

EMERGENT EVOLUTION
AND THE DEVELOPMENT OF SOCIETIES

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EMERGENT EVOLUTION
AND THE
DEVELOPMENT OF SOCIETIES

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PREFACE

The first part of the following volume is one of four addresses in a symposium on "Emergence" held at the Sixth International Congress of Philosophy, at Cambridge, Mass., September 14, 1926, and was published in the Proceedings of the Congress during 1927. It had previously appeared in *Science* (November, 1926) and in *Psyche* (January, 1927). The second part has been added for the purpose of calling attention to certain historical statements on "Emergence" and to the works of a number of contemporary authors who hold similar views.

Since the publisher has generously included this article in his "New Science Series", I seize the opportunity to introduce several changes. Owing to the fact that the original paper was presented to an audience familiar with

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the principle of "Emergence" and its implications, parts of the text must have seemed rather opaque or cryptic to the general reader. I have therefore rewritten the introduction and have endeavored to clarify or illustrate my meaning in some of the other paragraphs. The bibliography has been somewhat expanded.

W. M. WHEELER.

Bussey Institution,
Forest Hills,
January, 1928.

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We have hitherto failed in our comprehension of life mainly because we have been involved in the absolute method of dealing with things—have been more intent on discovering what units are for themselves than on finding out how they are related to and influenced by the systems to which they belong.

E. NOBLE, "Purposive Evolution."

Toutes les fois que des éléments quelconques en se combinant, dégagent par le fait de leur combinaison des phénomènes nouveaux, il faut bien concevoir que ces phénomènes sont situés non dans les éléments, mais dans le tout formé par leur union. Appliquons ce principe à la sociologie. Si, comme on nous l'accorde, cette synthèse sui generis qui constitue toute société des phénomènes nouveaux, différents de ceux qui se passent dans les consciences solitaires, il faut bien admettre que ces faits spécifiques résident dans la société même qui les produit, et non dans ses parties, c'est-à-dire dans ses membres.

—DURKHEIM, "Les Règles de la Méthode Sociologique."

Notez qu'étudier les individus ne veut pas dire que l'on doit considérer plusieurs de ceux-ci mis ensemble comme une simple somme; ils forment un composé, lequel, à l'égal des composés chimiques, peut avoir des propriétés qui ne sont pas la somme des propriétés des composants.

—PARETO, "Traité de Sociologie Générale."

PART I

EMERGENT EVOLUTION AND THE DEVELOPMENT OF SOCIETIES

THE words "emerge," "emergent" and "emergence" are now employed so frequently and have sometimes been employed so loosely that it behooves an author to define the precise meaning he wishes them to convey. "To emerge" may, of course, signify that something comes up out of a liquid after being immersed, like a grebe or a loon out of a lake, or that something comes into view after concealment, like the sun when the clouds disperse. The verb is also occasionally used of facts that are revealed as the result of an inquiry or of questions or difficulties that suddenly crop up. In a more technical sense it is employed by entomologists when they say that a butterfly emerges from its chrysalis (in the sense of the

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German "entpuppen"), in order to avoid the word "hatch", which they restrict to the issuing of the caterpillar from the egg. In all these cases, except that of a difficulty, the something emerging is supposed to preëxist and merely to become visible or manifest. The difficulty said to "emerge" or "arise" leads naturally to a consideration of "emergency", which does not connote preëxistence but the sudden and unexpected outcome of a critical, or contingent constellation of events, or happenings calling for immediate intervention. The two meanings now conveyed by the words "emergence" and "emergency" might therefore be called the preformational and the epigenetic respectively. They were not clearly distinguished by some of the writers of the past century, or at any rate the words were sometimes used interchangeably, and this is true also of the adjective "emergent" and its noun derivative. There is a third meaning

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of "emergence" or "emergency" which is so epigenetic as to deserve the epithet miraculous. Kallen, in his admirable book, *Why Religion*, states that "Mary Morse Baker Glover Patterson Eddy, the founder of the (Christian Science) sect, records that she had been healed of an incurable disease by 'emergency into the light' ". Mrs. Eddy may have meant that, after pre-existing as an incurably diseased metaphysical chrysalis, she suddenly burst into the spiritual light as a healthy metaphysical butterfly, though it seems more probable that she uses "emergency" in the sense of a miraculous change of belief. But all exegesis in such cases is apt to take too much for granted. In religious writings words should always be used in such a way as to connote the greatest possible number of meanings, so that the theologians may not lack for employment.¹

¹ Indeed, the writers of the most successful sacred texts, such as the Bible, the Koran, the Book of Mormon and Science and Health, have subconsciously

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Now "emergence", in the following pages, signifies neither the manifestation or unveiling of something hidden and already existing, as in the common and the entomological denotations of the word, nor some miraculous change, as in Mrs. Eddy's conversion, but a *novelty of behavior* arising from the specific interaction or organization of a number of elements, whether inorganic, organic or mental, which thereby constitute a whole, as distinguished from their mere sum, or "resultant".

conformed to this practice, which was long ago psychoanalyzed by Lucian in *The Dream, or the Cock*. The cobbler Micyllus is astonished to hear his cock suddenly remark in excellent Greek that he is a reincarnation of Pythagoras. Of course, the cobbler cannot help asking him why, if he is Pythagoras, he has been eating the beans that were cast before him, since that worthy had made the eating of beans *taboo*. The cock is ashamed and embarrassed, but finally confesses: "There was no sound or good reason, but I saw that if I should believe what was customary and the same as the masses, I would, in a very small measure, draw men to the wonder. The more odd I might be, the more reverence I thought I would receive from them. On this account I decided to introduce something new, keeping the cause of it a secret, in order that one conjecturing in one way and another in another, they might all be amazed just as they are in the mysteries of the oracles". (D. C. Brown's translation.)

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The classical example is, of course, such a chemical compound as H_2O , in which hydrogen and oxygen combine under certain conditions and in certain proportions to form a liquid emergent, water, exhibiting a very different behavior (properties) from that of either of its gaseous components. In this sense, "emergence" acquires the epigenetic meaning of "emergency", and G. H. Lewes (1875), who was the first to use the word to designate such chemical behavior, probably had this meaning in mind.¹ The distinction between sum and emergent had been previously recognized by J. S. Mill (1843), who derived the latter from "heteropathic causation". L. F. Ward and Spaulding prefer "creative synthesis". Wundt uses the term "creative resultants", Sellars "evolutionary naturalism", C. L. Morgan "emergent evo-

¹ "There are many ways in which the properties of a mass differ from those of its molecules; the chief of them is, that some properties are *emergents*, not resultants."

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lution", Broad "emergent vitalism", Smuts "holism", L. J. Henderson and others "organicism". I have adopted C. L. Morgan's term because it seems most applicable to the matters which I wish to discuss.

Emergence, as above defined, is a favorite concept, especially with a number of contemporary American and British realistic philosophers and biologists, including Holt, Spaulding, Sellars, Alexander, C. L. Morgan, Gordon, C. K. Ogden, G. H. Parker and Jennings, all of whom have stressed the unique qualitative (*i.e.*, behavioristic) character of organic and inorganic wholes as due to the peculiar non-additive relations or interactions among their parts. Since the various sciences are concerned with the investigation of wholes of different degrees of complexity, this conception is, perhaps, implicit also in Comte's hierarchy of the sciences, to which we still adhere, and in our various chemical and