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5. *Dimensions de la conscience historique*. Paris: Plon, p. 27.
6. Pierre Thévenaz, *op. cit.*, p. 208.
7. Pierre Fougeyrollas, *La Philosophie en question*, Paris: Denoël, 1960, p. 16.
8. E. Coreth, "Metaphysik als Wissenschaft" in *Stimmen der Zeit*, Februar 1963, pp. 357-365.
9. *Eloge de la philosophie*, pp. 47, 51-53.
10. Pierre Fougeyrollas, *op. cit.*, p. 16.
11. *Op. cit.*, p. 301.
12. Paul Ricoeur, *Finitude et Culpabilité*. Paris: Aubier, t. I, p. 77.
13. Paul Ricoeur, *G. Marcel et K. Jaspers*. Paris: Ed. du Seuil, p. 276.

*Source*: DIALOGUE: Vol. III, September 1964, No. 2, pp. 126-41. "Le Statut et le rôle de la philosophie dans la société contemporaine." **Complete Translation.**

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# Some Reflections on Classification

BY CH. PERELMAN

TO CONCLUDE THIS SERIES OF conferences dealing with the use of classification by the various scientific disciplines we will attempt to make some sort of synthesis. We will attempt to show that the tendencies that are at play in the idea of classification itself are at work in the various sciences, whatever their object. For the way in which a question is asked is quite similar to the manner in which it is solved.

The act of classifying, *i.e.*, the act of putting objects in some order for purposes of identification and reference,

from its very start involves both classification and categorization. Classification entails putting objects in relationships that are founded upon a pre-established order. Such are alphabetical order, chronological order, numerical order, or an order resulting from a combination of these. The salient characteristic of the activity is the manipulation of the objects themselves as in an herbarium, a library, a museum, or in archives. It is often the case then that purely extrinsic matters such as weight or shape determine the classification of the objects since the practical considerations of ease of identification and reference are its underlying purpose.

The same is not the case when it comes to categorization. The place of an object is no longer dictated by practical facility but by the ends of speculation. The integration of several objects into a category does not consist in the manipulation of objects to fit a pre-established order, but it arises more from the elaboration of specific relationships through the systematic division of an unspecified class. We shall examine in turn the formal aspects of this activity and their implications.

Since M. Apostel has treated the formal aspects of categorization at great length, I will content myself with referring to only a few points. The method of categorization that first comes to mind as the most logically satisfactory consists in successively dichotomizing an unspecified class, i.e., the whole of the objects in a classification, and the resulting categories in view of a determined property. The possession of the property by each of the components of a class must be of a permanent nature for them to be able to be included in the class without ambiguity resulting. From the standpoint of the principles of non-contradiction and of the mutual exclusiveness of contraries the categories formed by this operation should not have common members and taken together they should amount to the class of which they form a part. Furthermore, the properties that act as the basis of the dichotomy should be so chosen that none of the categories that are formed are without objects in them, i.e., a null class.

However, we are aware that a great number of categories are not based on the presence or absence of a property but on the presence of a particular property that is specifically different and totally unrelated to any other property found in related categories. Such is the case, for example, in the classification of phanerogamic plants according to their number of pistils.

There are evident advantages to categories based on the obvious presence of easily identifiable characteristics. The relationship of one category to others is not too difficult to determine and the choosing of a name is greatly facilitated.

Owing to the fact that objects possessing various properties can be placed in more than one category, that is, two objects will or will not form part of a category depending on a choice from among their properties, the work of categorization brings several questions of a non-formal nature to mind. In actual fact the problem resolves itself into a choice from among the logical possibilities, based on the strongest reason. It is from this that the distinction between natural and artificial categories arises; for the difference between natural and artificial categories has some reference to the fact that as regards natural categories the components that have the most affinity show a closer relationship inside the unclassified group already than those that have less affinity. The notion of the *distance* which separates two categories of an unspeci-

fied class can be defined by using purely formal criteria. A study of this sort has been made by Mme S. Luszczewska-Romahnowa of the University of Poznan in a recent work.* The distance between classes or parts in a class is inversely proportional to their affinity. This very abstract and general principle only becomes practicable by establishing criteria for similarity or affinity.

Remarkably enough in all of the sciences the attempt to work out natural categories and the research into the criteria of affinity have led, often successively, in three directions: a) categories based on essential characteristics; b) categories based on a comparable structure already existing (morphological view); c) categories established in view of a comon origin (genetic or evolutionary view).

Let us examine these orientations a bit further.

Research which attempts to establish essential properties as the basis of categories finds itself seeking the characteristics or properties that are most common to members of the same species and most related to other characteristics. Thus the terminology: dominant characteristics and secondary, dependent characteristics. A series of categories based on essential and dominant characteristics has an obvious advantage in its simplicity. Each of its characteristics reveals a great number of others and establishes the possibility of prediction of characteristics that are always associated with it.

But if the presence of an essential or dominant characteristic indicates the presence of a certain number of coordinate and subordinate characteristics, then a permanent structure based on the constant relationships of the characteristics can be established and readily recognized as such. From this new vantage point categories based on essential characteristics open up to those based on morphology.

In organizing structures, the classifications you make, from the most general to the most elaborate, are characterized by the progressive demands of morphology. To classify turns out to be nothing else than locating one kind of structure within a general system characterized by variable structures. In the end you get an architechtonic schema that lets you foresee all possible variants, even in casses where the evident structures are of a broad geometrical type. Categories of this type almost never allow dichotomies since they are not formed in view of the presence or absence of a certain structure. The categories are usually formed by the observation of real structures and the organization into specific categories starts with an abstract schema and approaches concrete reality by successive stages.

In this context the temptation is great to consider the various concrete examples as realizations following each other in time. This springs from imagining that the various levels of a category have been formed by successive realizations according to a rational plan. Such imaginings are not necessary. All you need to see in the developed structural plans are moments of historical reality. This is adequate to lead one from a morphological view to a genetic viewpoint. And the genetic approach is a kind of corrective of the morphological, for taking into consideration the evolutionary schemas it locates in definite places in the system elements that only gave vague indications of this in the morphological schemas.

* "Classification as a kind of distance function." *Studia Logica*, Vol. XII, pp. 41-46. Warsaw, PWN, 1961.

We should note that as soon as the accent is placed on structure and elements having the same structure become interchangeable, whatever individual characteristics escape morphological classification are considered secondary. The consequence of this approach is that the species and no longer the individual is the basis of every classifiable "area."

Species has been defined as an ensemble of beings that are alike in heredity. This definition which comes from certain biologists who are already considered traditional conforms perfectly with the morphologic view if we affirm from experience that individuals of the same species and only they can give birth to further reproductive members of the species. Nonetheless, it is a fact that some groups, even though they have been carefully differentiated as to their traits, can still crossbreed and give birth to further reproductive members of the species. In this regard pure species with a stabile genome give rise to species in which the genome is heterozygous through crossbreeding.

Keeping in mind the above distinction, if the definition of species should be taken to be in complete correspondence with reality, the mind of the biologist would eventually become rigidly systematic, even to the point of having to admit that the creator, whoever he is, following a rationally worked out plan, would need a new act of creation for the formation of every new species.

But is the principle which stands behind the definition of species and affirms that like is only born of like entirely valid? For those among the anthropologists who admit of monogenism and for whom all of the human racial types derive from one original couple there is the undeniable difficulty of explaining all of the variations that have arisen since the first couple. Besides, the practices of selection of horticulturists and gardeners deny in their very purpose this rigorous viewpoint as does the transmission of mutations by heredity.

This leads to a dilemma. On the one hand, the existence of species that are clearly distinct from each other is admitted; but then, even if a rational plan is attributed to the creative acts, a priori the possibility of evolution must be completely denied. On the other hand evolution — either complete or partial, i.e., the result of several independent origins — remains; but then, square opposition is the only answer to clearly distinct species and the definition of species which implies this distinctiveness. As a result it would no longer be possible to establish incompatible differences between species. In a system of biology that is purely evolutionary, such as S. G. Kiriakoff has presented, phylogeny, according to the definition of M. Zimmerman, studies the transformation of organisms in their Gestalt and their biology. The descendants are transformed precisely in that they attain a nature which differs from that of the ascendants. But if phylogenesis is admitted as a reality, species cease to be stabile and they become entities in the chain of evolution which at the same time raises their stability to a biological classification.

Immediately we should be aware that this is no longer a problem proper to biology since the same tension between the systematic and the evolutionary is found in all scientific domains. Accordingly, attempts in chemistry to conciliate the periodic index with the hypothesis that they are of a common origin poses problems of the same nature. It is the same in respect to all disciplines where both static and dynamic views can be envisaged at the same time. From whichever vantage point a beginning is made, from the one to the

multiple, from continuity to discontinuity, or vice versa, the difficulty must always be met of integrating the point of view that has been neglected.

Solutions to these problems could be found by distinctions of the kind that are found in a probabalist view of taxonomy. Instead of affirming that a species possesses or does not possess a certain property, one should content himself with the statistical data which allow for variations that are as important as they are rare. But by the same token categories lose their specificity and only constitute approximations.

The history of categories and their development teaches us that a science is born only when one category cannot be simply replaced by another, when a definite category serves as a permanent reference for the development of a science. And instead of being replaced, it is amended, perfected, to the extent that the changes affecting it actually explain certain anomalies. This aspect of the history of science allows us to see at once that chemistry and mineralogy are more advanced sciences than anthropology and linguistics.

If classifications found in various sciences are comparable and present problems and attempts at solution of the same nature, then they tell something about the ways of the human mind whatever it is about. The study of classifications and their development in the many scientific disciplines is a study in methodology and epistemology.

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