CHAPTER II

TERMINOLOGY AND MEANINGS

The representation of mental phenomena in the form of reactions, conditioned reflexes, Bechterew's 'psycho-reflexes', leads to a truly physiological schematization.... (411) HENRI PIÉRON

Now I claim that the Ethnographer's perspective is the one relevant and real for the formation of fundamental linguistic conceptions and for the study of the life of languages, whereas the Philologist's point of view is fictitious and irrelevant. . . . To define Meaning, to explain the essential grammatical and lexical characters of language on the material furnished by the study of dead languages, is nothing short of preposterous in the light of our argument. (332)

B. MALINOWSKI

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. (264)

CASSIUS J. KEYSER

Finally, in semantic aphasia, the full significance of words and phrases is lost. Separately, each word or each detail of a drawing can be understood, but the general significance escapes; an act is executed upon command, though the purpose of it is not understood. Reading and writing are possible as well as numeration, the correct use of numbers, but the appreciation of arithmetical processes is defective.... A general conception cannot be formulated, but details can be enumerated. (411) HENRI PIÉRON

Moreover, the aphasic patient in his mode of life, in his acts and in all his behaviour may seem biologically and socially normal. But he has nevertheless suffered an unquestionable loss, for he no longer has any chance of undergoing further modifications of social origin, and of reacting in his turn as a factor in evolution and progress. (411)HENRI PIÉRON

Particularly it expresses that most important step in the treatment, the passing over from a mere intellectual acceptance of the facts of the analysis, whether in interpretation of the underlying complexes or in recognition of the task to be accepted, to an emotional appreciation and appropriation of the same. *Intellectual acceptance can work no cure* but may prove seriously misleading to the patient who is attempting to grasp the situation and to the beginner in analysis as well. (241) SMITH ELY JELLIFFE

Section A. On semantic reactions.

The term *semantic reaction* is fundamental for the present work and *non-elementalistic systems.* The term 'semantic' is derived from the Greek *semantikos,* 'significant', from *semainein 'to* signify', 'to mean', and was introduced into literature by Michel Bréal in his *Essai de Sémantique.* The term has been variously used in a more or less general or restricted sense by different writers. Of late, this term has been used by the Polish School of Mathematicians, and particularly L. Chwis-

tek (see Supplement III), A. F. Bentley[1], and has been given a medical application by Henry Head[2] in the study of different forms of Aphasias. 'Aphasia', from the Greek *aphasia*, 'speechlessness', is used to describe disorders in comprehension or expression of written and spoken language which result from lesions of the brain. Disturbances of the semantic reactions in connection with faulty education and ignorance must be considered in 1933 as sub-microscopic colloidal lesions.

Among the many subdivisions of the symbolic disturbance, we find *semantic aphasia*, to be described (after Head) as the want of recognition of the full significance or intention of words and phrases, combined with the loss of power of appreciating the 'ultimate or non-verbal meaning of words and phrases' to be investigated presently, and the failure to recognize the intention or goal of actions imposed upon the patient.

The problems of 'meaning' are very complex and too little investigated, but it seems that 'psychologists' and 'philosophers' are not entirely in sympathy with the attitude of the neurologists. It is necessary to show that in a $\overline{A}$-system, which involves a new theory of meanings based on *non-el* semantics, the neurological attitude toward 'meaning' is the only structurally correct and most useful one.

The explanation is quite simple. We start with the negative $\overline{A}$ premise that words are *not* the un-speakable objective level, such as the actual objects outside of our skin *and* our personal feelings inside our skin. It follows that the only link between the objective and the verbal world is exclusively structural, necessitating the conclusion that the only content of all 'knowledge' is structural. Now structure can be considered as a complex of relations, and ultimately as multi-dimensional order.

From this point of view, all language can be considered as names either for un-speakable entities on the objective level, be it things or feelings, or as *names for relations.* In fact, even objects, as such, *could* be considered as relations between the sub-microscopic events and the human nervous system. If we enquire what the last relations represent, we find that an object represents an abstraction of low order produced by our nervous system as the result of the sub-microscopic events acting as stimuli upon the nervous system. If the objects represent abstractions of some order, then, obviously, when we come to the enquiry as to language, we find that words are still higher abstractions from objects. Under such conditions, a theory of 'meaning' looms up naturally. If the objects, as well as words, represent abstractions of different order, an individual, A, cannot know what B abstracts, unless B tells him, and so the 'meaning' of a word must be given by a definition. This

would lead to the dictionary meanings of words, provided we could define all our words. But this is impossible. If we were to attempt to do so, we should soon find that our vocabulary was exhausted, and we should reach a set of terms which could not be any further defined, from lack of words. We thus see that all linguistic schemes, if analysed far enough, would depend on a set of undefined terms. If we enquire about the 'meaning' of a word, we find that it depends on the 'meaning' of other words used in defining it, and that the eventual new relations posited between them ultimately depend *on the m.o meanings of the undefined terms,* which, at a given period, cannot be elucidated any further.

Naturally, any fundamental theory of 'meaning' cannot avoid this issue, which must be crucial. Here a semantic experiment suggests itself. I have performed this experiment repeatedly on myself and others, invariably with similar results. Imagine that we are engaged in a friendly serious discussion with some one, and that we decide to enquire into the meanings of words. For this special experiment, it is not necessary to be very exacting, as this would enormously and unnecessarily complicate the experiment. It is useful to have a piece of paper and a pencil to keep a record of the progress.

We begin by asking the 'meaning' of every word uttered, being satisfied for this purpose with the roughest definitions; then we ask the 'meaning' of the words used in the definitions, and this process is continued usually for no more than ten to fifteen minutes, until the victim begins to speak in circles—as, for instance, defining 'space' by 'length' and 'length' by 'space'. When this stage is reached, we have come usually to the *undefined* terms of a given individual. If we still press, no matter how gently, for definitions, a most interesting fact occurs. Sooner or later, signs of *affective disturbances* appear. Often the face reddens; there is a bodily restlessness; sweat appears—symptoms quite similar to those seen in a schoolboy who has forgotten his lesson, which he 'knows but cannot tell'. If the partner in the experiment is capable of self-observation, he invariably finds that he feels an internal *affective pressure,* connected, perhaps, with the rush of blood to the brain and probably best expressed in some such words as 'what he "knows" but cannot tell', or the like. Here we have reached the bottom and the foundation of all *non-elementalistic meanings*—the meanings of *undefined terms,* which we 'know' somehow, but cannot tell. In fact, we have reached the un-speakable level. This 'knowledge' is supplied by the lower nerve centres; it represents affective first order effects, and is interwoven and interlocked with other affective states, such as those called 'wishes',

‘intentions’, ‘intuitions’, ‘evaluation’, and many others. It should be noticed that these first order effects have an objective character, as they are un-speakable—are *not* words.

‘Meaning’ must be considered as a multiordinal term, as it applies to all levels of abstractions, and so has no general content. We can only speak legitimately of ‘meanings’ in the plural. Perhaps, we can speak of the meanings of meanings, although I suspect that the latter would represent the un-speakable first order effect, the affective, personal raw material, out of which our ordinary meanings are built.

The above explains structurally why most of our ‘thinking’ is to such a large extent ‘wishful’ and is so strongly coloured by affective factors. Creative scientists know very well from observation of themselves, that all creative work starts as a ‘feeling’, ‘inclination’, ‘suspicion’, ‘intuition’, ‘hunch’, or some other un-speakable affective state, which only at a later date, after a sort of nursing, takes the shape of a verbal expression, worked out later in a rationalized, coherent, linguistic scheme called a theory. In mathematics we have some astonishing examples of intuitively proclaimed theorems, which, at a later date, have been proven to be true, although the original proof was false.

The above explanation, as well as the neurological attitude toward ‘meaning’, as expressed by Head, is *non-elementalistic*. We have not illegitimately split organismal processes into ‘intellect’ and ‘emotions’. These processes, or the reactions of the organism-as-a-whole, can be contemplated at different neurological stages in terms of order, but must never be split or treated as separate entities. This attitude is amply justified structurally and empirically in daily and scientific life. For instance, we may assume that educated Anglo-Saxons are familiar with the Oxford Dictionary, although it must be admitted that they are handicapped in the knowledge of their language by being born into it; yet we know from experience how words which have one standard definition carry different meanings to, and produce different affective individual reactions on, different individuals. Past experiences, the knowledge. , of different individuals are different, and so the *evaluation* (affective) of the terms is different. We are accustomed to such expressions as ‘it means nothing to me’, even in cases when the dictionary wording is accepted; or ‘it means a great deal to me’, and similar expressions which indicate that the meanings of meanings are somehow closely related to, or perhaps represent, the first order un-speakable affective states or reactions.

Since ‘knowledge’, then, is not the first order un-speakable objective level, whether an object, a feeling. ; structure, and so relations, becomes

the only possible content of ‘knowledge’ *and of meanings.* On the lowest level of our analysis, when we explore the objective level (the un-speakable feelings in this case), we must try to define every ‘meaning’ as a conscious feeling of actual, or assumed, or wished. , *relations* which pertain to first order objective entities, psycho-logical included, and which can be evaluated by personal, varied, and racial—again un-speakable first order—psychophysiological effects. Because relations can be defined as multi-dimensional order, both of which terms are *non-el,* applying to ‘senses’ and ‘mind’, after *naming* the un-speakable entities, all experience can be *described* in terms of relations or multi-dimensional order. The meanings of meanings, in a given case, in a given individual at a given moment. , represent composite, affective psycho-logical configurations of all relations pertaining to the case, coloured by past experiences, state of health, mood of the moment, and other contingencies.

If we consistently apply the organism-as-a-whole principle to any psycho-logical analysis, we must conjointly contemplate at least both aspects, the ‘emotional’ and the ‘intellectual’, and so *deliberately ascribe* ‘emotional’ factors to any ‘intellectual’ manifestation, and ‘intellectual’ factors to any ‘emotional’ occurrence. That is why, on human levels, the *el* term ‘psychological’ must be abolished and a new term *psycho-logical* introduced, in order that we may construct a science.

From what has been said, we see that not only the structure of the world is such that it is made up of absolute individuals, but that meanings in general, and the meanings of meanings in particular—the last representing probably the un-speakable first order effects—also share, in common with ordinary objects, the absolute individuality of the objective level.

The above explains why, by the inherent structure of the world, life, and the human nervous system, human relations are so enormously complex and difficult; and why we should leave no stone unturned to discover beneath the varying phenomena more and more general and invariant foundations on which human understanding and agreement may be based. In mathematics we find the only model in which we can study the invariance of relations under transformations, and hence the need for future psycho-logicians to study mathematics.

It follows from these considerations that any psycho-logical occurrence has a number of aspects, an ‘affective’, and an ‘intellectual’, a physiological, a colloidal, and what not. For the science of psychophysiology, resulting in a theory of sanity, the above four aspects are of most importance. As our actual lives are lived on objective, un-speakable levels, and not on verbal levels, it appears, as a problem of evaluation,

that the objective level, including, of course, our un-speakable feelings, ‘emotions’. , is the most important, and that the verbal levels are only auxiliary, sometimes useful, but at present often harmful, because of the disregard of the *s.r*. The role of the auxiliary verbal levels is only fulfilled if these verbal processes are translated back into first order effects. Thus, through verbal intercourse, in the main, scientists discover useful first order abstractions (objective), and by verbal intercourse again, *culture* is built; but this only when the verbal processes affect the un-speakable psycho-logical manifestations, such as our feelings, ‘emotions’, .

Some extraordinary parrot could be taught to repeat all the verbal ‘wisdom’ of the world; but, if he survived at all, he would be just a parrot. The repeated noises would not have affected his first order effects—his affects—these noises would ‘mean’ nothing to him.

Meanings, and the meanings of meanings, with their inseparable affective components, give us, therefore, not only the *non-elementalistic* foundation on which all civilization and culture depends, but a study of the *non-el* mechanisms of meanings, through psychophysiology and general semantics, gives us, also, powerful physiological means to achieve a host of desirable, and to eliminate a large number of undesirable, psycho-logical manifestations.

The physiological mechanism is extremely simple and necessitates a breaking away from the older elementalism. But it is usually very difficult for any given individual to break away from this older elementalism, as it involves the established *s.r*, and to be effective is, by necessity, a little laborious. The working tool of psychophysiology is found in the *semantic reaction.* This can be described as the psycho-logical reaction of a given individual to words and language and other symbols and events in *connection with their meanings,* and the psycho-logical reactions, which *become meanings and relational configurations* the moment the given individual begins to analyse them or somebody else does that for him. It is of great importance to realize that the term ‘semantic’ is *non-elementalistic,* as it involves conjointly the ‘emotional’ as well as the ‘intellectual’ factors.

From the *non-el* point of view, any affect, or impulse, or even human instinct, when made conscious acquires *non-el* meanings, and becomes ultimately a psycho-logical configuration of desirable or undesirable to the individual relations, thus revealing a workable *non-el* mechanism. Psychotherapy, by making the unconscious conscious, and by verbalization, attempts to discover meanings of which the patient was not aware. If the attempt is successful and the individual meanings are revealed, these are usually found to belong to an immature period of

evaluation in the patient's life. They are then consciously revised and rejected, and the given patient either improves or is entirely relieved. The condition for a successful treatment seems to be that the *processes should be managed in a non-elementalistic* way. Mere verbal formalism is not enough, because the full *non-elementalistic* meanings to the patient are not divulged; consequently, in such a case, the *s.r* are not affected, and the treatment is a failure.

The *non-el* study of the *s.r* becomes an extremely general scientific discipline. The study of relations, and therefore order, reveals to us the mechanism of *non-el* meanings; and, in the application of an ordinal *physiological* discipline, we gain psychophysiological means by which powerfully to affect, reverse, or even annul, undesirable *s.r.* In psychophysiology we find a *non-el* physiological theory of meanings and sanity.

From the present point of view, all affective and psycho-logical responses to words and other stimuli *involving meanings* are to be considered as *s.r.* What the relation between such responses and a corresponding persistent psycho-logical *state* may be, is at present not clear, although a number of facts of observation seem to suggest that the re-education of the *s.r* results often in a beneficial change in some of these states. But further investigation in this field is needed.

The realization of this difference is important in practice, because most of the psycho-logical manifestations may appear as evoked by some event, and so are to be called responses or reflexes. Such a response, when lasting, should be called a given *state*, perhaps a semantic state, but not a semantic reflex. The term, 'semantic reaction', will be used as covering both semantic reflexes and states. In the present work, we are interested in *s.r*, from a psychophysiological, theoretical and experimental point of view, which include the corresponding states.

If, for instance, a statement or any event evokes some individual's attention, or one train of associations in preference to another, or envy, or anger, or fear, or prejudice. , we would have to speak of all such responses on psycho-logical levels as *s.r.* A stimulus was present, and a response followed; so that, by definition, we should speak of a reaction. As the active factor in the stimulus was the individual meanings to the given person, and his response had meanings to him as a first order effect, the reaction must be called a *semantic* reaction.

The present work is written entirely from the *s.r* point of view; and so the treatment of the material, and the language used, imply, in general, a psycho-logical response to a stimulus in connection with meanings, this response being expressed by a number of such words as 'implies', 'follows', 'becomes', 'evokes', 'results', 'feels', 'reacts', 'evalu-

ates', and many others. All data taken from science are selected, and only those which directly enter as factors in *s.r* are given in an elementary outline. The meanings to the individual are dependent, through the influence of the environment, education, languages and their structure, and other factors, on racial meanings called science, which, to a large extent, because of the structural and relational character of science, become physiological semantic factors of the reactions. In fact, science, mathematics, 'logic'. , may be considered from a *non-elementalistic* point of view as *generalized* results of *s.r* acceptable to the majority of informed and not heavily pathological individuals.

To facilitate the writing and the reading of the work, I am compelled to use definite devices. As in case of structure, multiordinal terms, so in the case of *s.r*, I often employ an ordinary form of expression and use the words 'structur*al*', 'multiordin*al*', 'semantic', as adjectives, or 'structurally', 'semantically'. , as adverbs, always implying the full meanings, that under such and such conditions of a given stimulus, the given *s.r* would be such and such. In many instances, the letters *s.r* or (*s.r*) will be inserted to remind the reader that we deal with semantic reactions or the psycho-logical reactions in connection with the meanings of the problems analysed. It is not only useful, but perhaps essential, that the reader should stop in such places and try to evoke in himself the given *s.r.* The present work leads to new *s.r* which are beneficial to every one of us and fundamental for sanity. The casual reading of the present book is not enough. Any one who wants the full or partial benefit of the joint labours of the author and the reader must, even in the reading, begin to re-train his *s.r*.

As the organism works as-a-whole, and as the training is psychophysiological in terms of order, reversing the reversed pathological order. , organism-as-a-whole means *must* be employed. For this purpose, the Structural Differential has been developed. The reader will later understand that it is practically impossible to achieve, without its help, the maximum beneficial semantic results.

From a *non-el* point of view, which makes illegitimate any *el* verbal splitting of 'emotions' and 'intellect'. , these processes must be analysed in terms of order, indicating the stages of the psycho-neural process-as-a-whole. Empirically, there is a difference between an 'emotion' which becomes 'rationalized' and 'emotions' invoked or produced by 'ideas'. The order is different in each instance, and if, in a given nervous system, at a given moment, or under some special conditions, the lower or higher nerve centres work defectively, the nervous reactions are not well balanced and the manifestations acquire a one-sided character. The other

aspect is not abolished, but is simply less prominent or less effective. Thus, in morons, imbeciles, and in many forms of infantilism, the ‘thinking’ is very ‘emotional’ and of a low grade; in so-called ‘moral imbeciles’, and perhaps in ‘schizophrenia’, the ‘thinking’ may be seemingly ‘normal’, yet it does not affect the ‘feelings’, which are deficient.

From the *non-el* semantic *human* point of view, any affect only gains meanings when it is conscious; or, in other words, when an actual or assumed set of relations is present. In an ideally balanced and efficient human nervous system, the ‘emotions’ would be translated into ‘ideas’, and ‘ideas’ translated into ‘emotions’, *with equal facility.* In other words, the *s.r* of a given individual would be under full control and capable of being educated, influenced, transformed quickly and efficiently—the very reverse of the present situation. The present enquiry shows that the lack of psychophysiological methods for training and lack of analysis and understanding of the factors involved, are responsible for this deplorable situation.

The above processes are quite obvious on *racial* grounds, if we study science and mathematics from the semantic point of view. With very few exceptions, we only fail individually. For instance, a Euclid and a Newton had ‘hunches’, ‘intuitions’. ; then they rationalized and verbalized them and so affected the rest of us and established the ‘natural’ feeling for *E* geometries, *N* mechanics, . When new $\overline{E}$ or $\overline{N}$ systems were produced, many of the older scientists could ‘understand’ them, could even master the new symbolic technique; yet their ‘feelings’. , were seldom affected. They ‘thought’ in the new way, but they continued to ‘feel’ in the old; their *s.r* did not follow fully the transformation of their ‘ideas’, and this produced a split personality.

Any fundamentally new system involves new *s.r;* and this is the main difficulty which besets us when we try to master a new system. We must re-educate, or change, our older *s.r.* As a rule, the younger generation, which began with the new *s.r*, has no such difficulties with the new systems. Just the opposite—the older *s.r* become as difficult or impossible to them as the new were to the older generation. To both generations, with their corresponding *s.r,* the non-habitual *s.r* are ‘new’, no matter what their historical order and how difficult or how simple they are. However, there is an important difference. The newer systems, as, for instance, the $\overline{E}$, $\overline{N}$ and the present corresponding $\overline{A}$-system, are *more general:* which means that the newer systems include the older as particular cases, so that the younger generation has *s.r* which are *more flexible, more conditional,* with a broader outlook. , semantic conditions absent in the older systems.

The problems connected with the *s.r* are not new, because these are inherent in man, no matter on what low or primitive level or on what high level of development he may be; but, up to the undertaking of the present analysis, the problems of *s.r* were not formulated, their psychophysiological mechanisms were not discovered, and so, to the detriment of all of us, we have had no workable educational means by which to handle them effectively.

That is why the passing from one era to another is usually so difficult and so painful. The new involves new *s.r*, while, as a rule, the older generations have enforced their systems, and, through them, by means of controlled education and linguistic structure and habits, the old *s.r*. This the younger generation, *always* having more racial experience, cannot accept, so that revolutions, scientific or otherwise, happen, and, when successful, the new systems are imposed on the older generation without the older generation's changing their *s.r*. All of which is painful to all concerned. The next generation after such a 'revolution' does not have similar difficulties, because from childhood they are trained in the new *s.r*, and all appears as 'natural' to them, and the older as 'unthinkable', 'silly', .

As a descriptive fact, the present stage of human development is such that with a very few exceptions our nervous systems do not work properly in accordance with their survival structure. In other words, although we have the potentialities for correct functioning in our nervous system, because of the neglect of the physiological control-mechanism of our s*.r*, we have semantic blockages in our reactions, and the more beneficial manifestations are very effectively prevented.

The present analysis divulges a powerful mechanism for the control and education of *s.r*; and, by means of proper evaluation, a great many undesirable manifestations on the psycho-logical level can be very efficiently transformed into highly desirable ones. In dealing with such a fundamental experimental issue as the *s.r*, which have been with us since the dawn of mankind, it is impossible to say new things all the time. Very often the issues involved become 'common sense'; but what is the use, in practice, of this 'common sense', if it is seldom, if ever, applied, and in fact cannot be applied because of the older lack of workable psychophysiological formulations ? For instance, what could be simpler or more 'common sense' than the $\overline{A}$ premise that an object is *not* words; yet, to my knowledge, no one *fully* applies this, or has *fully acquired* the corresponding *s.r*. Without first acquiring this new *s.r*, it is impossible to discover this error and corresponding *s.r* in others; but as soon as we have trained ourselves, it becomes so obvious that it is impossible to miss

it. We shall see, later, that the older *s.r* were due to the lack of structural investigations, to the old structure of language, to the lack of consciousness of abstracting, to the low order conditionality of our conditional reactions (the semantic included), and a long list of other important factors. All scientific discoveries involve *s.r*, and so, once formulated, and the new reactions acquired, the discoveries become 'common sense', and we often wonder why these discoveries were so slow in coming in spite of their 'obviousness'. These explanations are given because they also involve some *s.r;* and we must warn the reader that such evaluations (*s.r*): 'Oh, a platitude !', 'A baby knows that', are very effective *s.r to prevent* the acquisition of the new reactions. This is why the 'discovery of the obvious' is often so difficult; it involves very many of semantic factors of new evaluation and meanings.

A fuller evaluation is only reached at present on racial grounds in two or more generations, and never on individual grounds; which, of course, for *personal generalized adjustment* and happiness, is very detrimental. Similarly, only in the study of racial achievements called science and mathematics can we discover the appropriate *s.r* and the nervous mechanism of these so varied, so flexible, and so fundamental reactions.

In fact, without a structural formulation and a $\overline{A}$ revision based on the study of science and mathematics, it is impossible to discover, to control, or to educate these *s.r.* For this reason it was necessary to analyse the semantic factors in connection with brief and elementary considerations taken from modern science. But, when all is said and done, and the important semantic factors discovered, the whole issue becomes extremely simple, and easily applied, even by persons without much education. In fact, because the objective levels are *not* words, the only possible aim of science is to discover *structure*, which, when formulated, is *always simple* and easily understood by everyone, with the exception, of course, of very pathological individuals. We have already seen that structure is to be considered as a configuration of relations, and that relations appear as the essential factors in meanings, and so of *s.r.* The present enquiry, because structural, reveals vital factors of *s.r.* The consequences are extremely simple, yet very important. We see that by a simple *structural re-education* of the *s.r*, which in the great mass of people are still on the level of copying animals in their nervous reactions, we powerfully affect the *s.r*, and so are able to impart very simply, to all, in the most elementary education of the *s.r* of the child, *cultural* results at present sometimes acquired unconsciously and painfully in university education.

The above considerations have forced upon me the structure of the present work and the selection and presentation of the material. Of

course, the reader can skip many parts and at once plunge into Part VII, and discover that it is all ‘childishly simple’, ‘obvious’ and ‘common sense’. Such a reader or a critic with this particular *s.r* would miss the point, which can be verified as an *experimental* fact in the meantime, that in spite of its seeming simplicity, *no one,* not even the greatest genius, *fully* applies these ‘platitudes’ outside of his special work, which *s.r,* in his limited field, represent the semantic components *that make up his genius.*

The full acquisition of the new *s.r* requires special training; but, when acquired, it solves for a given individual, without any outside interference, all important human problems I know of. It imparts to him some of the *s.r* of so-called ‘genius’, and thus enlarges his so-called ‘intelligence’.

The problems of the structure of a given language are of extreme, and as yet unrealized, semantic importance. Thus, for instance, the whole Einstein theory, or any other fundamental scientific theory, must be considered as the building of a new language of similar structure to the empirical facts known at a given date. In 1933, the general tendency of science, as made particularly obvious in the works of J. Loeb, C. M. Child, psychiatry, the Einstein theory, the new quantum mechanics. , and the present work, is to build languages which take into consideration the many important invariant relations, a condition made possible only by the use of *non-el* languages. In my case, I must construct a *non-el* language in which ‘senses’ and ‘mind’, ‘emotions’ and ‘intellect’. , are no longer to be verbally split, because a language in which they *are* split is not similar in structure to the known empirical facts, and all speculations in such an *el* language must be misleading.

This *non-el* language involves a new *non-el* theory of meanings, as just explained. The term ‘semantic’, ‘semantically’, ‘semantic reactions’, ‘semantic states’. , are *non-el,* as they involve both ‘emotions’ and ‘intellect’, since they depend on ‘meanings’, ‘evaluation’, ‘significance’, and the like, based on structure, relations, and ultimately multi-dimensional order. All these terms apply equally to ‘senses’ and to ‘mind’, to ‘emotions’ and to ‘intellect’—they are not artificially split.

It is important to preserve the *non-el* or organism-as-a-whole attitude and terminology throughout, because these represent most important factors in our *s.r.* Sometimes it is necessary to emphasize the origin, or the relative importance, of a given aspect of the impulse or reaction, or to translate for the reader a language not entirely familiar to him into one to which he is more accustomed. In such cases, I use the old *el* terms in quotation marks to indicate that I do not eliminate or disregard the other

aspects—a disregard which otherwise would be implied by the use of the old terms.

The term psycho-logical will always be used either with a hyphen to indicate its *non-el* character, or in quotation marks, without a hyphen, when we refer to the old elementalism. Similarly, with the terms psycho-logics, psycho-logicians, for 'psychology' and 'psychologist'. The terms 'mental ills', 'mental hygiene' are unfortunate ones, since they are used by the majority as *el*. Psychiatrists, it is true, use them in the organism-as-a-whole sense to include 'emotions'. Because of the great semantic influence of the structure of language on the masses of mankind, leading, as it does, through lack of better understanding and *evaluation* to *speculation on terms,* it seems advisable to abandon completely terms which imply to the many the suggested elementalism, although these terms are used in a proper *non-el* way by the *few*.

If specialists, to satisfy their *s.r*, disregard these issues and persist in the use of *el* terms, or use such expressions as 'man is an animal' and the like, they misunderstand the importance of semantic factors. Through lack of appreciation or of proper evaluation of the problems involved, they *artificially* and most effectively prevent the rest of us from following their work without being led astray by the inappropriate structure of their language. The harm done through such practices is quite serious, and, at present, mostly disregarded. For this reason, I either use quotation marks on the terms 'mental', 'mental' ills, 'mental' hygiene. , or else I use the terms psycho-logical, semantic ills, psycho-logical or semantic hygiene, . The above two terms are not only *non-el* but also have an important advantage of being international. The terms 'affects', 'affective' are little used outside of scientific literature, where they are used mostly in the *non-el* ordinal sense. I use them in a similar way, without quotation marks.

All the issues involved in the present work are, of necessity, interconnected. Thus, order leads to relations, relations to structure, and these, in turn, to *non-el* meanings and evaluations, which are the fundamental factors of all psycho-logical states and responses, called more specifically semantic reactions, states, and reflexes. The reader should be careful to remain at all times aware of these connections and implications. Whenever we find order, or relations, or structure, in the outside world, or in our nervous system, these terms, because of their *non-el* character, imply similar order, relations, and structure in our psycho-logical processes, thus establishing meanings, proper evaluations. , ultimately leading toward appropriate *s.r*. The reverse applies also. When-

ever we speak of *s.r, non-el* meanings, structure, relations, and, finally, order, are implied.

The use of *non-el* languages is seriously beneficial, as it is structurally more correct and establishes *s.r* which are more appropriate, more flexible, or of higher order conditionality, a necessity for the optimum working of the human nervous system,—all of which results follow automatically from the structure of the language used.

A *non-el,* structurally correct, but non-formulated, attitude is a private benefit. Once it is formulated in a *non-el* language, it becomes a public benefit, as it induces in others the *non-el* attitudes, thus transforming the former *s.r.* In this way, a 'feeling' has been translated structurally into language; which, in turn, through structure, involves other people's attitudes and 'feelings', and so their *s.r*.

The whole process is extremely simple, elementary, and automatic; yet, before we acquire the new *s.r,* we find difficulties because of the fundamental novelty of these reactions. Any persistent student will acquire them easily, provided he does not expect too rapid a progress. The subject matter of the present analysis is closely related to the 'feelings' of everybody; yet the difficulties in acquiring the new reactions are similar to those the older scientists found in acquiring the *s.r* necessary for mastering the $\overline{E}$ and $\overline{N}$ systems.

In physics, we often need 'space-like' or 'time-like' intervals, although the *non-el* implications of the term 'interval' remain. Similarly, in our problems when we are interested in the 'emotion-like' or 'mind-like' aspects of the *non-el s.r,* we shall indicate the special aspects by using the old terms in quotation marks. This method prevents wasteful and futile speculations on *el* terms, and serves as a reminder that the other aspects are present, although in a given discussion we do not deem them to be important. The above has, by itself, very far-reaching semantic influence on our reactions.

From what has already been said, it is clear that the terminology of semantic reactions. , covers in a *non-el* way all psycho-logical reactions which were formerly covered by *el* terms of 'emotions' and 'intellect', the reactions themselves always being on the objective levels and un-speakable. As *s.r* can always be analysed into terms of meanings and evaluation, and the latter into terms of structure, relations, and multidimensional order, which involves physiological factors, the term 'semantic' ultimately appears as a physiological or rather psychophysiological term. It suggests workable and simple educational methods which will be explained later. The reader should notice that the use of a language

of a new structure has led to new results, which, in turn, directly affect our *s.r*.

An important point should be stressed; namely, that the issues are fundamentally simple, because they are similar in structure to the structure of human 'knowledge' and to the nervous structure on which so-called 'human nature' depends. Because of this similarity, it is unconditionally necessary to become fully acquainted with the new terms of new structure, and to use them habitually. then will the beneficial results follow. All languages have some structure; and so all languages involve automatically the, of necessity, interconnected *s.r*. Any one who tries to translate the new language into the old while 'thinking' in the older terms is confronted with an inherent neurological difficulty and involves himself in a hopeless confusion of his own doing. The reader must be warned against making this mistake.

In the present work, I have tried to realize fully my duties toward my reader; and I am certain that the reader who will read the book diligently and repeatedly will be repaid for his labours. The realization that some problems *do exist*, even if we do not fully appreciate or understand them, has very serious semantic influence on all of us. Realizing my responsibilities toward the reader, I have not spared difficult labour in order to bring these semantic facts to his attention. I seriously suggest that no reader ought to disregard Parts VIII, IX, and X, but that he should become at least acquainted with the existence of the problems there discussed. If this is conscientiously done, many beneficial *s.r* will appear sooner or later.

The present system is an interconnected whole: the beginning implies the end, and the end implies the beginning. Because of this characteristic, the book should be read *at least twice*, and preferably oftener. I wish positively to discourage any reader who intends to give it merely a superficial reading.

The problems of *s.r* have not, so far, been analysed at all from the point of view of structure, and the present enquiry is, as far as my knowledge goes, the first in existence. The problems of meanings are vast, extremely important, and very little analysed. The interested reader will find some material in the excellent critical review of the problems of meanings in Ogden's and Richards' *The Meaning of Meaning*, in some parts of Baldwin's *Thought and Things or Genetic Logic*, and in Lady Welby's article in the *Encyclopaedia Britannica* on *Significs*. In these three studies, a partial literature of the subject is given.

The present work involves issues taken from many and diverse branches of knowledge which have not hitherto been seen to be connected.

What is of importance is that the issues presented should be sound *in the main*, even if not perfect in details, which often have no bearing on the subject. Specialists in the fields here analysed should pass their professional judgement as to the soundness of their *special parts* of the system. They do not need even to be enthusiastic, it is enough if they approve it. The main issue is the building of a $\overline{A}$-system, which *co-ordinates* many disconnected fields of knowledge on the basis of structure, from the special point of view of *non-el s.r.* If these results have been accomplished, the author is satisfied.

Section B. On the un-speakable objective level.

The term ‘un-speakable’ expresses exactly that which we have up to now practically entirely disregarded; namely, that an object or feeling, say, our toothache, is *not* verbal, is *not* words. Whatever we may say will not be the objective level, which remains fundamentally un-speakable. Thus, we can sit on the object called ‘a chair’, but we cannot sit on the noise we made or the name we applied to that object. It is of utmost importance for the present $\overline{A}$-system not to confuse the verbal level with the objective level, the more so that all our immediate and direct ‘mental’ and ‘emotional’ reactions, and all *s.r*, states, and reflexes, belong to the un-speakable objective levels, as these are *not* words. This fact is of great, but unrealized, importance for the training of appropriate *s.r*. We can train these reactions simply and effectively by ‘silence on the objective levels’, using familiar *objects* called ‘a chair’ or ‘a pencil’, and this training automatically affects our ‘emotions’, ‘feelings’, as well as other psycho-logical immediate responses difficult to reach, which are also *not* words. We can train simply and effectively the *s.r* inside our skins by training on purely objective and familiar grounds outside our skins, avoiding unnecessary psycho-logical difficulties, yet achieving the desired semantic results. The term ‘un-speakable’ is used in its strict English meaning. The objective level is *not* words, can *not* be reached by words alone, and has nothing to do with ‘good’ or ‘bad’; neither can it be understood as ‘non-expressible by words’ or ‘not to be described by words’, because the terms ‘expressible’ or ‘described’ already presuppose words and symbols. Something, therefore, which we call ‘a chair’ or ‘a toothache’ may be *expressed* or *described* by words; yet, the situation is not altered, because the given description or expression will *not* be the actual objective level which we call ‘a chair’ or ‘a toothache’.

Semantically, this problem is genuinely crucial. Any one who misses that—and it is unfortunately easily missed—will miss one of the most

important psycho-logical factors in all *s.r* underlying sanity. This omission is facilitated greatly by the older systems, habits of thought, older *s.r*, and, above all, by the primitive *structure* of our *A* language and the use of the 'is' of identity. Thus, for instance, we *handle* what we call a pencil. Whatever we *handle* is un-speakable; yet we *say* 'this *is* a pencil', which statement is unconditionally false to facts, because the object appears as an absolute individual and *is not* words. Thus our *s.r* are at *once trained in delusional values*, which must be pathological.

I shall never forget a dramatic moment in my experience. I had a very helpful and friendly contact prolonged over a number of years with a very eminent scientist. After many discussions, I asked if some of the special points of my work were clear to him. His answer was, 'Yes, it is all right, and so on, *but*, how can you expect me to follow your work all through, if I still do not know what an object is ?' It was a genuine shock to me. The use of the little word 'is' as an identity term applied to the objective level had paralysed most effectively a great deal of hard and prolonged work. Yet, the semantic blockage which prevented him from acquiring the new *s.r* is so simple as to seem trifling, in spite of the semantic harm done. The definite answer may be expressed as follows: 'Say whatever you choose *about* the object, and whatever you might say *is not* it.' Or, in other words: 'Whatever you might *say* the object "is", well it *is not.'* This negative statement is *final*, because it is *negative.*

I have enlarged upon this subject because of its crucial semantic importance. Whoever misses this point is missing one of the most vital factors of practically all *s.r* leading toward sanity. The above is easily verified. In my experience I have never met any one, even among scientists**,** who would *fully* apply this childish 'wisdom' as an *instinctive* 'feeling' and factor in all his *s.r*. I want also to show the reader the extreme simplicity of a $\overline{A}$-system based on the denial of the 'is' of identity, and to forewarn him against very real difficulties induced by the primitive structure of our language and the *s.r* connected with it. Our actual lives are lived entirely on the objective levels, including the un-speakable 'feelings', 'emotions'. , the verbal levels being only *auxiliary,* and effective only if they are translated back into first order un-speakable effects, such as an object, an action, a 'feeling'. , all on the silent and un-speakable objective levels. In all cases of which I know at present, where the retraining of our *s.r* has had beneficial effects, the results were obtained when this 'silence on the objective levels' has been attained, which affects all our psycho-logical reactions and regulates them to the benefit of the organism and of his survival adaptation.

Section C. On ‘copying’ in our nervous reactions.

The selection of the term ‘copying’ was forced upon me after much meditation. Its standard meaning implies ‘reproduction after a model’, applicable even to mechanical processes, and although it does not exclude, it does not necessarily include conscious copying. It is not generally realized to what an important extent copying plays its role in higher animals and man.

Some characteristics are inborn, some are acquired. Long ago, Spalding made experiments with birds. Newly hatched birds were enclosed in small boxes which did not allow them to stretch their wings or to see other birds fly. At the period when usually flying begins, they were released and began to fly at once with great skill, showing that flying in birds is an inborn function. Other experiments were made by Scott to find out if the characteristic song of the oriole was inborn or acquired. When orioles, after being hatched, were kept away from their parents, at a given period they began to sing; but the peculiar melody of their songs was different from the songs of their parents. Thus, singing is an inborn characteristic, but the special melody is due to copying parents, and so is acquired.[3]

In our human reactions, speech in general is an inborn characteristic, but what special language or what special *structure* of language we acquire is due to environment and copying—much too often to unconscious and, therefore, uncritical copying. As to the copying of animals in our nervous reactions, this is quite a simple problem. Self-analysis, which is rather a difficult affair, necessitating a serious and efficient ‘mentality’, was impossible in the primitive stage. Copying parents in many respects began long before the appearance of man, who has naturally continued this practice until the present day. The results, therefore, are intimately connected with reactions of a pre-human stage, transmitted from generation to generation. But for our present purpose, the most important form of the copying of animals was, and is, the copying of the comparative unconditionality of their conditional reflexes, or lower order conditionality; the animalistic identification or confusion of orders of abstractions, and the lack of consciousness of abstracting, which, while natural, normal, and necessary with animals, becomes a source of endless semantic disturbances for humans. More about copying will be explained as we proceed.

It should be noticed also that because of the structure of the nervous system and the history of its development, the more an organism became ‘conscious’, the more this copying became a neurological necessity, as

exemplified in parrots and apes. With man, owing to the lack of consciousness of abstracting, his copying capacities became also much more pronounced and often harmful. Even the primitive man and the child are ‘intelligent’ enough to observe and copy, but not informed enough in the racial experiences usually called science, which, for him, are nonexistent, to discriminate between the reactions on the ‘psychological’ levels of animals and the typical responses which man with his more complex nervous system should have. Only an analysis of *structure* and *semantic reactions*, resulting in consciousness of abstracting, can free us from this unconscious copying of animals, which, let us repeat, must be pathological for man, because it eliminates a most vital regulating factor in human nervous and *s.r*, and so vitiates the whole process. This factor is not simply additive, so that, when it is introduced and *superimposed* on any response of the human nervous system allowing such superimposition, the whole reaction is *fundamentally changed* in a beneficial way.