CHAPTER XXVIII

ON THE MECHANISM OF IDENTIFICATION AND VISUALIZATION

"Did you say 'pig,' or 'fig' ?" said the Cat.

"I said 'pig'," replied Alice; "and I wish you wouldn't keep appearing and vanishing so suddenly: you make one quite giddy !"

"All right," said the Cat; and this time it vanished quite slowly, beginning with the end of the tail, and ending with the grin, which remained some time after the rest of it had gone.

"Well ! I've often seen a cat without a grin," thought Alice; "but a grin without a cat ! It's the most curious thing I ever saw in all my life !"* LEWIS CARROLL

The significance of the paradoxical phase is not limited to pathological states such as those previously observed, and it is highly probable that it plays an important part in normal men too, who often are apt to be much more influenced by words than by the actual facts of the surrounding reality. (394) I.P. PAVLOV

In the case of an imbecile, repetition without comprehension, psittacism, may prevail; the rôle of visual impressions is null or nearly so among the illiterate; the deaf from birth who have learned to speak have no auditory impressions to intervene. But, normally, it is feelings and ideas that appear in action, in the form of language. (411) HENRI PIÉRON

The specific neurones necessary for sensation are also necessary for the associative reawakening of that sensation, which is called the image—a dynamic process and not a photographic negative resting miraculously in the nervous substance, where some subtle spirit might go to consult it. (411) HENRI PIÉRON

It is none the less true that certain cultivated persons can use visual images, and can even use these images in preference to others. (411) HENRI PIÉRON

Objectification and visualization are usually not differentiated. The first represents a very undesirable semantic process, whereas the second, visualization, represents one of the most beneficial and efficient forms of human 'thought'. From a $\overline{A}$ point of view, such a lack of differentiation between the two reactions appears as a very serious problem, requiring an analysis of the respective mechanisms.

To visualize, we must have such forms of representation as lend themselves to visualization; otherwise, we must fail. The *A*-system which could not adequately handle asymmetrical relations. and could not be built explicitly on structure, necessarily involves identification. In the *A* period, we were able to visualize objects and a few objective situations, but all the higher abstractions were, in principle, inaccessible to visualization, making scientific theories needlessly difficult. A $\overline{A}$-system, free from identification, must be based explicitly on *structure* on all levels (structure defined in terms of relations and ultimately multi-dimensional

* *Alice in Wonderland*

order), which can be easily visualized. It should be recalled that structure, relations, and multi-dimensional order supply us with a language which completely bridges daily-life experiences with all science, leading toward a *general theory of values.* Mathematics and mathematical physics then become the representatives and the foundation of all science; and in the human field a general theory of values will lead to adjustment or sanity and will some day include ethics, economics, .

For these reasons, the Structural Differential is uniquely useful, as, at a glance, it conveys to the eye structural differences between the world of the animal, the primitive man, and the infant, which, no matter how complex, is extremely simple in comparison with the world of the 'civilized' adult. The first involves a *one-valued orientation* which, if applied to the ∞-valued facts of life, gives extremely inadequate, wasteful, and ultimately painful adjustment, where only the few strongest survive. The second involves ∞-valued orientation, similar in structure to the actual, empirical, ∞-valued facts of life, allowing a one-to-one adjustment in evaluation with the facts in each individual case, and producing a semantic flexibility. , necessary for adjustment. This flexibility is known to be the foundation for balanced semantic states, 'higher intelligence', .

Visualization requires a definite elimination, through differentiation, of harmful identification, which, as usual, is based on incorrect evaluation of structural issues. Thus, we have had endless, bitter, and futile arguments as to whether or not the 'mechanistic' point of view of the world and ourselves is legitimate, adequate, . The average person, as well as the majority of 'philosophers', identifies '*me*chanistic' with '*ma*chinistic'. Roughly, mechanics is a name for a science which deals with dynamic manifestations on all levels; thus, we have macroscopic classical mechanics, colloidal mechanics now being formulated, and the sub-microscopic quantum mechanics already being well-developed disciplines. In the rough. 'machine' is a label applied to a man-made apparatus for the application or transformation of power. But even machines differ greatly; thus, a dynamo is entirely different in principle, in theory, and in applications from a lathe or an automobile.

If we ask: 'Is the machinistic point of view of the world justified ?', the answer is simple and undeniable; namely, that this point of view is grossly inadequate and should be entirely abandoned. But it is not so with the mechanistic point of view, understood in its modern sense and including the quantum mechanics point of view, which is entirely *structural*. In 1933, we know positively that even the gross macroscopic physico-chemical characteristics of everything we are dealing with depend on the sub-microscopic *structure* (see Part X). The details are

not yet fully known, but the principles are firmly established. With a $\overline{A}$ understanding and evaluation of the unique importance of structure as the only possible content of 'knowledge', these 'firmly established' principles become *'irreversibly established'*. We may go further and say that the quantum mechanics point of view becomes the first structurally correct point of view and, as such, should be accepted fully in any sane orientation. If we stop identification, then we will differentiate between some simple facts. For instance, we will understand that any semantic state, reaction, or process has its corresponding sub-microscopic, structural, colloidal, and ultimately quantum mechanical processes going on in the nervous system; however, the *s.r*, or feelings of pain or pleasure. , *are not* the sub-microscopic processes. These belong to different levels, but with ∞-valued semantics we can establish in principle a one-to-one correspondence between them. Thus, when we differentiate adequately, the older *mach*inistic objections disappear entirely; and, in its proper field, for structural reasons, we must preserve the *mechanistic*, and entirely abandon the too crude *mach*inistic attitudes. The *mechanistic* (1933) attitude is based on *structure* and so is indispensable for visualization; and *training in visualization automatically abolishes objectification*, which represents an important special case of all identification. From the point of view of a $\overline{A}$-system, adjustment and sanity in humans depend, to a large extent, on their 'understanding', which is entirely structural in character; therefore, we must accept a *mechanistic* (1933) *attitude*, which, in the meantime, can be visualized.

The finding of structural means of representation facilitates *visualization*, imagining, picturing, . In the adjustment trend we start with lower nerve-impressions, 'senses', 'feelings'. , lower abstractions, and these are abstracted again by the higher centres. The higher centres produce the 'very abstract' theories, which cannot be visualized for a while. The lower centres, which are involved in visualization, can deal only with structures which can be 'concretely pictured'. So we always try to invent mechanistic or geometrical theories, such as can be handled by the lower centres.

Individual 'experiences', supplied by the lower centres of different individuals, do not blend directly. They are blended in the higher centres. In them manifold experiences, whether individual or accumulated by the race (time-binding), are abstracted further, integrated, and summarized. Once this has been accomplished, structural means are sought *and discovered* to translate these higher abstractions into lower, the only ones with which the lower centres can deal. Then we can 'visualize' our theories, and the higher centres not only influence the lower centres, but

the lower centres have appropriate means by which to co-operate with the higher centres in their new *non-el* quests.

The lack of explicitly structural forms of representations is responsible, also, for the difficulties which arise when the higher order abstractions are translated into the reflex-reactions of the lower centres, which can deal with ‘intuitions’, ‘orientations’, ‘visualization’, . The so-called ‘geniuses’ have a very subtle nervous system in which the translation of higher order abstractions into lower and vice versa is easily accomplished. From the point of view of forms or representations, we can have two issues: (1) we may have *el* forms of representations which are not based on structure, visualization. , and cannot efficiently affect the activities of the lower centres; (2) we may have a *non-el* system based on structure, visualization. , which can be translated simply, easily, and efficiently into the terms of the lower centres. These problems are of educational importance and should be worked out more fully.

In my experience with grown-ups who have had only a *short* contact with my work, I find, in many cases, that, although they may have even given their complete verbal approval of the main point of the system, yet, invariably, in practice, the full application is lacking. Obviously, the semantic importance of the present findings is not in the verbal approval alone, when that approval is not applied, but in the consistent and permanent instinctive acquisition of the new semantic attitude which involves a complete elimination of identification, allness, elementalism, .

We can teach any one to repeat verbally, by heart, instructions for operating an automobile, a piano, or a typewriter; but no one could operate them satisfactorily by reflex-action after such verbal training alone. To operate effectively and skilfully any structural complex, we must become intimately familiar with its structural working through actual reflex-training, and only then can we expect the best results. In my experience, this is true with language, and, without the *visual* Structural Differential on which we can point our finger to the objective level and urge silence. , such basic semantic *reflex-training* cannot properly be given.

If we ask a man: ‘Do you know how to drive a car ?’, and he answers ‘Yes’, we assume that he has acquired the proper *reflexes.* If he answers ‘No, but I know *about* it’, he means that he has *not* acquired the proper reflexes, but that his ‘knowledge’ is on purely verbal levels, non-effective in application on *non-verbal* reflex-levels. This applies fully to *s.r;* we may ‘know’ *about* them, but we may never apply successfully what we supposedly ‘know’. To ‘know’ represents a multiordinal process which involves equally the activities of the lower nerve centres and of the higher. In our *el* systems we had no such distinction, and so we

confused them. The older 'knowledge', when presented in *el* language, could not have been absorbed easily by the *non-el* organisms-as-a-whole. As the main task, at present, is to unlearn the older *s.r,* the new reactions need a persistent training, particularly by the grown-ups. The *non-el,* $\overline{A}$ language and method prove to have psychophysiological importance.

Although the neurological mechanism underlying identification, objectification, visualization. , is not well known (1933), neurology gives us evidence that in these states, as well as in delusions and hallucinations, the actual lower nerve centres are somehow engaged. We may assume that different 'resistances', 'blockages'. , in some parts of the nervous system make the passage of nervous impulses more difficult, and it seems reasonable to suppose that, in such cases, the paths travelled by the nervous currents are different.

In Fig. 1, an hypothetical and over-simplified scheme of the different types of distribution of nervous currents, as is known functionally. is suggested. The ordering is not anatomical but functional in terms of degrees of intensity. In this scheme, we may consider that the nervous impulse (A) reaches the lower nerve centres, the brain-stem and the thalamus, passes through the sub-cortical layers and the cortex, continuously being transformed. Finally, in returning, it may take either the beneficial and adaptive semantic form of visualization (V), free from identification and semantic disturbances, or may involve identification, with semantic disturbances, such as objectifications of different orders (O), delusions (D), illusions (I), or, finally hallucinations (H).

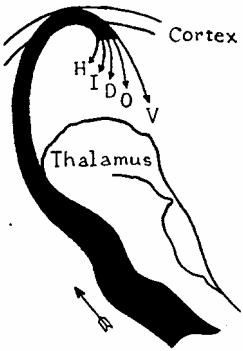

FIG. 1

Identification, or confusion of orders of abstractions, consists of erroneous evaluation: that which is going on inside of our skin has objective existence outside of our skins; the ascribing of external objectivity to words; the identification in value of 'memories of experiences' with experience; the identification of our *s.r* and states with words; the identification of inferences with descriptions, . Identification is greatly facilitated, if not actually induced, by the *A* structure of language in which we have *one name* for at least *four* entirely different entities. Thus, the *A* 'apple' (without subscripts and date) is used as a label for the physico-chemical process; for an object, say, '$\text{apple}_1^{\text{Feb.23.1933}}$'; for a 'mental' picture on the un-speakable semantic level, and for the verbal definition. Under such linguistic conditions, it is practically impossible, *without special training,*

not to identify the *four* entirely different abstractions into *one.* , with all the following sinister consequences.

Delusions represent incorrect notions and inappropriate *s.r* formed, not by insufficient knowledge or 'logic', but by affective pressure in a definite evaluational direction; as, for instance, delusions of grandeur; delusions of persecution; delusions of 'sin'; delusions of reference, .

Illusions appear more like real perceptions, but pathologically changed. For instance, anything may be semantically coloured or interpreted, or evaluated as an offense, or a threat, or a promise, .

Hallucinations consist of 'perceptions', with all their vividness, but *without* any external stimuli. Patients hear voices; see visions; feel pricks or burnings. , when there is nothing to hear, or see, or to be pricked by.

In *visualization,* identification does not occur; orders of abstractions are not confused; semantic disturbances do not appear; the *evaluation is correct*; a 'picture' is evaluated as a picture and not as the events, . In other words, because of the consciousness of abstracting, the natural order of evaluation is preserved. But once, through identification, this natural order is reversed, it marks a pathological condition more or less morbid, and often of a non-adaptive character.

Identification represents, in affective tension, the mildest semantic disturbance, consisting of an error in meanings and evaluation. Objects are evaluated as events; 'ideas', or *higher* order abstractions, are evaluated as objects; as experience; as the un-speakable semantic states or reactions; otherwise, as *lower* order abstractions. The confusion in the field of higher order abstractions follows a similar rule. Inferences obviously represent higher order abstractions than descriptions; so, when they are not differentiated, higher order abstractions are again identified with the lower. We all know from daily-life experience the fantastic amount of suffering we can, and do, actually produce for ourselves and others with such identifications.

In delusions, a similar but more intense identification occurs, resulting in erroneous semantic evaluation; wishes, feelings, and other semantic states inside of our skins are projected into the external world, giving delusionally strong objective evaluation.

In illusions, we also ascribe to, or identify our complex semantic states with different perceptions and evaluate our higher order abstractions as lower.

In hallucinations, this process of reversing the natural order comes to a culminating point: higher order abstractions are translated into, and have the full vividness and 'reality' of, lower order abstractions.

We see that the pathological processes of 'mental' illnesses involve identification as a generalized symptom; which means the reversal, in different degrees, of the natural order of evaluation based on the intensified confusion of the orders of abstractions. The more intense this process of reversal becomes, the more non-adaptive and morbid the manifestations. It should be noticed that this analysis becomes a necessity once we decide to accept a *non-el* language. This analysis is far from exhaustive, but an analysis in new *non-el*, structurally correct terms, throws a new light on old problems.

Hallucinations which result from 'physical' illness do not represent a permanent danger, but when a patient seems 'physically' well, and his confusions of orders of abstractions, delusions, illusions, and hallucinations become completely 'rationalized', then these are unmistakable signs of serious 'mental' illness, suggesting sub-microscopic colloidal lesions. Now this 'rationalization' represents nothing else but a nervous disturbance and involves *identification* somewhere. In 'physical' ills the nervous system may be disturbed, but the illness does not usually originate in nervous disturbances, and so, as such, is not dangerous.

The distinction between visualization and objectification based on a $\overline{A}$-system seems new; the difference is subtle, but when it is formulated we can discover a simple means whereby to control the situation. If we were to take a 'bone' made of papier-maché and smear it with fat or meat, Fido would, perhaps, *objectify* (identify) such a 'bone' from the smell and the form of the papier-maché with an edible one, and would fight for it. We do a similar sort of thing when we objectify. Religious wars, the 'holy inquisition', the persecution of science, which we are witnessing even at the present day in some countries and communities, are excellent examples.

We should notice that Fido was able *to trust* his natural, even 'objectified', instinct, for nature does not play such tricks on him, such as producing 'bones' of papier-maché. If nature did, dogs that objectify and persist in their liking for such 'food' would soon be eliminated. These particular objectifications would be dangerous and painful to those particular kinds of dogs with that particular nervous system, and would ultimately prove of no survival value. Thus identification, which represents an inappropriate evaluation, is harmful to all life, but is little noticed at present, because the main periods of the animal racial adjustment have been accomplished long ago. Experiments on flies show that the number of mutants which may be produced in a laboratory is large, but very few would survive outside of a laboratory. In unaided nature, these mutants probably occur, but seldom leave observable traces.[1]

However, even today, as Pavlov has shown in his laboratories, we can impose, by an interplay of a four-dimensional order of stimuli, such conditions upon animals for which their nervous survival structure was not naturally adapted, and so induce nervous pathological states. Wrong evaluation is, indeed, harmful to all life and accounts for such rigid survival laws in nature, which science teaches humans how to make more flexible. Practically word for word, this applies to ourselves. We are constantly producing more and more complex conditions of life, man-made, man-invented, and deceptive for the non-prepared. These new conditions are usually due to the application of the work of some genius, and the nervous system and *s.r of* most of us are not prepared for such eventualities. In spite of inventions and discoveries of science, which are *human* achievements, we still preserve *animalistic* systems and doctrines which shape our *s.r.* Hence, life becomes more strained and increasingly more unhappy, thereby multiplying the number of nervous break-downs.

It is known that not all people are able to visualize equally well. In the older days this fact was taken for granted, and did not suggest further analysis. Under present conditions in many human beings and also in animals, as shown in the experiments of Pavlov, the visual stimuli are physiologically weaker than the auditory ones; in man, however, the visual stimuli should be physiologically stronger than the auditory. This difference does not affect the *general* mechanism of the cyclic nerve currents and orders of abstractions. In the auditory type the main returning currents are deviated into different paths. The division between ‘visual’ and ‘auditory’ types is not sharp. In life we deal mainly with individuals who have no more than a special inclination for one or the other types of reaction.

In the case of ‘mental’ processes, human adjustment has to be managed on higher, more numerous, and more complex levels. Obviously, then, the auditory types are more enmeshed by words, further removed from life than the visual ones, and so cannot be equally well adjusted. This fact should not be neglected, and on the human levels we should have educational methods to train in visualization, which automatically eliminates identification.

The auditory channels which connect us with the external world are much less subtle and effective than the visual ones. The eye is not merely a ‘sense-organ’. Embryology shows that the eye is a part of the brain itself and what is called the ‘optic nerve’ must be considered not a nerve but as a genuine nervous tract. This fact, of course, would assign to the eye a special semantic importance, not shared with other

‘sense-organs’ or receptors. We ought not to be surprised to find that the visual types are better adjusted to this world than the auditory types. In pathological states, such as identifications, delusions, illusions, and hallucinations, there seems to be involved a translation of *auditory* semantic stimuli into visual images. In these pathological cases the order of evaluation appears as label first and object next, while the adaptive order seems to require object first and label next, . There seems little doubt that visualization is very useful, and that identification is especially harmful. The *most effective means to transform the s.r of identification is found in visualization, which indicates its special semantic importance.*

The semantic *disturbance* of identification may have many sources, auditory included, but the only adaptive trend is in visualization, which involves in some way the optical neural structure. Some structural light is thrown on this subject when we realize that, physiologically, the eye is more closely related to the vegetative nervous system, which regulates our vital organs, than the ear is. In man the optic thalamus is greatly enlarged, so that the whole thalamus is often called the ‘optic thalamus’. Actually, the thalamus has many functions, other than visual, and is connected with affective manifestations.

As most of our observations are accomplished by the aid of the eye, we should expect auditory types to be *poor observers,* and so racially, in the long run, not so well adjusted semantically. Observation shows that the auditory types often have infantile reactions—a serious handicap. From an adaptive point of view the ‘normal’, non-infantile, best-adjusted individual ought to be a visual type. Auditory types must also be further detached from actualities than the visual types, as auditory stimuli involve more inferences than descriptions, which is the opposite of the functioning of the visual types. If inferences, rather than descriptions, are involved, we naturally deal with higher abstractions first, and with the lower next, and so there is always a danger of the semantic confusion of orders of abstractions, which necessarily involves inappropriate evaluation, of which objectification is only a particular case.

Even to common sense it seems clear that there is a significant difference between ‘knowing’ this world by hearing and ‘knowing’ it by seeing. There is, likewise, a difference between the translation of higher abstractions into lower terms by the visual path, and the corresponding translation by the auditory path. In daily life we never say ‘I hear’ when we wish to convey that we understand; but we say ‘I see’. When we say ‘I hear’, we usually wish to convey that we have heard some-

thing which we did not fully grasp or approve. The above relation is rather important, but has not been sufficiently analysed. The problems of introversion and extroversion are connected with it.

The relation between the problems of identification and the *number* of values *found* in the empirical world in connection with the *number* of values *ascribed*, or *assumed*. , by our semantic processes, is most important.

The following analysis is, by necessity, one-sided, over-simplified. , as a fuller analysis would require a separate volume. I consider many problems 'in principle' only; this allows me a briefer treatment necessary for my purpose, but it must be realized that our language and general semantics, which, *in practice*, we use unconsciously, are *extremely complex* and involve one-, two-, three-, and ∞-valued components, never, as yet, sharply differentiated nor formulated. Investigation shows that the ∞-valued semantics is the most general and includes the one-, two-. , and few-valued semantics as particular cases. The one-valued semantics of literal identifications are found only among animals, primitive people, infants, and the 'mentally' ill, although more or less serious traces of some identification are found in practically all of us, because these are embodied in the structure of our language and prevent the acquisition of the ∞-valued systems necessary for sanity. For my purpose, it is enough to formulate the problems for the complete elimination of primitive identification, and then modern, ∞-valued, $\overline{A}$ semantics follow automatically. Under such conditions, I must concentrate on the vital problem of one-valued identification and treat the two-. , and few-valued systems sketchily, 'in principle', although we must realize that the last systems have been made more flexible by the use of many ingenious verbal devices which I do not even mention in the present work.

Let me repeat that the attitudes, flexibility, or fixity. , of our *s.r* depend to a large extent on the structure of language used, which involves also its appropriate general semantics. The 'logic' of our schooldays represents a composite affair, in the main *A*, and we call it by this last name. This 'logic' can be considered as a two-valued 'logic' because of the fundamental 'law of the excluded third', expressed as 'A is B or not B', by which a third possibility is excluded. But even the traditional 'logic' had to admit in its scheme what was called 'modality'; namely, some degrees of certainty or uncertainty with which a given statement is made. Lately, Lukasiewicz has shown that a three-valued 'logic' can be so formulated as to include modality. Later, he and Tarski generalized it to an *n*-valued 'logic'. When *n* tends toward infinity, this 'logic' becomes the 'logic' of probability. If these disciplines are made *non-el*,

we have what I call one-, two-, three-. , and ∞-valued *general semantics.* Theoretically, and in practice, we are interested mostly in the one-, two-, three-, few-valued, and ∞-valued general semantics. For my purpose, and for simplicity, I shall deal only with identification; that is, the primitive one-valued semantics, the influence of which is found in both the two- and three-valued semantics, *and may only be completely eliminated in an ∞-valued semantics.*

We live in a four-dimensional space-time manifold which, on all levels, consists of absolutely individual events, objects, situations, abstractions. , and we must conclude that structurally we live in an *indefinitely many-valued* or ∞-valued world, the possibilities of which follow in principle the laws of combinations of higher orders. The above statement represents a description of a structural observation about the empirical world, independent of our pleasure, and can be contradicted only by exhibiting empirically, actual 'identity' or 'absolute sameness'. , of different events, objects, or situations. , which exhibiting becomes an impossibility if we decide to investigate facts more fully.

Under such empirical conditions, for adjustment and so for sanity, we must have on semantic levels such theories, systems, methods. , which would allow us in a given case, under given conditions, at a given date. , to evaluate the individual happenings *uniquely*; or which would allow us to establish a one-to-one correspondence between the essentially ∞-valued facts of experience and our semantic states. It becomes obvious that this can be accomplished only if we have ∞-valued and *non-el* general semantics. We see that the two-, or three-valued, *el A* 'logic', 'psychology'. , and, in general, the *A*-system, being structurally different from the empirical world, will prevent, in principle, such an adjustment and, therefore, sanity.

Identification may be considered as the remains of pre-human, or primitive, or infantile, one-valued semantics, which establishes, or results from, semantic states, by which the essentially ∞-valued facts of experience are not differentiated or evaluated properly, and so the indefinitely many values of these facts are identified into a single value. Such identification is always structurally unjustified and dangerous, and may be the result of a great many factors, such as low development, ignorance, insufficient observation, 'wishful thinking', fears, pathological states of our nervous system, different semantic disturbances, 'mental' ills, infantilism in the grown-ups, . But among humans we cannot avoid training, through the mechanism of language and its structure, in some, most often unconscious, general semantics, and so a great deal depends

on what kind of semantics or methods of evaluation we impose on our children.

We should notice an important fact which is usually disregarded; namely, that a language, and often one word, involves a definite type of semantics. Thus, in primitive 'polysynthetic' languages, it is not a question of associations or superstitions; the mystic characteristics and the thing simply are not differentiated, but literally identified into one whole. Thus, we have one-valued semantics where the 'good' and 'evil spirits' actually participate in everything considered as a synthetic whole.[2]

A language of 'true' and 'false' involves two-valued semantics; the introduction of adverbs or their equivalents introduces modality and so three-valued semantics. The introduction of indefinitely many degrees between the 'true' and 'false' leads finally to ∞-valued semantics.

A diagram may help to make this clearer.

A, B, C. , ∞-valued and different facts of experience, which, in a given case, have, by necessity, *indefinitely many, single, individual* values.

a, b, c. , ∞-valued non-aristotelian orientation structurally *similar* to the empirical world which allows us, in a given case, to assign indefinitely many single, one-to-one corresponding values to the individual facts.

A, B, C. , ∞-valued and different facts of experience, which, in a given case, have, by necessity, *indefinitely many, single, individual* values.

Σ_1, Σ_2. , two-, three-. , and few-valued aristotelian orientation structurally non-similar to the empirical world, which compels us to ascribe two. , or few values to the essentially indefinitely many-valued and different facts, resulting in identification of the many values into a few, which improper evaluation is projected on the facts.

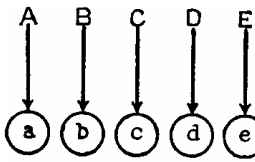

FIG. 2

A, B, C. , ∞-valued and different facts of experience, which, in a given case, have, by necessity, *indefinitely many, single, individual* values.

Ω, one-valued, animal, primitive. , orientation, structurally non-similar to the empirical world, which compels us to ascribe one value to the essentially indefinitely many-valued and different facts, resulting in *identification* of the many values into one, which improper evaluation is projected on the facts.

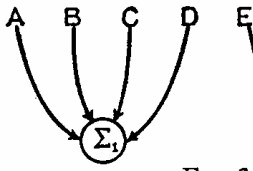

FIG. 3

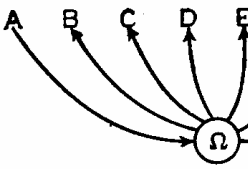

FIG. 4

In Fig. 2, the arrows Aa, Bb. , indicate the $\overline{A}$ one-to-one correspondence between the ∞-valued individual facts of life, A, B, C. , and the corresponding *s.r*, or a, b, c orientations. , which ascribe single values *to* the different facts, establishing a foundation for structurally correct *proper evaluation* which helps adjustment and so sanity.

In Fig. 3, the *A* two-. , few-valued orientation and type of correspondence is shown.

In Fig. 4, Ω indicates a single, say, proper evaluation of the one fact A. The arrows ΩB, ΩC, ΩD, ΩE, ΩF, . . . , ΩN indicate the *projection* of the one-valued semantic state, or orientation on the essentially unchanged ∞-valued facts A, B, C. , *distorting them.* In other words, the ∞-valued facts, through the identification of many values into one, and by pathological projection, have been given wrong evaluation, thereby preventing, *in principle,* adjustment and sanity, particularly for a civilized human 1933.

If we train our children in one-, two-, three-, and more generally few-valued *el, A* reactions based on corresponding languages, 'logics'. , the result must be that they will have great difficulty in adjusting themselves to a world of *non-el* ∞-valued facts, and that, even if they succeed, this would ultimately happen only after a great waste of efforts and unnecessary sufferings. If we approach the ∞-valued facts of life with one-, two-, or even few-valued semantic attitudes, we must identify some of the indefinitely many values into one, or a few values, and so approach the ∞-valued world with an orientation which *projects* ignorantly or pathologically our *restricted,* few-valued semantic evaluations on the ∞-valued individual facts of experience.

The above explanations apply in the fullest extent to the structure of language. The daily language, as well as our attitudes toward it, still reflects primitive structural *s.r* of the period before it was known that on the objective levels we deal *exclusively* with ∞*-valued, four-dimensional processes.* The language in the *A*-system represents, *in principle,* what may be called a three-dimensional and one-, two-. , more generally few-valued linguistic system structurally non-similar to the ∞-valued, four-dimensional event-process conditions. Let us analyse, for instance, the *A* term 'apple'. This term represents, *in principle,* a name for a verbal, one-valued, and constant intensional definition, in which space-time relations do not enter. What are the structural facts of experience ? The object which we call 'apple' represents a process which changes continually; besides, every single apple that ever existed, or will exist, was an absolute individual, and different from any other objective 'apple'. In applying such a three-dimensional and one-valued language to essen-

tially ∞-valued processes, we only make proper evaluation, and so adjustment and sanity, very difficult.

Yet the structural adjustment is simple in a $\overline{A}$-system. The *A* 'apple' was a name for a verbal *intensional definition;* in a $\overline{A}$-system, we manufacture indefinitely many names for the indefinitely many objective and different 'apples' by subscripts, 'apple$_1$', 'apple$_2$, 'apple$_3$. , supplementing the subscript with the date; thus, in 'apple$_{1,\text{Feb.23,1933}}$', we gain the possibility of considering 'apple$_{n,t}$' as ∞-valued, and so, in a given case. , we are enabled to have a single name which we could relate to single values of the objective, absolute individuals, and absolute individual stages of the process. Similarly with multiordinal terms. Before the multiordinality of terms was discovered and formulated by me in 1925, these terms were silently assumed *in principle,* to be one-valued, and we were either prevented from using them in connection with ∞-valued orders of abstractions, or, if used by semantic necessity, we identified the indefinitely many values into one. Both results were undesirable; the first established semantic blockages to creative scientific work; the other promulgated semantic disturbances. But once the multiordinality of terms is established, we have ∞-valued terms to which, in a given context (by differentiating the different orders of abstractions which a context indicates), we can ascribe single values.

Such a pioneering analysis may appear difficult at first, but this is only due to the lack of familiarity and established pre-*A* and *A* one-, two-, three-, or few-valued *s.r,* all of which involve ultimately *identification* somewhere. Once identification is abolished, however, and this is childishly simple, although not easy and rather laborious for grown-ups, ∞-valued semantics become natural and *automatic*, evading very serious theoretical difficulties. In the present volume, I had to elaborate in detail upon different issues, simply because my readers will be mostly grown-ups with established *pre-A,* and *A* reactions, who must first be made to recognize the benefits of an evaluation before they will be willing to undergo a laborious re-education of their older *s.r*. The procedure in the training of infants and children is extremely simple and entirely on their levels.

There is, however, one point that I wish to make entirely clear. From the older point of view, one might say that a $\overline{A}$-system may lead to 'over-rationalization' and, consequently, take 'all the joy out of life'. Such objections are entirely unjustified. First of all, the *A*-system leads to shallow, but often clever verbal interplay of definitions, mostly non-similar in structure to the world and ourselves, representing a species of apologetics, and usually called 'rationalization'. The $\overline{A}$-system leads to

structural adjustment of language and *s.r*, and a *structural* enquiry, resulting in *understanding.* It makes shallow infantile 'rationalization', 'wishful thinking', and apologetics of different brands impossible, but leads to a higher order of adult intelligence, based on *proper evaluation.* In mere 'rationalization', we often have clever, but shallow, infantile evaluation, based on the ignorance or disregard of structural facts, which alone make up the content of all 'knowledge'. In a $\overline{A}$-system, by eliminating the sources of infantile evaluation and reactions, we supply the nervous system of the infant with uniquely appropriate material, so that it may develop into a 'normal' adult. In the older system, instead of helping, we hindered the development of adult standards of evaluation, with well-known results. There is nothing wrong with 'human nature' or the majority of nervous systems as such, but there is something definitely wrong with our educational methods inside and outside our schools.

There is another point which is still more convincing and, perhaps, even more decisive. The above-mentioned older objections are due to *s.r* based on the play upon *elementalistic* terms and are a *neurological impossibility.* The organism works as-a-whole, and in the cyclic nerve currents it is impossible, by any known educational methods, to abolish 'emotions'. But what *can be* accomplished is this: by training in silence on the un-speakable objective levels and in differentiation between different orders of abstractions, we automatically abolish the infantile identifications and evaluations; we introduce a 'delay in action', which is the physiological means for getting our 'emotions' under control and for engaging the fuller co-operation of the cortex. Infantile 'over-emotionalism' is abolished in the adult. Infants would behave as infants, but this infantile behaviour would not be carried into the period when adulthood should begin. The 'emotions' are not abolished but 'sublimated'.

It is true that many standards would be changed. For instance, we might roughly say that an infantile type is often bored by a symphony and that jazz satisfies his infantile make-up. If we were to take such an infantile grown-up and compel him to listen only to symphonies, this would not be kind, nor would it transform his infantile *s.r* into adult reactions. But, if unhampered by inappropriate semantic and so neurological training, he would be free to develop normally into an adult, and his own preference would be toward a symphony rather than toward primitive throbbings, his enjoyment, then, would not be diminished, but. perhaps, made fuller.

Similar analysis could be made of all human interests, with the result that the forcing of adult standards on infantile types would remain unkind; but the sad part of it is that, in spite of repressions, impositions. , these imposed standards remain largely ineffective and are abandoned as soon as compulsion ends. Not so, if, by proper semantic education, we allow the infant to develop normally into adulthood. The *new* standards are not imposed, but become his own. We do not then need compulsion from without, because the new standards act from within and become pleasurable and lasting.

A similar process is very obvious in the practice of psychotherapy. The standards of evaluation of the patients are usually inappropriate to the conditions of modern life and often clash sharply with the accepted standards. Moralizing without changing by *other means* his standards of evaluation never accomplishes any satisfactory therapeutic results; quite the contrary, it often does a great deal of harm. A physician would be very unwise to censure or condemn a symptom, as this would preclude any beneficial results. What physicians usually do is to treat any symptom, no matter how repulsive, with great sympathy and understanding. They *do not attempt* to change the symptom directly, but, by the understanding of its main mechanism, they try to *change the patient's standards of evaluation*, of which the symptom is only a consequence. If at all successful and the physician succeeds in changing the inappropriate standards of evaluation, the symptom then automatically disappears. In daily life, we usually attack only the symptoms, disregarding mostly the underlying structural foundations; this method accounts for the doubtful results.

Under infantile standards we apply similar methods to society. Many may want to abolish wars, revolutions, 'depressions'. , but they do not investigate structurally deep enough. They attack the symptoms, instead of analysing the structural issues which produce these symptoms.

In conclusion, let us notice that the analysis of a semantic mechanism on a printed page requires new terms and the co-ordination of many details. , which, at first, do not always appear so simple, although, once the theoretical side is mastered, the educational application is genuinely simple. Thus, the analysis of the one-, two-, three-. , and ∞-valued semantics may appear difficult, yet, in practice, it only amounts to imparting through our educational systems a semantic flexibility, instead of fixity; to acquiring the inclination of starting with observations, followed by descriptions, from which we pass to inferences, in connection with awareness of these ordered processes, . In training, it is enough to abolish identification, and this is easily achieved once we have produced

the proper method, based on a language of new $\overline{A}$ structure. This last actually consists of but a few, new, simple, and common-sense terms, the analysis of which helps us to discover a few simple and invariant psychophysiological relations. Thus, identification is eliminated by starting with an *ordinal* language and method. Once we get the feel of the horizontal and vertical stratification, and learn to differentiate between orders of abstractions, identification disappears. Silence on the objective levels produces a 'delay', involves and trains the cortex; our reactions become more and more intelligent in the human sense. , . ; and the most important results are reached by the simplest means.

The training in visualization and the abolishing of objectification are the first and most important steps for a complete elimination of identification. When this first step is achieved, the rest is comparatively a very simple task.

But the reader may ask why we should have to use such unfamiliar and, therefore, seemingly difficult methods to achieve such obvious results. Do we really need a $\overline{A}$-system to achieve the results which, even in an *A*-system, are known to be desirable ? The answer is weighty with consequences and should be taken very earnestly. In the *A*-system, these desirable results could not be attained generally, because the structure of our old languages and the method hampered rather than helped us. New theories, new systems. , are built precisely with the aim to facilitate adjustment. Those questions which in the older days were supposed to be 'philosophical', 'metaphysical'. , the application of which required a high grade of intelligence, knowledge. , to start with, become, in the new way, simply *a problem of the structure of the language we use.* All the issues appear closely interrelated. We do not require 'high intelligence' nor 'higher education' to begin with, in order to obtain these desirable results, as the results follow *automatically* from the structure of the language we accept and teach our children. Thus, the older impossibilities are achieved simply and automatically, with the greatest possible efficiency and the most lasting results.