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LANGUAGE AND THE ANALYSIS OF SOCIAL LAWS

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IN A recent work, whose importance from the point of view of the future of the social sciences can hardly be overestimated, Wiener poses, and resolves in the negative, the question of a possible extension to the social sciences of the mathematical methods of prediction which have made possible the construction of the great modern electronic machines. He justifies his position by two arguments.[1]

In the first place, he maintains that the nature of the social sciences is such that it is inevitable that their very development must have repercussions on the object of their investigation. The coupling of the observer with the observed phenomenon is well known to contemporary scientific thought, and, in a sense, it illustrates a universal situation. But it is negligible in fields which are ripe for the most advanced mathematical investigation; as, for example, in astrophysics, where the object has such vast dimensions that the influence of the observer need not be taken into account, or in atomic physics, where the object is so small that we are only interested in average mass effects in which the effect of bias on the part of the observer plays no role. In the field of the social sciences, on the contrary, the object of study is necessarily affected by the intervention of the observer, and the resulting modifications are *on the same scale* as the phenomena that are studied.

In the second place, Wiener observes that the phenomena subjected to sociological or anthropological inquiry are defined within our own sphere of interests; they concern questions of the life, education, career, and death of individuals. Therefore the statistical runs available for the study of a given phenomenon are always far too short to lay the foundation of a valid induction. Mathematical analysis in the field of social sciences, he concludes, can bring results which should be of as little interest to the social scientist as those of the statistical study of a gas would be to an individual about the size of a molecule.

These objections seem difficult to refute when they are examined in terms of the investigations toward which their author has directed them, the data of research monographs and of applied anthropology. In such cases, we are deal-

[1] Wiener, N., 1948, p. 189–191.

ing with a study of individual behavior, directed by an observer who is himself an individual; or with a study of a culture, a national character, or a pattern, by an observer who cannot dissociate himself completely from his culture, or from the culture out of which his working hypotheses and his methods of observation, which are themselves cultural patterns, are derived.

There is, however, at least one area of the social sciences where Wiener's objections do not seem to be applicable, where the conditions which he sets as a requirement for a valid mathematical study seem to find themselves rigorously met. This is the field of language, when studied in the light of structural linguistics, with particular reference to phonemics.

Language is a social phenomenon; and, of all social phenomena, it is the one which manifests to the greatest degree two fundamental characteristics which make it susceptible of scientific study. In the first place, much of linguistic behavior lies on the level of unconscious thought. When we speak, we are not conscious of the syntactic and morphological laws of our language. Moreover, we are not ordinarily conscious of the phonemes that we employ to convey different meanings; and we are rarely, if ever, conscious of the phonological oppositions which reduce each phoneme to a bundle of differential features. This absence of consciousness, moreover, still holds when we do become aware of the grammar or the phonemics of our language. For, while this awareness is but the privilege of the scholar, language, as a matter of fact, lives and develops only as a collective construct; and even the scholar's linguistic knowledge always remains dissociated from his experience as a speaking agent, for his mode of speech is not affected by his ability to interpret his language on a higher level. We may say, then, that as concerns language, we need not fear the influence of the observer on the observed phenomenon, because the observer cannot modify the phenomenon merely by becoming conscious of it.

Furthermore, as regards Wiener's second point, we know that language appeared very early in human history. Therefore, even if we can study it scientifically only when written documents are available, writing itself goes back a considerable distance, and furnishes long enough runs to make language a valid subject for mathematical analysis. For example, the series we have at our disposal in studying Indo-European, Semitic or Sino-Thibetan languages is about four or five thousand years old. And, where a comparable temporal dimension is lacking, the multiplicity of coexistent forms furnishes, for several other linguistic families, a spatial dimension that is no less valuable.

We thus find in language a social phenomenon which manifests both independence of the object and long statistical runs; which would seem to indicate that language is a phenomenon fully qualified to satisfy the demands of mathematicians for the type of analysis Wiener suggests.

It is, in fact, difficult to see why certain linguistic problems could not be

solved by modern calculating machines. With knowledge of the phonological structure of a language and the laws which govern the grouping of consonants and vowels, a student could easily use a machine to compute all the combinations of phonemes constituting the words of *n* syllables existing in the vocabulary, or even the number of combinations compatible with the structure of the language under consideration, such as previously defined. With a machine into which would be "fed" the equations regulating the types of structures with which phonemics usually deals, the repertory of sound which human speech organs can emit, and the minimal differential values, determined by psycho-physiological methods, which distinguish between the phonemes closest to one another, one would doubtless be able to obtain a computation of the totality of phonological structures for *n* oppositions (*n* being as high as one wished). One could thus construct a sort of periodic table of linguistic structures that would be comparable to the table of elements which Mendeleieff introduced into modern chemistry. It would then only remain for us to check the place of known languages in this table, to identify the positions and the relationships of the languages whose first-hand study is still too imperfect to give us a proper theoretical knowledge of them, and to discover the place of languages that have disappeared, are unknown, yet to come, or simply possible.

To add a last example: Jakobson has recently suggested that a language may possess several coexisting phonological structures, each of which may intervene in a different kind of grammatical operation.[2] Since there must obviously be a relationship between the different structural modalities of the same language, we arrive at the concept of a "metastructure" which would be something like the law of the group (*loi du groupe*) consisting of its modal structures. If all of these modalities could be analyzed by our machine, established mathematical methods would permit it to construct the "metastructure" of the language, which would in certain complex cases be so intricate as to make it difficult, if not impossible, to achieve on the basis of purely empirical investigation.

The problem under discussion here can, then, be defined as follows. Among all social phenomena, language alone has thus far been studied in a manner which permits it to serve as the object of truly scientific analysis, allowing us to understand its formative process and to predict its mode of change. This results from modern researches into the problems of phonemics, which have reached beyond the superficial conscious and historical expression of linguistic phenomena to attain fundamental and objective realities consisting of systems of relations which are the products of unconscious thought processes. The question which now arises is this: is it possible to effect a similar reduction in the analysis of other forms of social phenomena? If so, would this analysis lead to the same result? And if the answer to this last question is in the affirma-

[2] Jakobson, R., 1948.

tive, can we conclude that all forms of social life are substantially of the same nature—that is, do they consist of systems of behavior that represent the projection, on the level of conscious and socialized thought, of universal laws which regulate the unconscious activities of the mind? Obviously, no attempt can be made here to do more than to sketch this problem by indicating certain points of reference and projecting the principal lines along which its orientation might be effective.

Some of the researches of Kroeber appear to be of the greatest importance in suggesting approaches to our problem, particularly his work on changes in the styles of women's dress.[3] Fashion actually is, in the highest degree, a phenomenon which depends on the unconscious activity of the mind. We rarely take note of why a particular style pleases us, or falls into disuse. Kroeber has demonstrated that this seemingly arbitrary evolution follows definite laws. These laws cannot be reached by purely empirical observation, or by intuitive consideration of phenomena, but result from measuring some basic relationships between the various elements of costume. The relationship thus obtained can be expressed in terms of mathematical functions, whose values, calculated at a given moment, make prediction possible.

Kroeber has thus shown how even such a highly arbitrary aspect of social behavior is susceptible of scientific study. His method may be usefully compared not only with that of structural linguistics, but also with that of the natural sciences. There is a remarkable analogy between these researches and those of a contemporary biologist, G. Teissier, on the growth of the organs of certain crustaceans.[4] Teissier has shown that, in order to formulate the laws of this growth, it has been necessary to consider the relative dimensions of the component parts of the claws, and not the exterior forms of these organs. There, relationships allow us to derive constants—termed parameters—out of which it is possible to derive the laws which govern the development of these organisms. The object of a scientific zoology, in these terms, is thus not ultimately concerned with the forms of animals and their organs as they are usually perceived, but is to establish certain abstract and measurable relationships, which constitute the basic nature of the phenomena under study.

An analogous method has been followed in studying certain features of social organization, particularly marriage rules and kinship systems.[5] It has been shown that the complete set of marriage regulations operating in human societies, and usually classified under different headings such as incest prohibitions, preferential forms of marriage, and the like, can be interpreted as being so many different ways of insuring the circulation of women within the social group, or, of substituting the mechanism of a sociologically determined affinity for that of a biologically determined consanguinity. Proceeding from this

[3] Kroeber, A. L. and Richardson, J., 1940.

[4] Teissier, G., 1936.

[5] Lévi-Strauss, C., 1949, *passim.*

hypothesis, it would only be neccesary to make a mathematical study of every possible type of exchange between *n* partners to enable one almost automatically to arrive at every type of marriage rule actually operating in living societies and, eventually, to discover others which are merely possible; one would also understand their function and the relationships between each type and the others.

This approach was fully validated by the demonstration, reached by pure deduction, that the mechanisms of reciprocity known to classical anthropology —namely, those based on dual organization and exchange-marriage between two partners or whose number is a multiple of two—are but a special instance of a wider kind of reciprocity between any number of partners. This fact has tended to remain unnoticed, because the partners in those matings, instead of giving and receiving from one another, do not give to those from whom they receive, and do not receive from those to whom they give. They give to and receive from different partners to whom they are bound by a relationship that operates only in one direction.

This type of organization, no less important than the moiety system, has thus far been observed and described only imperfectly and incidentally. Starting with the results of mathematical study, data had to be compiled; thus, the real extension of the system was shown and its first theoretical analysis offered.[6] At the same time, it became possible to explain the more general features of marriage rules such as preferential marriage between bilateral cross-cousins or with only one kind of cross-cousin, on the father's side (patrilateral), or on that of the mother (matrilateral). Thus, for example, though such customs had been unintelligible to anthropologists,[7] they were perfectly clear when regarded as illustrating different modalities of the laws of exchange. In turn, these were reduced to a still more basic relationship between the rules of residence and the rules of descent.[8]

Now, these results have only been achieved by treating marriage regulations and kinship systems as a kind of language, a set of processes permitting the establishment, between individuals and groups, of a certain type of communication. That the mediating factor, in this case, should be the *women of the group*, who are *circulated* between clans, lineages, or families, in place of the *words of the group*, which are *circulated* between individuals, does not at all change the fact that the essential aspect of the phenomenon is identical in both cases.

We may now ask whether, in extending the concept of communication so as to make it include exogamy and the rules flowing from the prohibition of incest, we may not, reciprocally, achieve insight into a problem that is still very obscure, that of the origin of language. For marriage regulations, in relation

[6] *Ibid.*, pp. 278–380.
[7] *Ibid.*, pp. 558–566.
[8] *Ibid.*, pp. 547–550.

to language, represent a complex much more rough and archaic than the latter. It is generally recognized that words are signs: but poets are practically the only ones who know that words have also been values. As against this, women are held by the social group to be values of the most essential kind, though we have difficulty in understanding how these values become integrated in systems endowed with a significant function. This ambiguity is clearly manifested in the reactions of persons who, on the basis of the analysis of social structures referred to,[9] have laid against it the charge of "anti-feminism," because women are referred to as objects.[10] Of course, it may be disturbing to some to have women conceived as mere parts of a meaningful system. However, one should keep in mind that the processes by which phonemes and words have lost—even though in an illusory manner—their character of value, to become reduced to pure signs, will never lead to the same results in matters concerning women. For words do not speak, while women do; as producers of signs, they can never be reduced to the status of symbols or tokens. But it is for this very reason that the position of women, as actually found in this system of communication between men that is made up of marriage regulations and kinship nomenclature, may afford us a workable image of the type of relationships that could have existed at a very early period in the development of language, between human beings and their words. As in the case of women, the original impulse which compelled men to exchange words must be sought for in that split-representation which pertains to the symbolic function. For, since certain terms are simultaneously perceived as having a value both for the speaker and the listener, the only way to resolve this contradiction is in the exchange of complementary values, to which all social existence reduces itself.

These speculations may be judged utopian. Yet, granting that the assumptions made here are legitimate, a very important consequence follows that is susceptible of immediate verification. That is, the question may be raised whether the different aspects of social life (including even art and religion) can not only be studied by the methods, and with the help of concepts similar to those employed in linguistics, but also whether they do not constitute phenomena whose inmost nature is the same as that of language. That is, in the words of Voegelin, we may ask whether there are not only "operational" but also "substantial comparabilities" between language and culture.[11]

How can this hypothesis be verified? It will be necessary to develop the analysis of the different features of social life, either for a given society or for a complex of societies, so that a deep enough level can be reached to make it possible to cross from one to the other; or to express the specific structure of

[9] *Ibid.*, p. 616.

[10] *Ibid.*, p. 45 sq.

[11] "Language and Culture: substantial and operational comparabilities" was the title given by C. F. Voegelin to the symposium held at the 29th International Congress of Americanists, New York, 5–12 September, 1949, where these reflections were first offered.

each in terms of a sort of general language, valid for each system separately and for all of them taken together. It would thus be possible to ascertain if one had reached their inner nature, and to determine if this pertained to the same kind of reality. In order to develop this point, an experiment can be attempted. It will consist, on the part of the anthropologist, in translating the basic features of the kinship systems from different parts of the world in terms general enough to be meaningful to the linguist, and thus be equally applicable by the latter to the description of the languages from the same regions. Both could thus ascertain whether or not different types of communication systems in the same societies—that is, kinship and language—are or are not caused by identical unconscious structures. Should this be the case, we would be assured of having reached a truly fundamental formulation.

If then, a substantial identity were assumed to exist between language structure and kinship systems, one should find, in the following regions of the world, languages whose structures would be of a type comparable to kinship systems in the following terms:

1. *Indo-European:* As concerns the *kinship systems*, we find that the marriage regulations of our contemporary civilization are entirely based on the principle that, a few negative prescriptions being granted, the density and fluidity of the population will achieve by itself the same results which other societies have sought in more complicated sets of rules; i.e. social cohesion obtained by marriage in degrees far removed or even impossible to trace. This statistical solution has its origin in a typical feature of most ancient Indo-European systems. These belong, in the author's terminology, to a simple formula of generalized reciprocity (*formule simple de l'échange généralisé*).[12] However, instead of prevailing between lineages, this formula operates between more complex units of the *brastsvo* type, which actually are clusters of lineages, each of which enjoys a certain freedom within the rigid framework of general reciprocity in effect at the level of the cluster. Therefore, it can be said that a characteristic feature of Indo-European kinship structure lies in the fact that a problem set in simple terms always admits of many solutions.

Should the linguistic structure be homologous with the kinship structure it would thus be possible to express the basic feature of Indo-European languages as follows: The languages have simple structures, utilizing numerous elements. The opposition between the simplicity of the structure and the multiplicity of elements is expressed in the fact that several elements compete to occupy the same positions in the structure.

2. *Sino-Thibetan kinship systems* exhibit quite a different type of complexity. They belong to or derive directly from the simplest form of general reciprocity, namely mother's brother's daughter marriage, so that, as has been shown,[13] while this type of marriage insures social cohesion in the simplest

[12] Lévi-Strauss, C., 1949, pp. 583–591.

[13] *Ibid.*, 1949, pp. 291–380.

way, at the same time it permits this to be indefinitely extended so as to include any number of participants.

Translated into more general terms applicable to language that would correspond to the following linguistic pattern, we may say that the structure is complex, while the elements are few, a feature that may be related to the tonal structure of these languages.

3. The typical feature of *African kinship systems* is the extension of the bride-wealth system, coupled with a rather frequent prohibition on marriage with the wife's brother's wife. The joint result is a system of general reciprocity already more complex than the one with the mother's brother's daughter, while the types of unions resulting from the circulation of the marriage-price approaches, to some extent, the statistical mechanism operating in our own society.

Therefore one could say that African languages have several modalities corresponding in general to a position intermediate between 1) and 2).

4. The widely recognized features of *Oceanic kinship systems* seem to lead to the following formulation of the basic characteristics of the linguistic pattern: simple structure and few elements.

5. The originality of *American kinship systems* lies with the so-called Crow-Omaha type which should be carefully distinguished from other types showing the same disregard for generation levels.[14] The important point with the Crow-Omaha type is not that two kinds of cross-cousins are classified in different generation levels, but rather that they are classified with consanguineous kin instead of with affinal kin as it occurs, for instance, in the Miwok system. But systems of the Miwok type belong equally to the Old and the New World; while when considering the differential systems just referred to as Crow-Omaha, one must admit that, apart from a few exceptions, these are only typical for the New World. It can be shown that this quite exceptional feature of the Crow-Omaha system results from the simultaneous application of the two simple formulas of reciprocity, both special and general (*échange restreint* and *échange généralisé*),[15] which elsewhere in the world were generally considered to be incompatible. It thus became possible to achieve marriage within remote degrees by using simultaneously two simple formulas, each of which independently applied could only have led to different kinds of cross-cousin marriages.

The linguistic pattern corresponding to that situation would be that certain of the American languages offer a relatively high number of elements, which succeed in becoming organized into relatively simple structures by compelling these to assume an asymmetrical form.

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[14] From this point of view, G. P. Murdock's suggestion that the Crow-Omaha type be merged with the Miwok type (1949, pp. 224, 340) should be challenged.

[15] Lévi-Strauss, C., 1949, pp. 228–233.

It must be kept in mind that in the above highly tentative experiment, the anthropologist proceeds from what is known to what is unknown to him: namely from kinship structures to linguistic structures. Whether or not the differential characteristics thus outlined have a meaning in so far as the respective languages are concerned, remains for the linguist to decide. The author, being a social anthropologist, and not a linguist, can only try to explain briefly to which specific features of kinship systems he is referring in this attempt toward a generalized formulation. Since the general lines of his interpretation have been fully developed elsewhere,[16] short sketches were deemed sufficient for the purpose of this paper.

If the general characteristics of the kinship systems of given geographical areas, which we have tried to bring into juxtaposition with equally general characteristics of the linguistic structures of those areas, are recognized by linguists as an approach to equivalences of their own observations, then it will be apparent, in terms of our preceding discussion, that we are much closer to the understanding of the fundamental characteristics of social life than we have been accustomed to think.

The road will then be open for a comparative structural analysis of customs, institutions, and accepted patterns of behavior. We will be in a position to understand basic similarities between forms of social life, such as language, art, law, religion, that, on the surface, seem to differ greatly. At the same time, we will have the hope of overcoming the opposition between the collective nature of culture and its manifestations in the individual, since the so-called "collective consciousness" would, in the final analysis, be no more than the expression, on the plane of individual thought and behavior, of certain time and space modalities of these universal laws which make up the unconscious activity of the mind.

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[16] *Ibid.*