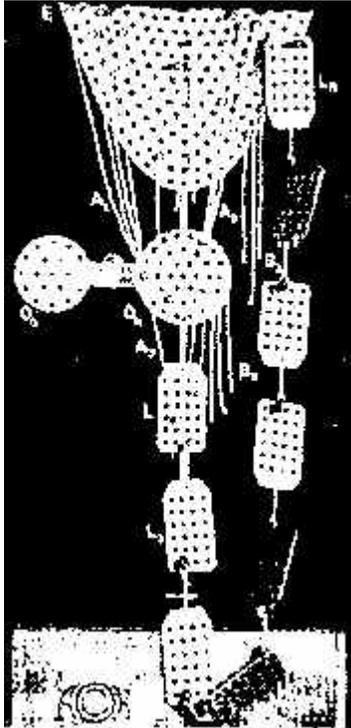


Historical Note on the Structural Differential[*]

By Alfred Korzybski



Shortly after *Manhood of Humanity* was published, I was invited for a symposium before the New School for Social Research in New York. To me the school was rather important because there were a lot of serious people there, educated, who took life seriously, and scientific research seriously. The school was then dominated by John Dewey and John Watson, the behaviorist. Both of those men heard something about my *Manhood of Humanity*, in which I claimed that man is *not* an animal, but in a category by himself. They followed the linguistic implication of the old theories; namely, that man *is* an animal, and so to them (about twenty-five years ago) it was all ‘bunk’. They followed the old map and they simply would not revise their old opinion.

In the meantime, as that group in the New School was so important and so intelligent, I was very eager to make good to that particular class in spite of Dewey and Watson, and I was eager to convey the difference between the reaction of man and dogs, cats, and so on, what are usually called ‘animals’. I was struggling with myself how to convey that fundamental difference, and somehow under that stress, pressure, of necessity — I would even use the word ‘emotional stress’ — of conveying what I wanted to convey, as a flash, a diagram occurred to me, the diagram which today is known as and called the ‘Structural Differential’. Originally I called it the ‘Anthropometer’, which I later changed to ‘Structural Differential’ because ‘Anthropometer’ had implications as a measurer, eventually, of man, and there was nothing ‘measuring’ there in the actual physical sense, except perhaps in the sense that it was a standard of evaluation [for determining the] difference between man and animal. So I changed the name from ‘Anthropometer’ to ‘Structural Differential’.

The difference was to be formulated in the form of a diagram, which today we have before our eyes, how it looks. To the right of the diagram we have a broken-up parabola, which is showing that the parabola is extending indefinitely. And because we have it limited, so we have it broken up on the top. There is a number of holes, and they indicate the characteristics on the sub-microscopic level, which of course increase indefinitely together with the contour of the parabola.

The strings which are connected from the parabola to the circle underneath [indicate the process of abstracting]. The circle underneath represents the object of the ordinary kind — a pencil, an

apple, a chair, a table, anything of the sort — which means an abstraction which our nervous system has made out of the indefinite number of characteristics in the process parabola to the object (the circle) made up by us.

The next level happens to be a copy of the label which is used on trunks — everybody is familiar with it. This level of the label is not only representing the label, the name of the object, but also may be considered as the level of description. Then when we have a description, we can speak about speaking — that means we can say something about a description, with the result that this is a statement about a statement, which means a statement of a different level, rather of a higher order of abstraction. And so we go on indefinitely. It means we can speak, on the human level, about speaking, literally indefinitely. When it comes to understand the question of the process level — the sub-microscopic level — we must realize that the abstractions we get [refer to] the sub-microscopic level, which for instance we may call the electron, proton, or what not, and that these are the highest abstractions which we have gotten at a given date.

Here we must discriminate between different kinds of so-called ‘knowledge’. We have sense-data, which are ‘given’ by the object (and we might just as well call them sense-data), which means abstractions made by our nervous system from the sub-microscopic level, which is *not* on the sense level. And the other kind of knowledge we have is inferential — it means we go by higher and higher abstracting beyond the so-called sense-data, but our so-called ‘mentality’ still works in the sense of abstracting further and further. In the abstract this may seem a little bit, well, too abstract, but in practice we have to realize that the question of electrons, protons, and the whole electronic business, as well as the mechanisms of the colloids, all of it is beyond sense-data and it represents only inferential knowledge. What we do actually, when we go to the highest order of abstraction of a given date [is] read, say, an electron, a proton, and whatever in the electronics we discover; we read it back in a circular way into the process character of nature, the actual mechanisms [of which] are only inferred. Nature seems to work *as if* the mechanisms were such and such. It means we see and experience the results, but we are unaware, except by inferences, of the intimate mechanisms and so we can only say that it works *as if* the mechanisms on the process level would be such and such.

Now this was one of the very fundamental things; there is nothing really new about that, except without this particular diagram, it is very difficult to convey that to the people. The point is that we know so much and yet we do not use what we know. It is one of our main weaknesses, that we know so much and yet we don’t utilize the knowledge we know. So far the whole field of the Differential is practically covered.

Now we have to go back to the circle which is on the left side of the Differential. I call that the ‘animal object’. This has a different color and the holes are distributed differently, but it means, really, that this is a similar object to our object, but is the object, as I call it in *Science and Sanity*, of Fido, an animal. What can be said about the animal object is this: autopsies are showing that the nervous system, say, of Fido, a dog, is quite similar to our nervous system — quite similar. The difference is only — the main difference — in the thickness of the cortex. The main difference between the brain of higher animals, mammals altogether, and humans, is, practically, the thickness of the cortex of the brain, which makes the whole difference.

Now as [far as] the process of abstracting goes, we do not connect the characteristics of the event, process, with strings to the animal object. The reason for this is that, although Fido does the abstracting, Fido does not know and cannot know that he abstracts, for the simple reason that Fido has no libraries, no laboratories, no scientific developments, so he cannot record, and cannot therefore transmit to future generations, which we can do. So although animals abstract, say, from the 'same' object, they don't know and cannot know that they abstract. For this reason we do not connect the event, process, the parabola, with strings to the animal object. It's a fundamental difference.

The difference really goes further. Somehow, animals — say Fido — can do some barking, and the other fellow somehow, incomprehensibly to us, somehow 'understands' what the first fellow tries to convey. It means that they have some sort of, say, vocal inter-communication which we humans do not understand, although when you have a pet dog or a pet cat, you get acquainted with his little funny noises, and you learn how to understand your pet dog or cat. The fundamental difference between the abstracting process of animals is this. Imagine — this has been shown in a way by Pavlov in his experiments with dogs — for instance, we can connect problems of food with a bell. You give food, the dog produces saliva. If you connect — associate — a bell with food, the dog will produce saliva at the sound of the bell. Now this is abstracting, associating one symbol for the so-called 'reality'. As far as food is concerned, and Fido is concerned, we could eventually associate a whistle for a bell, a bell for food. Under such conditions Fido would have saliva for the whistle, which would be a second order abstraction. If we try the same experiment on food any further, we will not succeed. I will repeat, that if we go to a higher order of abstraction, with food, we will not succeed with dogs. It means the whistle will work for the bell, and the bell for [food]; but if we put, for instance, a metronome for the whistle, whistle for the bell, the metronome will not operate on the salivary glands. It means that Fido is unable to go beyond two orders of abstraction, for food.

This is not true if we deal with pain. So, for instance, if we put in the mouth of a dog acid — harmless but sort of painful — we will be able to go to a still higher order. It means we can have bell for saliva, then whistle for the bell for saliva, but with pain, acid, we could put, say, the metronome for the whistle, whistle for the bell, bell for food. Then, with pain produced by acid, the metronome, which would be the third order abstraction, would be workable. With the experiments with dogs we were not able to go any further.

When I discussed that problem with Dr. [W. Horsley] Gantt, who is the head of the Pavlovian laboratory in Johns Hopkins Hospital, we discussed the problem that perhaps with sex we still could go to, say, another order of abstraction. As experience showed later, Dr. Gantt had a remarkable dog with whom he worked, I believe, something like ten years. [He] kept him not only alive but under laboratory conditions, and gave him here and there long vacations so that he could recover completely from the former experiences. With this particular dog he made experiments with sex, and it turned out that the sex urge is stronger even than pain, and pain is stronger than food. The food goes to some orders of abstraction, pain carries further, and ultimately sex goes still further. Well, from a biological point of view this is quite simple, that the avoidance of pain is even more important for self-preservation than the urge to eat, and the urge for procreation is still more important than even pain or food. Biologically it is quite comprehensible, but again the main characteristic is that animals, if we wish to speak that way,

can abstract in some orders, but their abstracting stops somewhere. So I repeat that animal abstracting stops somewhere, and there is no way of bringing about, unless with very special training, special signal or symbol reactions with animals. When we have highly trained animals we still can produce slightly further ways of abstracting. But they stop somewhere anyway.

Now this is not true about humans; and this is the main characteristic of humans which allows us to be just the way we are, and the very thing which allows us to have science, culture, progress, and what not; in other words, the very characteristic which makes humans human. We don't stop abstracting. It means the potentiality is there; abstracting can be done by everybody, but not in the same degree. If you wish, we can say that the judgment about somebody's 'mentality' is exactly in the point of how far in orders of abstraction he can go. This characteristic is so fundamental that we may take it as the very crux of human characteristics, as humans.

The process of abstracting, in the meantime, through education, can be trained in children, if we deliberately train them in what I call the 'consciousness of abstracting'. I will repeat, that what we know about the process level, it means the sub-microscopic level, is already the highest abstraction we get at a given date. It means in '47 we know a great deal about atomic structure, electronic theories, nuclear energies, and liberation of nuclear energy, which became so obvious in dealing with the so-called atomic bomb. Today that process of abstracting is more and more, again, inferentially extended to the latest knowledge. For instance I used to say, without proof, that food in terms of calories cannot account for all the energy that you and I can produce ... [including] so-called 'mental' energy, which is a product of our nervous systems; and for the extent to which that energy can produce other energies and liberate other energies. It means your and my brain have produced the latest discoveries; and the amount of calories in food cannot account for the production of that kind of energy. The latest discoveries are, for instance, that the so-called cosmic rays are producing radioactive carbon molecules [in us].

The training with the Differential involves different factors, which seem to be of extreme importance. [Some] psychiatrists, for instance, have found in dealing with their patients that the use of the Differential is absolutely needed for them. They cannot convey to the patient what they want to convey by verbal means alone. The Differential is showing to the eye the structure of the human world as different from the animal world. It means there comes that parabola with an indefinite number of characteristics, that some characteristics are left out. Those are the free-hanging strings. So you see that [Differential] — and we use our hands showing the levels of abstraction: the level of the parabola, which is the level of process, sub-microscopic; then comes the level of the object which *is made up by our nervous systems*; then comes the label or descriptive level; then come different inferential levels, which are going further and further, higher and higher inferences. The result is that the higher the inferences we use, and the higher the inferential knowledge, the more we may call it 'abstract', the further and further away we get from immediate sense-data, which today we know is very crude data.

Here comes another most important problem, which shows not only the difference between animal reactions and human reactions, but also forms what I call the natural order of evaluation. It's a most heavy problem; we will find that we do not live by the natural order of evaluation, but we live by the reverse, or pathological order, in spite of what we know. The tragic thing is, in spite of what we know, we do not apply what we know. Obviously, if we are hungry and we

want to eat an apple, our belly actually wants the process apple, not the object apple. It would be possible to make a synthetic apple which would look like a real apple, smell like it, would even eventually taste like it, and yet there would be no food in it. So the *process* is more important as far as life is concerned; the process (the parabola with indefinite number of characteristics) is more important than the object which we see, handle, taste, and what not. In the meantime the majority of people somehow through experience know that the apple is a process. Yet in daily life we consider the object first; we ascribe to the object more importance than we ascribe to the process, which is the reverse order, because the process happens to be more important than the object. So in daily life, as we see, we orient ourselves, or evaluate, by reversing the natural order, ascribing more value to the object than the process out of which our nervous system makes the object.

We can go further in the same vein: we go to the verbal level, the first label, which we may call the descriptive level. In a great many instances, particularly when we deal with our psycho-logical reactions, and in many other instances, we pay more attention to the word than we pay to the objective level; and we orient ourselves, in many instances, by the label, instead of reconstructing the objective, silent levels behind the label. Again, although we know better, we live with the reversed pathological order. This applies to higher and higher orders of inferences—it means statements about statements, indefinitely so. We orient ourselves by our theories, our metaphysics (and no one is free from some kind of metaphysics — no one, I repeat), and we evaluate by some dogmas and doctrines, very far away from so-called first order experiences, or the facts, all of which happen on the non-verbal level.

I use with my students the example, for instance, of pinching a finger, to convey to them that what they feel is *not* what they say; and this simple experience of pinching the finger applies to every kind of psycho-logical experiences, all of which, love, hate, whatever, happen on the silent levels, which are non-verbal. So again, living by high order abstractions, metaphysical stuff, creeds, dogmas, and what not, we again are living by a reversal of the natural order.

Psychiatrists find it very useful to notice in a given particular case, if a patient is reversing his evaluation, the natural order. This gives immediately a general scheme for the physician to deal with his patient. His problem is really to reverse the reversal. It may seem so simple. It is a very difficult thing, really, to do; but it can be done, because when we deal with the problem of orders of abstraction, indicating with the hand the characteristics left out, the free strings everywhere, indicating the non-allness, the different levels, say, the parabola or process, the object or the circle, and the labels, they convey to the eye, thalamically, the order; and they convey that the parabola is not — *is not* — the object, the circle; that the object or the circle *is not* the label or the descriptive level; that the descriptive level *is not* the inferential level; that inferences of lower order *are not* inferences of higher order; and so on and so on. So we include the 'is not' and the 'not all' with the strings left out.

[*] This 'Note' was recorded at the request of Kenneth S. Keyes, Jr. in his home at Warm Springs, Georgia on July 3, 1947. The recording was not intended for publication, and the transcription has only slight editing to retain its extempore quality. A 33 RPM long-playing record was for many years a popular item on the Institute list, and it is now available on cassette.

Steve Stockdale merged portions of the audio from the recording with video of Korzybski and the Structural Differential Diagram to provide the short hybrid video located at:

<http://www.youtube.com/watch?v=eE1iOM9FqBg>