, in his *Language and Speech Hygiene: An Application of General Semantics*, published as the first monograph of the Institute of General Semantics. More details concerning neuro-semantic relaxation will be presented in professional papers.

3. EXTENSIONAL DEVICES AND SOME APPLICATIONS

To achieve extensionalization we utilize what I call ‘extensional devices’:

- | | | |
|------------------------------|---|-----------------|
| 1) Indexes | } | Working Devices |
| 2) Dates | | |
| 3) Etc. (<i>et cetera</i>) | | |
| 4) Quotes | } | Safety Devices |
| 5) Hyphens | | |

It should be noticed that in a four-dimensional world dating is only a particular temporal index by which we can deal effectively with space-time. In non-aristotelian orientations these extensional devices should be used habitually and permanently, with a slight motion of the hands to indicate absolute individuals, events, situations, etc., which change at different dates, also different orders of abstraction, etc. Thus thalamic factors become involved, *without which the coveted thalamo-cortical integration cannot be accomplished*.

I may add that all existing psychotherapy, no matter of what school, is based on the partial and particular extensionalization of a given patient, depending on the good luck and personal skill of the psychiatrist. Unfortunately these specialists are in the main unaware of what is said here, and of the existence of a theory of sanity which gives general, simple, and workable thalamo-cortical methods for extensionalization, and so thalamo-cortical integration.

A few illustrations of the wide practical applications of some of the devices may be given here. In many instances serious maladjustments

follow when 'hate' absorbs the whole of the affective energy of the given individual. In such extreme cases 'hate' exhausts the *limited* affective energy. No energy is left for positive feelings and the picture is often that of a dementia praecox, etc. Thus an individual 'hates' a *generalization* 'mother', 'father', etc., and so by identification 'hates' 'all mothers', 'all fathers', etc., in fact, hates the whole fabric of human society, and becomes a neurotic or even a psychotic. Obviously, it is useless to preach 'love' for those who have hurt and have done the harm. Just the opposite; as a preliminary step, by *indexing* we *allocate* or *limit* the 'hate' to the individual Smith₁, instead of a 'hate' for a generalization which spreads over the world. In actual cases we can watch how this allocation or limitation of 'hate' from a generalization to an individual helps the given person. The more they 'hate' the individual Smith₁ instead of a generalization, the more positive affective energy is liberated, and the more 'human' and 'normal' they become. It is a long struggle, but so far empirically invariably successful, provided the student is willing to work persistently at himself.

But even this indexed *individualized* 'hate' is not desirable, and we eliminate it rather simply by *dating*. Obviously Smith₁¹⁹²⁰ *is not* Smith₁¹⁹⁴⁰ and most of the time hurt₁¹⁹²⁰ would not be a 'hurt' in 1940. With such types of orientations the individual becomes adjusted, and serious improvements in family and social relationships follow, because the student has trained himself in a general method for handling his own problems.

Similar mechanisms of generalization through identifications are involved in morbid and other generalized *fears* which are so disastrous for daily adjustment. Because *thalamic factors are involved*, these difficulties are helped greatly or eliminated by a similar use of the extensional devices to individualize and then date the allocated fears.

What a heavy price we may sometimes pay for the disregard of extensional devices in connection with the structure of language, can be illustrated no better than by the life history and work of Dr. Sigmund Freud. In his writings Freud ascribed *one* intensional undifferentiated 'sex' even to infants, which revolted public opinion. If Freud would have used the extensional devices he would not have gotten into such detrimental professional and other difficulties. He would not have used the fiction 'sex' without indexes, dates and quotes, and he would have explained that an infant has a ticklish organ which could be labelled 'sex₀⁰' at birth, 'sex₁¹' at the age of one, 'sex₂²' at the age of two, etc. These are obviously different in life, but the differences are hidden by the one abstract definitional term 'sex', and made obvious only by the extensional techniques.

Let us be frank about it. The intensional abstract 'sex' labels a fiction. By extension or facts, 'sex' varies with every individual not only with age (dates), but in relation to endless other factors, and can be handled adequately only by the use of extensional devices.

4. IMPLICATIONS OF THE STRUCTURE OF LANGUAGE

In what is said above we were already dealing with the change from an intensional to an extensional *structure* of language, and so orientation. We can investigate a step further, and find that the aristotelian structure of language is in the main *elementalistic*, implying, through structure, a split or separation of what in actuality cannot be separated. For instance, we can verbally split 'body' *and* 'mind', 'emotion' *and* 'intellect', 'space' *and* 'time', etc., which as a matter of fact cannot be separated empirically, and can be split only verbally. These elementalistic, splitting, structural characteristics of language have been firmly rooted in us through the aristotelian training. It built for us a *fictional animistic world* not much more advanced than that of the primitives, a world in which under present conditions an optimum adjustment is in principle impossible.

In a non-aristotelian system we do not use elementalistic terminology to represent facts which are non-elementalistic. We use terms like 'semantic reactions', 'psychosomatic', 'space-time', etc., which eliminate the verbally implied splits, and consequent mis-evaluations. In the beginning of my seminars when I am explaining space-time, students often react by saying, 'Oh, you mean "space" *and* "time" '. This translation would abolish the whole modern advances of physics, because of the structural implications of a delusional verbal split. Similarly the habitual use of the non-elementalistic term 'semantic reactions' eliminates metaphysical and verbal speculations on such elementalistic fictions as 'emotion' *and* 'intellect', etc., considered as separate entities.

Unfortunately these considerations of structural implications have been entirely disregarded in daily life even by scientists, often befuddling issues very seriously. Thus, the term 'concept' is widely used, and the users are not conscious that this term has elementalistic implications of 'mind' or 'intellect' taken *separately*, which then become verbal fictions. The actual facts, however, can be simply expressed with correct structural implications. What is called 'concept' amounts to nothing more or less than a verbal *formulation*, a term which eliminates the false-to-fact implications. Students of general semantics are strongly advised never to use the elementalistic term 'concept', but the non-elementalistic 'formulation' instead. We could eventually berate and ridicule people for their

old neuro-linguistic habits, but in our work we take the *neurological attitude* and realize the difficulties of linguistic habits and neurological re-canalization. From this point of view we only face understandingly the inherent difficulties. I can even now hear the reactions of some of my readers, 'I fully agree with you, and I believe it is a very fine *concept*!' And so it goes.

From the above it becomes obvious that without changing the language itself, which is practically impossible, we can easily change the *structure* of language to one free from false-to-fact implications. This change is feasible.

Another example may make issues clearer. Thus the intensional verbal definition of 'man' or 'chair', etc., brings to our consciousness *similarities*, and, so to say, drives the *differences* into the 'unconscious'. In a world of processes and non-identity it follows that no individual, 'object', event, etc., can be the 'same' from one moment to the next. And so individualizing (indexes) and temporal devices (dates), etc., should be used *conjointly*. Thus, obviously chair₁¹⁶⁰⁰ is not the 'same' as chair₁¹⁹⁴⁰, nor is Smith₁^{Monday} the 'same' as Smith₁^{Tuesday}. Orientations in such extensional terms bring to our consciousness not only similarities but also differences. Through training in the consciousness of abstracting we become aware that characteristics are left out in the process of abstracting by our nervous systems, and so we become conscious of the possibility that new factors may arise at any time which would necessitate a change in our generalizations.

Once more we can get a bit of wisdom from mathematical method. I believe it was the great mathematician Sylvester who said that 'in mathematics we look for similarities in differences and differences in similarities', which statement should apply to our whole life orientation. This is made uniquely applicable to life by the new non-aristotelian extensional structure of language and so orientations.

The reader will find in this work the use of certain terms which, although they are standard English words, are not habitually used. The terms used here have been carefully selected and tested, and found to be more similar to the structure of the actual facts. The power of terminology, because of its *structural implications*, is well known in science, but is entirely disregarded in our daily neuro-linguistic habits.

It is shocking to realize that even such scholarly aristotelians as the Jesuits, and other devotees, are unable *or unwilling* to comprehend the obvious structural modern neuro-semantic and neuro-linguistic facts. When confronted with them they hide behind a verbal smoke screen of medieval terms such as 'nominalism', 'realism', etc., which in modern sci-

ence are hopelessly antiquated, useless, confusing, and so eventually harmful. Their attitude even today is that all those problems were settled and disposed of by different monks in the Middle Ages. Modern researches reveal that nothing of the sort was settled or disposed of, and that a new, up-to-date revision is necessary to eliminate the false knowledge from which present day tragedies follow automatically. The reader is referred to the Encyclopaedia Britannica under such terms as 'nominalism', 'realism', and related terms.

Section G. $\frac{\text{Over}}{\text{Under}}$ defined terms.*

As was explained before, for a revision of a system we must first get outside of the system. Only after producing a non-aristotelian extensional system can the aristotelian intensional structure of our traditional system and language be properly evaluated.

Here we introduce a most important technical term which describes a fundamental characteristic of a correct attitude toward language; namely, that most terms are ' $\frac{\text{over}}{\text{under}}$ defined'. They are over-defined (over-limited) by intension, or verbal definition, because of our *belief* in the definition; and are hopelessly under-defined by extension or facts, when generalizations become merely hypothetical. For instance, the euclidean parallels with their equal distance are over-defined by intension and under-defined by extension, as 'equal distance' is unnecessary and also is denied by facts. Similarly the newtonian equations are over-defined (over-limited) by intension, while under-defined by extension, which includes the necessary finite velocity of a signal (Lorentz-Einstein).

From these two examples alone we may see how heavy the problem is, as the discovery of a new important factor makes it obvious that most generalizations must be $\frac{\text{over}}{\text{under}}$ defined, depending upon whether our attitude is intensional or extensional. Unfortunately only those who have studied psychiatry and/or general semantics can fully comprehend the difficulties involved. Different maladjusted, neurotics, psychotics, etc., orient themselves by intension most of the time. This means they evaluate by over-definition, just because they *believe* in their limited verbal-

* The term 'over-defined class' was introduced to the best of my knowledge by Dr. A. S. Householder. This term is inadequate for our purpose, as it disregards the problems of intension and extension, which represent different types of evaluation. Besides, the term 'class' is very ambiguous. In science and life we deal mostly with $\frac{\text{over}}{\text{under}}$ defined *terms*, as will be explained.

isms, and not by extensional facts, which make us conscious of under-definition.

To make this fundamental difficulty clearer I will use a rather trivial illustration. The dictionaries define 'house' as a 'building for human habitation or occupation', etc. Let us imagine that we buy a house; this buying is an extensional activity, usually with some consequences. If we orient ourselves by intension we are really buying a definition, although we may even inspect the house, which may appear desirable, etc. Then suppose we move into the house with our furniture and the whole house collapses because termites have destroyed all the wood, leaving only a shell, perhaps satisfying to the eye. Does the verbal definition of the house correspond to the extensional facts? Of course not. It becomes obvious then that by intension the term 'house' was over-defined, or over-limited, while by extension, or actual facts, it was hopelessly under-defined, as many important characteristics were left out. In no dictionary definition of a 'house' is the possibility of termites mentioned.

'Philosophers', etc., and 'philosophizing' laymen, if they ever will be able to face facts and verbal paradoxes, will have a merry time arguing back and forth about the above human and neuro-linguistic situation because they know nothing about psychiatry and *empirical* data of general semantics. Without serious neuro-linguistic study, including the 'philosophical treatises' of 'mentally' ill in hospitals, they will not be able to understand why, by intension or *belief* in verbal definitions, most terms are hopelessly over-defined, while by extension they are hopelessly under-defined. Their analysis of intensional 'over-definitions' will be *extensional by necessity*, and they will have great difficulties in realizing the very important fact that we deal for the most part *only* with $\frac{\text{over}}{\text{under}}$ defined terms.

I must stress again that this difficulty is not inherent in our language as such, but depends exclusively on our *attitude* toward the *use* of language.

The ignorance of 'philosophers', etc., about *neuro*-semantic and *neuro*-linguistic issues is not only appalling, but positively harmful to sanity, civilization and culture. To justify their own existence in civilization they should have investigated such problems professionally long ago, and incorporated them in their work. Even the present world tragedies are one of the results of their intensional delusional *neuro*-semantic and *neuro*-linguistic detachment. Present day totalitarianisms were built by the dumping on the human nervous systems of such terms as 'communism', 'bolshevism,' etc., which induced corresponding fearful signal

reactions (see chapter XXI) of the ruling classes, resulting in their imbecilic and suicidal behaviour. The ruling classes welcomed in many ways the totalitarians as an eventual safe-guard of their personal selfish interests. The extensional results are that the dreaded ‘communists’ and ‘bolshevists’ have united with the totalitarians, and today, 1940, the ‘communists’ are as ‘imperialistic’ as any czar has ever been.

To give another example of $\frac{\text{over}}{\text{under}}$ defined terms, it may be helpful to cite a paradox formulated by the mathematician Frege in connection with linguistic difficulties underlying mathematical foundations.

In a village there was only one barber, who shaved only those who did not shave themselves. The question arises whether the barber shaves himself or not. If we say ‘yes’, then he did not shave himself; if we say ‘no’, then he shaved himself. In daily life we deal all the time with such paradoxes, which if not clarified result only in bewilderment.

The *term* ‘barber’ *as a term*, since it omits the living human being, is a label for a fiction, because there is no such thing as a ‘barber’ without a living human being. By extension the given specialist in shaving, Smith₁, is not so simple. He is peppered with complex chain-indexes and dates. Thus, Smith₁₁ may be by profession a barber, Smith₁₂ may be a father, Smith₁₃ may be a member of the village council, and anyway Smith_{1n} is a living person who has his own life and personality outside his profession, and ultimately he has to shave himself if he does not want a beard, verbalism or no verbalism. Obviously the *term* ‘barber’ is over-defined, over-limited, by intension, and is under-defined by extension.

One of my co-workers, commenting on this paradox, suggested that the barber may be a woman and have no beard; or, the barber may be a beardless hermaphrodite or eunuch; or, the barber may have a full beard. Thus, we have only traditionally assumed, in analyzing this old paradox, that the barber was a man with a beard which was somehow shaved.

The difficulties of this $\frac{\text{over}}{\text{under}}$ defined terms situation affect not only our daily lives, but science as well. For example, H_2O is by intension or definition over-defined; by extension or in practice we do not deal with ‘pure’ H_2O which is only a symbol on paper, because actually unavoidable impurities are always present.

Similarly let us consider ‘*blood transfusion*’. In the beginning we used the term ‘blood transfusion’ as over-defined; by extension it turned out to be under-defined, because different bloods have different characteristics, and often blood of one type killed the patient who had blood of another type.

Here I will list a few of the many heavy terms we use in science and

daily life which are the cause of endless verbal bickering and confusion, because of our lack of realization of their $\frac{\text{over}}{\text{under}}$ defined character, depending uniquely on our attitudes. Terms such as *variation* in biology and anthropology, *learning, frustration, education, needs, intelligence, instincts, genius, teacher, leadership, love, hate, fear, sex, man, woman, infantilism, maladjustment, dementia praecox, personality, democracy, totalitarianism, dollar, god, gold, war, peace, aggression, neutral, jew, number, velocity*, etc., etc., can serve as illustrations.

One psychoanalyst suggests *ego* and *super-ego*; another writes: 'I could quote you a considerable part of psychoanalytic terms'. An epistemologist says, '*Meaning* is a forbidden term in my courses.... In linguistics the terms *phoneme, word, sentence* are mazes of confusion. . . . *Philosophy* is in as bad a situation. *Metaphysics* is even worse.' To quote a prominent anthropologist: ' $\frac{\text{Over}}{\text{Under}}$ definition is notably common in the field of so-called social anthropology in which students attempt to disregard the human organism and deal with human affairs as discrete phenomena'. For example, '*culture* may be technology, morals, philosophy, or a wooden leg—all most vaguely formulated.... When some change in the anatomy and physiology of the organism is attributed to *environment*, the latter term is not broken down into climate, rainfall, food supply, etc. *Social environment* may be arts, industries, law, morals, religion, familial institutions, tradition, etc.'

The following comment by a mathematician shows the generality of this problem: 'A term would seem to be extensionally under-defined so long as we cannot in practice exhaust its instances by enumeration. But this much is true of just about every term of the kind traditionally known as "general concrete"; e.g. *house, dime, star, neurone*.'

A journalist suggests: 'As an example recently come to our attention I would mention those magic words *Monroe Doctrine*. Even when Mr. Hull discusses it, as he does as nearly correctly as anyone "in the know", he omits some real facts, such as the economic implications of overturning the international *status quo* in this hemisphere. But when Japan and/or Germany (high order abstractions as used here) refer to Asiatic and/or European Monroe Doctrines, the meaning of the original words has been completely metamorphosed through $\frac{\text{over}}{\text{under}}$ definition. The American accepted meaning includes no actual control of those falling within the doctrine's sphere, whereas Japan and Germany mean an actual hegemony in their respective spheres. The relationship between ours and theirs is therefore a vast confusion of terms.

'Then consider the *incidents* growing out of *insults* in the interna-

tional fields. What is an insult ? It is usually pure verbalism with great affective characteristics manipulated to sway others as the swayer directs. To bring it into the domestic field, call a *Republican* (what is that ?) a *New Dealer* (again, what is that ?) and the fur begins to fly.'

A leading moving picture executive says that actors have frequent verbal arguments about what is *funny*. The only thing to do is to try it before an audience. 'If it makes them . . . laugh, it may be termed *funny*. If it fails to make them laugh, it is *not funny*.' In the meantime, 'your audience may tell you that the subject in dispute is neither funny nor not-funny. It is merely boring.'

There is no need to give further examples here, as practically the whole dictionary could be quoted. In my enquiry concerning $\frac{\text{over}}{\text{under}}$ defined terms in many fields I got a number of answers which were very fundamental, which I gratefully acknowledge. Some replies were to the effect that 'I would gladly give you examples such as you ask for, but I do not think I have any that would be new to you', which shows their understanding of the problem. Yet the most extensional answer was given by that brilliant jurist, Dr. Robert M. Hutchins, who sent to me his Convocation Address of June, 1940 with a letter, which he has kindly given me permission to quote, as follows: 'I am afraid you will feel that all the words I use are examples of the errors you are attacking. Here is my last Convocation Address, with a sample in every line.' Such a judgement is profoundly justified whenever language is utilized. This address is a splendid piece of work, and it implies the intuitive recognition of the fundamental neuro-linguistic difficulties we are up against.

But an intuitive grasp by exceptional persons does not make that recognition *teachable* in general education. We need crisp, general *methodological formulations* which will make people aware of the role the structure of language plays in affecting our types of reactions. For instance, our language may be elementalistic or non-elementalistic, intensional or extensional, in structure, etc. We discover also the fundamental multiordinal character of the most important terms we have, the $\frac{\text{over}}{\text{under}}$ defined character of most of our terms, etc.

As the difficulties mentioned here are inherent in our neuro-semantic and neuro-linguistic mechanisms, which control our reactions, the only possible safe-guard against the dangers of hopeless bewilderment, fears, anxieties, etc., is the *consciousness of the mechanisms*. Certainly 'philosophers', 'logicians', psychiatrists, educators, etc., should be aware of these problems, and introduce this consciousness even in elementary education and in psychotherapy.

The problem of $\frac{\text{over}}{\text{under}}$ defined is very difficult to explain briefly. It is discussed more fully in two of my papers presented before professional societies.*

Section H. The passing of the old aristotelian epoch.

1. 'MAGINOT LINE MENTALITIES'

Present day scientific researches and historical world developments show there is no doubt that the old aristotelian epoch of human evolution is dying. The terrors and horrors we are witnessing in the East and the West are the deathbed agonies of that passing epoch, and not the beginning of a new system. The changes of historical periods in human development are often accompanied by the disorganization, and sometimes acute suffering, of mankind, and the price is bound to be paid by one or more generations.

I doubt if in the whole of human history there is a more accentuated illustration than the tragic and sudden collapse, in the summer of 1940, of the French government and army, and eventually of French culture and 'democracy'. The degree of stupidity, treachery, graft, dishonesty, ignorance, and ultimately decadence, etc., the French plutocrats and politicians, and so-called 'intelligentsia' displayed is unprecedented, particularly because of the fine historical record the French have had. We test the freshness or deterioration of fishes by smelling the head end, and as we know at the date of this writing, the head ends of the French 'democracy' have a putrid odor. This deterioration affected the French military men, who once were the finest in the world, and so the collapse was complete. I can give no better, no more pitiful, no more shocking illustration of the collapse of the old system.

The 'Maginot line mentality' will become a historical classic, and will be applied quite appropriately to other than military fields. It means a thoughtless, self-deceptive, etc., 'security' in antiquated systems as matched against modern methods of 1940. Well, the French Marianna felt secure from the front and was taken from behind by the German army men, who traditionally pay no attention to such 'details'.

* (a) $\frac{\text{Over}}{\text{Under}}$ defined Terms, 1939, the third of a trilogy of papers presented before annual meeting of the American Mathematical Society on General Semantics : I. Extensionalization in Mathematics, Mathematical Physics and General Education, 1935; II. Thalamic Symbolism and Mathematics, 1938. Institute of General Semantics, Lakeville, Connecticut.
(b) General Semantics, Psychiatry, Psychotherapy and Prevention, presented before the annual meeting of the American Psychiatric Association, 1940.

Dealing with those tragic and painful collapses in civilizations, and eventually passing to another spasm of civilization, what interests us most in considering the problems of sanity, is the newest, psychopathological methods of destroying sanity, not merely the organized orgies of murder, rape, arson, looting, drugging, and destruction under different dictators, mikados, etc.

I mention the 'mikado' especially here as a tragic human example of the effect of $\frac{\text{over}}{\text{under}}$ defined terms, which in *life application* sway the history of mankind. By definition and/or creed the mikado is supposed to be some sort of a 'god', etc. By extension or facts, the best we know, he is probably a sort of a nice, supposedly educated, collegian. He has a wife and makes babies, but he is told about Japanese people, the behaviour of Japanese troops in China, etc., only as much as the ruling clique in Japan allows him to know. If he would be allowed to know what 'his' soldiers, and so his representatives, are *actually* doing in China with their *governmentally organized* murder, rape, looting, drugging, etc., I doubt if he, as a 'nice collegian', would approve it. However, if he would try to do something about it, he probably would be 'liquidated' by the ruling clique. From a historical, civilization, human point of view he must be adjudged responsible, as the head of his government, for what the ruling clique and the Japanese army do in China in his name.

This applies to many other 'rulers', who seldom know what is going on extensionally because they rely on the use of $\frac{\text{over}}{\text{under}}$ defined terms in the reports of those who are in *actual* control. Ignorance in high places cannot humanly be an excuse.

Imagine a British empire tolerating so long a Chamberlain in the government, or the endless petty, befuddling, deluding, etc., bickerings of political partisanship, which are good enough to wreck any system of 'democracy' (in practice another $\frac{\text{over}}{\text{under}}$ defined term).

It seems, however, there is at least one point the totalitarian and 'democratic' politicians have in common, best expressed by Kipling:

'Ow the loot !
Bloomin' loot !
That's the thing to make the boys git up an' shoot !
It's the same with dogs an' men,
If you'd make 'em come again
Clap 'em forward with a Loo ! loo ! Lulu ! Loot !
Whoopee ! Tear 'im, puppy ! Loo ! loo !
Lulu ! Loot ! loot ! loot !'

2. WARS OF AND ON NERVES

It was explained already how the introduction of new factors is bound to change our generalizations and therefore evaluations. But this somehow is disregarded by most rulers and politicians who are on the defensive, while those who are on the offensive introduce new psycho-logical factors to confuse the old generalizations, as a rule successfully. Politicians, gangsters, military men, etc., without any understanding of the depth of destructiveness to the human nervous systems, utilize these methods quite successfully. Magicians have studied those methods professionally, but they utilize them for entertainment, not for destruction.

These destructive methods are the bases of the 'war of nerves', and the 'war on nerves', etc., to the point of using 'screaming' bombs, verbal distortion, the 'psychology' of deception, etc. These methods can be counteracted *only* when governments who feel their responsibility not only to the ruling classes, but also to the *people* of their nations, will employ experts in neuro-psychiatry, anthropology, general semantics, etc., for guidance, if the present world neurosis is to be checked.

There are persistent reports that the Nazi government is utilizing a staff of psycho-logical experts for *destructive* purposes. Other totalitarian governments ape their successfully worked out and tested methods. The 'democratic' governments in this present fundamental *nerve contest* appear a tragic joke of ignorance, inefficiency, etc. In practice this amounts to betrayal, because they fail to recognize the overwhelming importance and vulnerability of the human nervous system, and do not utilize such experts in a *constructive* way. The 'scream' of a bomb, for instance, is much more destructive to the 'enemy' than the destruction by the bomb itself, which may kill a few people at the cost of at least \$100,000 per corpse, while the 'scream' alone brings demoralizing terror to hundreds, if not thousands of people. It is certainly an expertly calculated and efficient 'war on human nerves'. But what can be done if ignorant 'democratic' governments refuse to live up to their duties ?

Humanity, civilizations, cultures, etc., are ultimately based on the constructive use of neuro-semantic and neuro-linguistic mechanisms present in every one of us. Many pathological Nazi leaders utilize these constructive mechanisms in civilization for destructive selfish purposes. Under experts they have turned against mankind the essential assets of mankind. The beginning was 'mental' illness of a few leaders, based on hates, fears, revenges, etc. Later this destructive task was passed on to governmental psycho-logical experts, to build up methods to tear down human *neuro-semantic* and *neuro-linguistic* mechanisms, quite success-

fully because of the abysmal ignorance of modern scientific issues exhibited by the political verbalists and enchanter of other nations.

One of the most effective of these methods is the use of *pathological verbal distortion* such as is found among the 'mentally' ill. For instance, a paranoiac may believe 'honestly' that he is persecuted, become dominated by 'hate', etc., and ultimately may kill to 'defend' himself. Unfortunately at present only psychiatrists, familiar with verbal distortions and 'rationalizations' of patients in hospitals, can fully understand these problems.

A 'mentally' ill person is not necessarily a 'genius', but it is well known to psychiatrists that some 'mentally' ill are often very cunning and will outwit any doctor or nurse. At present the people of the world do not realize that they are being trained in psychopathological uses of their nervous systems, and a future generation or two will become semantically crippled because trained in such distortions.

The violation, through ignorance and/or *un*-sanity, of the similarity of structure in the map-territory relationship (see p. 58 ff. and p. 750 ff.), and/or deliberate, professionally planned distortion of it, abolishes predictability, proper evaluation, trust, etc. This results only in breeding fears, anxieties, hates, etc., which disorganize individuals and even nations. There must be a correspondence and similarity of structure between language and facts, and so consequent thalamo-cortical integration, if we are to survive as a sane 'civilized' race.

In a few years history will judge these dying spasms of the aristotelian system, a system which was the best of its kind 2,300 years ago, as formulated by a great man under the conditions of the very few scientific facts known at that date. It is not so today, 1941. Most of the knowledge of scientific facts and methods of Aristotle are obsolete today, and in the main harmful, like the 'Maginot line' orientation.

By necessity the aristotelian system was based on macroscopic or animal, 'sense', levels, which even now predominantly guide the masses. It could take into consideration 'sense' data, etc., but cannot deal adequately with 1941 cultural as well as sanity conditions which, as we know today, are resultants of sub-microscopic, electro-colloidal processes.

In a non-aristotelian system we are stressing the differences between the animal reflex, automatic *signal* reactions, which do not involve 'thinking', human 'intelligence', etc., and human *symbol* reactions, with their flexibility, based on conscious evaluations, etc. These differences could hardly be conveyed better than by studying *The Rape of the Masses; The Psychology of Totalitarian Propaganda*, by Dr. Serge Chakotin, (Alliance Book Corporation, New York, 1940). A former student of

Professor Pavlov, Dr. Chakotin bases his analysis of totalitarian methods on Pavlov's fundamental researches of conditional reactions in dogs.

3. HITLER AND PSYCHO-LOGICAL FACTORS IN HIS LIFE

The groping dissatisfaction with the old system was so general that only a catalyst was needed to precipitate the crisis. This catalyst was found in the son of Alois Schicklgruber (also spelled Schucklgruber) who later changed his name to 'Hitler'. There was a history of illegitimacy in the family. Rudolf Olden in his biography of Hitler says, 'Hitler has given the simplest and clearest picture possible of conditions in his father's home. But we have only to look at the facts to see that, far from being simple, the married life of his father was unusual and tempestuous. Three wives, seven children, one divorce, one birth before marriage, two shortly after the wedding, one wife fourteen years older than himself and another twenty-three years younger—that is saying a good deal for a Customs officer.'

There were other important circumstances in Adolf Hitler's life which were influential and found their fulfillment in totalitarian systems. (a) He was born from a peasant stock, by tradition prepared to carry a heavy load of work with persistency. (b) He was baptized in the Catholic Church, an institution well known to have totalitarian orientations, and which up to this day in principle proclaims authority over 'all' the Catholics in the world. Having absorbed that totalitarian orientation from childhood up, which applies also to Mussolini, Stalin, etc., it was simple for those so trained to switch to *state totalitarianism*, where such leaders could find a 'lebensraum' for themselves as individuals, thus enhancing their own 'egos', and incidentally filling their pockets. No one who has actually studied the public appearances of various totalitarian 'fuhrers' can miss the utter similarity between their reactions and the reactions of the mobs to them. They act like little 'gods on wheels', and the mobs react with unreasoned, blind, fanatical subjection, which the fuhrers and their aides know how to manufacture.

(c) Hitler was born into Austrian bureaucracy, one of the most inefficient, dishonest, hypocritical, etc., bureaucracies in the world, permeated with the Hapsburg motto, 'Divide et impera'. The older Schicklgruber wanted his son also to become a Hapsburg bureaucrat. Schicklgruber, Jr. had a natural repulsion for them, and so deliberately boycotted any education, to disqualify himself for such a fate. This lack of education ostracized him from the class of so-called 'intelligentsia', to which a Hapsburg bureaucrat eventually belonged. Through living necessities he had to become a plain labour hand, yet because of his para-

noia tendencies, delusions of grandeur based on unhealthy worship of historical 'heroes', etc., he was also not acceptable to the plain workers, who are generally sane and do not look at life as a Wagnerian opera. So in reality he found that he was not acceptable anywhere, belonged nowhere, a misfit everywhere, until he adhered to totalitarianism as a 'religion' which he and his closest associates modified to suit the Prussian character, selected by them as a standard of German perfection, to be imposed on the rest of the world.

(d) When he joined the German army with its orderly efficiency, etc., he found an ideal for himself as an escape from Hapsburg decadence. No matter how he hated the Hapsburg polite perfidy, he was too much of an Austrian not to utilize to the limit the Hapsburg methods. Ultimately through this combination of methods he 'out-Prussianed' the Prussians, whose particular arrogant, brutal methods were never approved and often disliked throughout the world and even in Germany.

I give these data as partial explanations of how through life and other circumstances the whole life of Hitler, as well as his political program, was based on hate, revenge and destruction of what he feared and hated as a person, driven by his delusions of persecution and grandeur. It was only natural in his 'chosen people' delusion that he should hate and try to destroy other 'chosen people'; obviously there is no place in this world for two or more 'chosen people'. The absurdity of Hitler's ignorant anthropological theories has been definitely established by science and history, and in fact are not taken seriously by many of the informed Nazi leaders themselves.

Some such analysis of a few of the more important factors in Hitler's life indicates how his 'mental' illness developed, involving 'inferiority' and 'persecution' complexes, etc., and explains why for his own comfort he surrounded himself personally with mostly psychopathological people, although their psychiatric classifications may be different.

Very soon psychiatric treatises will be written on the 'Jehovah complex' of Schicklgruber, Jr., etc. Perhaps the following quotations will illustrate how the 'Jehovah', as recorded in *Exodus* 19 and 20, is being copied today:

'Now therefore, if ye will obey my voice indeed, and keep my covenant, then ye shall be mine own possession from among all peoples: for all the earth is mine: and ye shall be unto me a kingdom of priests, and a holy nation. These are the words which thou shalt speak unto the children of Israel [Nazis].'

Or, 'I am Jehovah thy God, who brought thee . . . out of the house of bondage [England].'

Or, 'for I Jehovah thy God am a jealous God, visiting the iniquity of the fathers upon the children, upon the third and upon the fourth generation of them that hate me, and showing mercy unto thousands of them that love me and keep my commandments.'

Or, 'An altar of earth thou shalt make unto me, and shalt sacrifice thereon thy burnt-offerings, and thy peace-offerings, thy sheep, and thine oxen: in every place where I record my name I will come unto thee and I will bless thee.' Etc., etc.

These suggestions are given only to indicate how psychiatrists can help future historians.

4. EDUCATION FOR INTELLIGENCE AND DEMOCRACY

It may become clearer why I speak of a dying, aristotelian, two-valued system by giving examples of how this type of evaluation is at the foundation of present day confusions and terrors. Thus, for instance, the Nazi militant delusion of 'chosen people' gives us an excellent illustration of a two-valued, 'either-or' orientation. The two-valued semantic twisting of 'real neutrality' is another significant example. This distortion has kept the 'neutrals' in terrors, disorganizing their national and political life to the point of complete collapse, which today is a historical fact. The Nazi two-valued evaluation of 'neutrality' was: *either* be 'really neutral' and endorse and fight for the Nazis, or be 'not really neutral' and not help them. According to this orientation a 'really neutral' Belgium, Holland, Denmark, Norway, etc., should fight against England, France, etc., to prove that they are 'really neutral' !

A similar analysis applies to the 'aggression' of China *against* Japan, Czechoslovakia *against* Germany, Poland *against* Germany, Poland *against* Russia, Finland *against* Russia, Greece *against* Italy, etc., and so on endlessly, which shows only the pathological application of the two-valued, 'either-or' patterns *in action*. This analysis applies also to the first World War and the 'war guilt'. In a non-aristotelian orientation we ask for actual facts, and do not accept mere verbalism. Who invaded whom? The historical facts are simple. We know by now *who invaded whom*, and never mind verbal definitions.

When analysed *from a non-aristotelian point of view*, such orientations appear pathologically twisted. Yet they produced results, as history shows. It is not accidental that some years ago Hitler in one of his speeches took a definite stand for the prevailing aristotelianism, two-valued orientations, etc., and against modern science, which naturally develops in a non-aristotelian direction. Quite soon whole volumes will

be written on this subject; here it is possible only to indicate the main *methodological* issues involved.

Dr. Irving J. Lee in his article, 'General Semantics and Public Speaking', *Quarterly Journal of Speech*, December, 1940, formulates a fundamental contrast between the types of 'rhetorics' of Aristotle and Hitler, and the non-aristotelian type of communication found in general semantics which is based on proper evaluation, made possible by thalamo-cortical integration.

We should not make the mistake of fancying that Hitler, etc., or the mikado are building a new non-aristotelian system, and a future new saner civilization. It is only a rebellion *within* the old 'either-or' system, a changing from one scheme of selfishness, greed and force to another cabal of selfishness, greed, and brute force, this time unavoidably lowering human cultural standards by training future generations in pathological abuses of neuro-semantic and neuro-linguistic mechanisms, emasculating and misusing science, etc.

A non-aristotelian system must include considerations of neuro-semantic and neuro-linguistic environments as environment. Introductions of such new factors necessitate a complete revision of all known doctrines, pet creeds, etc., and make possible the building of a *science of man*, which under the old aristotelian conditions was impossible. The tabulation given here indicates some of the many older fictitious factors which have been eliminated as false to facts and destructive, while new, constructive factors have been introduced. This by necessity requires the utilization of more adequate methods and techniques by which we can cope with a new world.

The new, non-aristotelian types of evaluations are forthcoming in every field of human endeavour, in science and/or life, necessitated by the urgencies of modern conditions. The main problem today is to formulate *general methods* by which these many separate attempts can be unified into a general system of evaluation, which can become communicable to children and, with more difficulty, even to adults. History shows that whenever older methods prove their inefficiency new methods are produced which meet the new conditions more effectively. But the difficulties involved must first be clearly *formulated* before methods and techniques can be devised with which we can deal with them more successfully.

It seems unnecessary to enlarge on the present day world tragedies because many excellent volumes have already been written and are continuing to accumulate, psychiatric evaluations included. I must stress, however, that no writer I know of has ever understood the depth of the

pending transition from the aristotelian system to an already formulated non-aristotelian system. This transition is much deeper than the change from merely one aristotelian 'ism' to another.

We argue so much today about 'democracy' versus 'totalitarianism'. Democracy presupposes intelligence of the masses;* totalitarianism does not to the same degree. But a 'democracy' without intelligence of the masses under modern conditions can be a worse human mess than any dictatorship could be.** Certainly present day education, while it may cram students, heads with some data, without giving them any *adequate methodological synthesis* and extensional working methods, does not train in 'intelligence' and how to become adjusted to life, and so does not work toward 'democracy'. Experiments show that even a root can learn a lesson (see p. 120), and animals can learn by trial and error. But we humans after these millions of years should have learned how to utilize the 'intelligence' which we supposedly have, with some predictability, etc., and use it *constructively*, not *destructively*, as, for example, the Nazis are doing under the guidance of specialists.

In general semantics we believe that some such thing as healthy human intelligence is possible, and so somehow we believe in the eventual possibility of 'democracy'. We work, therefore, at methods which could be embodied even in elementary education to develop the coveted thalamo-cortical integration, and so sane intelligence. Naturally in our work *prevention* is the main aim, and this can be accomplished only through education, and as far as the present is concerned, through *re-education*, and *re-training* of the human nervous system.

Section I. Constructive suggestions.

As far back as 1933, on page 485 ff. of the present book, I drew attention to the human dangers of the abuse of neuro-semantic and neuro-linguistic mechanisms, with suggestions for preventive measures. In September, 1939, I advanced further constructive suggestions to some leading governments, urging the employment of permanent boards of neuro-psychiatrists, psycho-logicians, and other specialists, to counteract similar dangers in connection with the present world crises. I received only *two* polite acknowledgements of my letters. But both forewarnings of 1933 and 1939 have been disregarded in practice, even by specialists, with known disastrous results.

* Mumford, Lewis. *Men Must Act*. Harcourt, Brace, New York, 1939.

** Consult, for example, comments of Supreme Court justices about the impossibility of 'justice' when juries are made up of individuals of *low grade* 'mentality', etc.

In the meantime the more far-sighted Nazi government employed a staff of specialists working at methods to *disorganize* the nervous functioning of their adversaries which, as facts show, have worked very successfully and devastatingly upon the unlucky citizens whom the short-sighted, unscientific, etc., governments never guided toward the proper use of their nervous systems, or safe-guarded from the abuses.*

Perhaps at present, 1941, after some irreparable harm has been done, the governments of the world will awaken and realize that the proper functioning of the nervous systems of their citizens is in many ways more important than any gun, battleship or aeroplane, etc., could possibly be, as there must be a Smith₁ behind the gun !

No matter who is finally 'victorious' in the present world struggle, no matter which way we look at it, the return to the old conditions is impossible. A complete neuro-semantic and neuro-linguistic revision is inevitable, and this revision is bound to lead away from aristotelianism. For this revision we are preparing the foundations in the formulations of general semantics. Before any lasting adjustments in the future social, economic, political, ethical, etc., fields are accomplished we have to be able to *evaluate properly and talk sense*. Otherwise the situation is hopeless.

Obviously, regardless of what the 'politicians' may say, in every country we necessarily have some kind of guidance by the government and executive power, no matter in what direction. Even 'complete lack of guidance' must be considered guidance of some sort, in the direction, say, of 'rugged individualism', etc., which, if carried to the limit, becomes the unworkable ideal of anarchy. In practical life such attitudes ultimately engender animal competition instead of human co-operation, and the very opposite of what we consider as the social feeling imperative for 'democracy'.

The real question is whether the existing governments are informed enough about human neurological problems, sanity, etc., and are intelligent enough, honest enough, etc., to guide and advise their people *constructively and efficiently* in constantly emerging *neurological situations* such as occur in home and school lives, in national and international affairs, etc. Unfortunately the answer is in the negative. At present there is no such government I know of. The Nazi government, on the other hand, has mobilized the psycho-logical knowledge available to them for *destructive* purposes, which must be *professionally counteracted* by the rest of the governments of the civilized world, if sanity is to prevail

* Taylor, Edmond. *The Strategy of Terror*. Houghton-Mifflin, Boston, 1940.

Depending on science for more and better killing *machines* is certainly not the solution for *human* problems, culture and civilization. Without being sentimental, in a human civilization humans matter more than machines, or symbols such as a 'dollar', a 'pound sterling', a 'pound of flesh', a 'scalp', etc., or such verbal generalizations as 'liberty', 'equality', etc. The *living reactions* of Smith₁ are more important than the verbalisms of Smith₁, who nevertheless can shake the air with his verbal tricks, as many of us too often do, affecting the nervous systems of others.

At present the totalitarians have exploited neuro-semantic and neuro-linguistic mechanisms to their destructive limit, the best they knew how, to date. Counteraction, reconstruction, and/or prevention are impossible unless such mechanisms are utilized *constructively* under the guidance of governmental specialists in the fields of anthropology, neuro-psychiatry, general semantics, etc., who would understand the language of their fellow workers in related scientific fields, and would be *FREE TO DEVOTE THEIR ENTIRE TIME AND EFFORTS TO THIS TASK AND TO FURTHER INVESTIGATIONS*.

Although practically all civilized states employ psychiatrists in their governmental hospitals for 'mentally' ill, these physicians are necessarily preoccupied with their patients and cannot undertake the special duties of the board I suggest. Such a board would require the full time and attention of its members, as they would be called upon for consultation by various other governmental departments such as interior, state, labour, commerce, health, army, navy, etc., and so special studies and co-ordinating knowledge in related branches of science would be essential.

It seems extremely short-sighted in 1941 that governments should employ permanently specialists in chemistry, physics, engineering, etc.; other specialists who advise how to eliminate lice from poultry, raise pigs, conserve wild life, etc.—and yet have no *permanent* consulting board of specialists who would advise how to conserve and prevent the abuse of human nervous systems. Even a Chamberlain would have intelligence and/or honesty enough to pass a problem of a 'magnetic mine' to physicists and engineers, and not to party politicians, who know nothing about such mechanisms, but would nevertheless be ready to debate 'politically' on the subject.

For example, if consulted, such a suggested body of governmental specialists would have studied *Mein Kampf* and various speeches of Hitler, Goebbels, etc., as a part of their duties, long ago, and would have advised their governments that psychopathological people are getting in control of world affairs and that their words cannot be trusted at all.

There would have been no 'appeasements', etc., and other measures would have been taken to cope with the depth of the problems involved.

It seems that the suggestions made on page 485 ff., although necessary, are not sufficient at the date of this writing, and the latest suggestions become imperative to safe-guard our future.

CONCLUSION

To summarize, under present world conditions the role of governments is becoming more and more difficult and important. With all modern complexities it is impossible for governmental men to be specialists in every field of science, and therefore they must depend on professional experts *attached to the government*, not only in the fields of chemistry, engineering, physics, agriculture, etc., which they already utilize; but also in anthropology, neuro-psychiatry, general semantics, and related professions. Otherwise the governments will indefinitely play the role of the blind leading the blind. It is unreasonable to wait ten or twenty years to learn by bitter experience how short-sighted and incompetent our governments have been. Why not utilize some human intelligence, proper evaluation, etc., toward which extensional methods lead, and thereby have some *predictability*. This is definitely an imperative, immediate need.

We should not delude ourselves. Once the psychopathological misuses of neuro-semantic and neuro-linguistic mechanisms have been so successfully introduced, they will remain with us unless reconstructive and preventive governmental measures are undertaken by experts, at once.

The conditions of the world are such today that private scientific undertakings and even professional opinions of scientific societies, or international congresses; etc., are bound to be ineffective. Only governmental interest, backing, financing, etc., can organize and enforce a serious movement for sanity, the more so since scientists, physicians, educators, and other professionals do not have the necessary time, money, authority, or even initiative to carry forward concerted plans. We have learned this group wisdom by now in the case of smallpox vaccination, control of epidemics, etc., and I venture to suggest that only such group wisdom will be effective as far as the health of our nervous systems is concerned. In terms of money certainly it would be economical to spend for *preventive* and *permanent* measures an amount even less than the cost of a single aeroplane which is made today and shot down tomorrow.

It must be sadly admitted that even professionals, no matter how prominent they may be in their narrow specialties, as individuals or spe-

cialized groups are at present scientifically unequipped to deal with such large and complex problems as the passing from one system of orientation to another, because those whose duty it was to integrate methodologically the vast knowledge at hand, have failed. Such conditions can be remedied only by diversified methodological investigations, co-operation, and *concerted action* of specialists in different fields, which no private undertaking can organize effectively. The reader is referred to page 558 ff. and also to my 'Science of Man'.*

There can be little doubt that self-seeking politicians, to cover up their own tracks, will be against such scientific sanity guidance, but enlightened public opinion will sooner or later force the issues to the only possible intelligent solution.

The prevalent and constantly increasing general deterioration of human values is an unavoidable consequence of the crippling misuse of *neuro-linguistic* and *neuro-semantic* mechanisms. In general semantics we are concerned with the *sanity* of the race, including particularly methods of prevention; eliminating from home, elementary, and higher education inadequate aristotelian types of evaluation, which too often lead to the *un-sanity* of the race, and building up for the first time a positive theory of sanity, as a workable non-aristotelian *system*.

The task ahead is gigantic if we are to avoid more personal, national, and even international tragedies based on unpredictability, insecurity, fears, anxieties, etc., which are steadily disorganizing the functioning of the human nervous system. Only when we face these facts fearlessly and intelligently may we save for future civilizations whatever there is left to save, and build from the ruins of a dying epoch a new and saner society.

I seriously appeal to scientists, educators, medical men, especially psychopathologists, parents, and other forward-looking citizens to investigate and co-operate in urging the governments to carry out their duty to guide the people scientifically, as suggested here.

A non-aristotelian re-orientation is inevitable; the only problem today is when, and at what cost.

A.K.

CHICAGO, MARCH, 1941.

* Korzybski, A. The Science of Man. *Amer. Jour. of Psychiatry*. May, 1937.

I gratefully acknowledge the valuable comments of the following in connection with $\frac{\text{over}}{\text{under}}$ defined terms: Franz Alexander, M.D., Professor Leonard Bloomfield, Douglas Gordon Campbell, M.D., Professor Morris R. Cohen, C. B. Congdon, M.D., Professor S. I. Hayakawa, Professor Earnest A. Hooton, Doctor Robert M. Hutchins, N. E. Ischlonsky, M.D., Professor Wendell Johnson, Professor Kurt Lewin, Professors H. G. and L. R. Lieber, Mr. Robert Lord, Jules H. Masserman, M.D., Mr. H. L. Mencken, Professor Charles W. Morris, the late Professor Raymond Pearl, Professor W. V. Quine, Professor Oliver Reiser, Professor Bertrand Russell, Doctor Eugene Randolph Smith, Mr. A. Ranger Tyler, and many students and friends too numerous to list here.

I wish to express my warm appreciation to my students and secretaries, Miss Charlotte Schuchardt and Miss Pearl Johnnecheck, for the constructive help they have given me in the preparation of this introduction. The drawings on pages xiv and xxviii were made by Miss Johnnecheck. I am also genuinely indebted to Miss M. Kendig, Educational Director of the Institute, and to Doctor Irving J. Lee of Northwestern University, for their important criticism and co-operation.

SPECIAL ACKNOWLEDGEMENT

On behalf of students of general semantics who have attended seminars at the Institute, and on my own behalf, I want to express my deep gratitude to Cornelius Crane, whose vision, interest, and financing made possible the founding of the Institute in 1938. The widespread influence and rapid development of the work of the Institute in this world turmoil became a living reality because of Mr. Crane's generous contributions during the first two and a half years of our pioneer effort. Forces of destruction are working steadily, and Mr. Crane should be credited with helping to organize constructive efforts.

I also gratefully acknowledge the contributions of the other students who are now helping to support the work of the Institute.

ALFRED KORZYBSKI

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The following bibliography is only illustrative of points made in the introduction to the second edition. A number of volumes listed here give extensive bibliographies in their fields. For instance, the book of Dr. Dunbar has 130 pages of bibliography which cover 2,358 items. Some of the most important and latest empirical data on electrical brain-waves, electro-physiology, conditional reactions in humans, electro-colloidal processes of the nervous system, experimental neuroses and psychoses in animals, the reactions of apes, data on human psychotherapy, the methods of deception and sensory misdirection as utilized by magicians, etc., are given mostly in technical journals and monographs, and the interested reader may find them in libraries.

This applies also to the many applications of the methods of general semantics in education, mental hygiene, speech difficulties, etc., carried on in universities and colleges, as well as applications in the practice of physicians, including psychiatrists; these are in preparation, or printed at present only by professional journals or by the Institute of General Semantics (see special list).

I list also some new pertinent, professional publications such as *Psychosomatic Medicine*, *Journal of Symbolic Logic*, *Encyclopedia of Unified Science*, etc., without listing the titles of the individual contributions. It is suggested that the interested, reader, and particularly educators, medical men, etc., become acquainted with such material, or at least know that it does exist. The reader is also referred to the foreword to the bibliography given on page 767, and the titles which follow.

In science and life a great deal depends on proper evaluation, tested by predictability, which depends in turn on the similarity of structure between territory-map or fact-language. Thus, we have to know scientific facts, as well as the intricacies and difficulties of language and its structure. Fortunately there is a weekly *Science News Letter*, published by Science Service, Washington, D. C., giving brief, authoritative, non-technical *factual* summaries of progress in science, mathematics, medicine, etc., including sources, which every specialist as well as intelligent layman should know.

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