Causality in the Social Sciences
Author(s): Morris Ginsberg
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XIV.—CAUSALITY IN THE SOCIAL SCIENCES.

By MORRIS GINSBERG.

THE notion of causality has, as everyone knows, been subjected to severe criticism, and it is frequently asserted that the exact sciences have entirely abandoned the use of it. Of this I do not feel convinced. What appears to have been abandoned is a particular interpretation of the notion of causality, especially the 'animistic' conception of a power or influence passing over from the cause to the effect. But I cannot believe that in the physical sciences or in practical life we can get on without assuming the existence of such real connexions between events, that changes of character do not occur in isolation but are associated with other changes or variations. If we have two similar systems and find them behaving differently, we assume that the differences are evidence of other previous differences, either in the sense that the systems were not exactly similar, or that a change has occurred in their concomitant circumstances; we assume, in short, that one difference implies another. It is clearly this assumption that leads us to seek for the conditions of events and to expect a proportionality between the variations in the conditions and the variations in the events. Causality, as I understand the term, appears to be a special form of this general connectivity or correlation. It is, namely, a relation of immediacy or continuity of transition. A cause is an assemblage of factors which, in interaction with each other, undergo a change of character and are continued into the effect. Regularity of succession is not, on this view, of the essence of causality, but rather a consequence of immediacy of connection. In practical life, and in the social sciences, regularity of succession so far from being identified with causal connexion suggests a search for causes. If we find, for instance, that changes in

the volume of trade are regularly associated with changes in the marriage rate we do not forthwith assert a causal connexion but proceed to look for the factors mediating the connexion. Precisely invariant sequences are, of course, rarely found in social activities, and in any event, invariableness cannot be a characteristic of causality formally necessary to be established ; since at best it can only be proved within our experience and our object in inductive inquiry is to find grounds of belief going beyond our actual experience.* Regularity of sequence is important in the discovery of causal connexions but not in defining the nature of causality.

The causal relationship I take to be of a synthetic character, that is, the effect cannot be obtained by logical analysis out of the cause, or the cause out of the effect. In this sense the relationship is, as the Occasionalists argued, ' incomprehensible ' or ' unintelligible ' ; it can only be discovered by a synthetic experience. The contrary view appears to be due in part to the fact that the causal relationship holds between parts within a whole, and we tend to attribute to the parts properties which belong to them in virtue of their membership, and which can only be known when the system as a whole is known. In other words, what things constitute interacting wholes is a question of empirical fact ; we cannot construct entirely new effects *a priori* merely by combining what we know of the constituent elements. We find the causality of the similar more intelligible than the causality of the dissimilar, but, strictly, the content of the effect is in neither case present in the content of the cause.

This factual nature of the causal relationship holds also of mental or of psycho-physical events ; we do not really ' understand ' the causal nexus but merely find it by analytic observation.† Thus it is a fact that repetition strengthens the bonds of memory, or that a pleasurable feeling tends to sustain and confirm an activity, while a painful one tends

* " Mill's conception of a cause as an invariable antecedent on which an event unconditionally follows, though it must be valid as a regulative ideal in inductive process, is *only* a regulative ideal." Stout, *Mind and Matter*, p. 120.

† *Cf.* Hume, *Enquiry*. Sec. VII. Pt. 1.

to inhibit it. Again we do not know ' why ' we can control our outward bodily movements but hardly our visceral activities or our pains ; we merely establish connexion or absence of connexion by experience, and all we can do is to define the connexion more or less exactly by varying the conditions and eliminating the irrelevant. The notion of compulsion or power is here no more intelligible than in dealing with purely physical facts. " The experience we have in our own persons of causality," says Professor Alexander, " is so far from giving us a notion of mysterious and unexplained efficacy or power that it is but an example of the same relation as we find outside ourselves in external events. Rather we must say that power is the continuous connexion which we observe in ourselves and can more easily and directly observe in ourselves in enjoyment than outside us in contemplated events. Our power is an instance of causality ; causality is not the work of power."* This point is forgotten, I think, when instincts or other inherited dispositions are regarded as ' forces ' impelling the individual to action, and as thus ' explaining ' highly complex forms of social behaviour. The instincts explain nothing unless they enable us to trace connexions and correspondences between inherited mental elements and factors in the social and physical environment, and unless we are able to show how the inherited tendencies mature and lead to specific forms of behaviour under appropriate stimulation.

In passing now to the part played by the notion of causality in the social sciences, I propose to adopt the following plan. I will try to enumerate, first, the types of regularities which can be distinguished in sociological inquiry, and then to investigate how far they rest upon causal connexions, or at least suggest further inquiry likely to lead to causal connexions. This will involve, obviously, some consideration of the use made of the inductive methods in sociology. The following types of regularity can readily be traced, without any pretence at exhaustive classification :

* *Space, Time and Deity*, Vol. II, pp. 290-1.

(i) Empirical associations or correlations of varying definiteness between concrete social phenomena, such as that urban divorce rates are about double rural rates, or that crime rates are higher in towns than in the country, or that the marriage rate varies with variations in the volume of trade.

(ii) Generalizations regarding the conditions under which institutions arise : for example, that the development of ' capitalism ' is associated with certain conditions, *e.g.*, the existence of large accessible markets, sufficient development of the industrial arts to make indirect methods of production profitable, the existence of a class of workers who find it difficult to earn an independent livelihood, the dominance of a certain mentality such as is expressed in the desire and the capacity to apply accumulated wealth to profit-making, &c.

(iii) Generalizations varying in scope and definiteness asserting that changes in given institutions are regularly associated with changes in other institutions. Thus, for example, it is claimed that a study of the primitive peoples shows that there is a close correlation between economic change or development and the consolidation of governmental organization, a similarly close correlation between the growth of slavery, the extension of warfare and economic advance, and in general, that the extension of order is associated with the extension of stratification on the principle of subordination, social and economic.* A far-reaching generalization of this kind is that made by historical materialism asserting that social and cultural changes are invariably associated with changes in the class structure of society.

(iv) Generalizations asserting rhythmical recurrences or phase-sequences of various kinds. Examples are the attempts to distinguish the ' stages ' of economic development made by Bücher, Schmoller, and many others ; or the view that economic development passes through alternating phases of expansion and contraction, or from phases of

* *Cf. The Material Culture and Social Institutions of the Simpler Peoples*, by Hobhouse, Wheeler and Ginsberg.

aristocratic control from above to phases of democratic control from below.

(v) Generalizations describing the main trend or trends in the evolution of humanity, such as Comte's law of three stages, the Marxian theory of a movement from an undifferentiated or class-less society, through various forms of class differentiation, returning to a class-less society; Durkheim's law of a transition from mechanical to organic types of society; Hobhouse's attempt to correlate the various phases of social development with the phases of mental development; and many other schemes of social evolution which do not stress the notion of recurrence or repetition of given sequences, but are concerned rather with the trends that can be disentangled in human culture as a whole.

(vi) Laws stating the implications of assumptions regarding human behaviour, but leaving to further inquiry how far the assumptions correspond to fact, and to what extent deviations can be explained by reference to 'disturbing' factors. Examples of these are the laws formulated in economic theory.

A full analysis of the logical character of the methods employed in establishing the various types of regularity just enumerated would require a whole treatise on the methodology of the social sciences. Here I only wish to inquire how far the connexion between the generalizations, established or attempted by social students, and causal determination is realized by these investigators themselves, and at what point they conceive themselves to be dealing with causal relationships. I propose to make some comments under each of the heads I have distinguished.

(i) Empirical associations such as those which are expressed in statistical correlations are not, of course, taken forthwith to imply causal connexion. They are in fact best used to test or confirm connexions suspected on other grounds, or else they may lead to further inquiry by other methods. The following points emerge on analysis of representative studies:

(*a*) To begin with, spurious connexions are eliminated so far as possible by closer definition of the variables

and by allowing for errors arising out of the methods of ascertainment. Thus, for example, the connexion between urbanization and increase in the crime rate may be due in part to the fact that in cities there are more laws to break and that fewer people who break the law can escape detection. The earlier studies of the relation between economic factors and the frequency of crime suffered from the vagueness of the criteria by which economic status was defined, and this led to contradictory conclusions. So again, in studying the alleged relation between the suicide rate and the distribution of catholicism and protestantism, it is important to allow for errors arising from inaccuracies in the classification of the causes of death, and it has been suggested, for example, that in many places the attitude of the Catholic Church to suicide leads to a dissimulation of the true causes.

(*b*) Another set of problems arises from the close interrelation of social phenomena which makes it peculiarly difficult to isolate the variables to be correlated. Thus, for instance, in the study of suicide it is extremely difficult to isolate the religious factor. If we find that in Prussia the rate is higher among Protestants, this may be connected with the fact that they are town dwellers while the Catholics are mostly peasants, and according to some authorities there are other correlations between the distribution of religion and of types of occupation which may be of importance in this connection. Frequently, complicated two-way relationships may be involved. For example, the negative relation between size of family and the employment of women may be due to the fact that widowed, divorced, childless married women or women with small families are more likely to seek employment ; while on the other hand women in profitable employment may tend to delay childbearing. Here the relationship is ' intelligible ' in terms of normal economic motives.

(*c*) Perhaps the most serious difficulties that are encountered in the study of social causation arise from the extreme complexity of social phenomena. A careful analysis of the studies that have been made, for example, of the ætiology of crime shows the intricacy of the factors

involved. " Crime," says Professor Burt, " is assignable to no single universal source nor yet to two or three ; it springs from a wide variety, and usually from a multiplicity, of alternative and converging influences. The nature of these factors, and of their varying combinations, differs greatly from one individual to another."* No doubt the ' plurality ' of causes which Mill regarded as especially characteristic of social phenomena, may to some extent be resolved by a closer analysis of the effects as, for example, in the case just quoted, by a more accurate classification of types of crime ; the ' complexity ' of causes, the presence of multiple interwoven determinants, will, however, always remain to baffle the student of social science.

(*d*) If for the reasons just given causal relations are difficult to establish directly, a great deal can sometimes be achieved by the methods of excluding possible or alleged causal factors. Thus, for example, in an American study of areas with a high rate of delinquency it has been shown that the relative rates remained more or less constant over a period of twenty years, despite the fact that the national composition of the population changed almost completely in this interval. It would seem that one reason why the crime rate of children of immigrants is higher, is that immigrant groups are attracted for economic reasons to regions of congestion and unsatisfactory living conditions, and thus have greater difficulty in imparting socially acceptable standards to their children.† Here then it is not the national factor as such which determines the rate of crime.

(*e*) At what point positive correlations, when freed from ambiguities and strengthened by exclusions, are held to justify a causal relationship I find it difficult to ascertain. In most sociological inquiries the student sooner or later comes up against imponderables in the background of his field of inquiry which do not yield to his ordinary methods. The study of crime thus leads to an inquiry into the general social and economic conditions which make for and against

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* *The Young Delinquent*, p. 600.

† *National Commission on Law Observance and Enforcement*, Vol. VI, p. 81.

law-abidingness, and this necessitates historical and comparative studies going far beyond the analysis of the immediate factors contributory to crime. It would seem, however, that in inquiries restricted to a manageable range, causal relations are asserted when the relationship is 'intelligible' in terms of motives held to be normally operative in popular psychology, supplemented at times by the results of a more scientific psychology. The alleged relation between the increase in the crime rate and economic crises is, for example, not regarded as causal unless the mode of influence can be further analysed in psychological terms, that is, shown to be the result of a loss of morale due to unemployment, or the direct urgency of economic needs. A fall in the birth-rate is regarded as explained when it is traced to voluntary restriction of births, and when this restriction is rendered intelligible by reference to normal or generally operative motives, such as the desire to maintain a certain standard of life and the changing attitude towards reproduction. Changes in the divorce rate are regarded as explained or interpreted when they can be referred to psychological changes arising out of the economic emancipation of women, the decline of the religious conception of marriage and the like. The psychological changes themselves are as a rule stated only in general terms, though it is felt that they ought to be further studied especially by the detailed investigation of individual cases.

The analysis of sociological methods made by Max Weber is of great interest in this connexion. The business of sociology is to understand or interpret social behaviour. By the latter is meant behaviour which, in the intention of the agent, has reference to the behaviour of others and is determined in its course by that behaviour. To interpret the behaviour is to grasp the intention, or *Sinn*, and to trace it back to a wider context of motives. In dealing with mass behaviour we must proceed by what Max Weber calls the method of ideal types. Thus, for example, in dealing with a panic on the stock exchange we must begin by the ideal type of rational behaviour, by asking how people would behave if they were rationally determined, and then seek to

interpret the deviations by reference to emotional or other irrational factors. The interpretation is regarded as verified when it is shown to be: (*a*) *sinnhaft adequat*, that is, intelligible in terms of normal habits of thought and feeling, and (*b*) *kausal adequat*, that is, that the sequence is in accordance with probability, or that on the basis of experience we can say that there is a chance of its always happening in that way. Sociological laws are, then, empirically established probabilities, or statistical generalizations of the course of social behaviour of which an interpretation can be given in terms of typical motives and intentions. On this view only those factors enter into sociological explanation which can be regarded as motives. All else is treated as data. This, I think, is an inconvenient restriction. If, for example, physiological differences in fertility were important factors in determining variations in the birth-rate, they would be sociologically important even though they never entered into people's consciousness. Similarly, interactions between individuals and the mere effect of numbers are of colossal importance though no one may be aware of them as such. It would seem then that 'verstehende' sociology does not exhaust the whole field of sociological interpretation.* It does, however, describe fairly adequately much of the actual procedure of sociological inquiry, except that, in practice, the deviating or disturbing factors are insufficiently followed up and the verification is frequently very incomplete.

(ii) The study of the conditions governing the growth of institutions or other social configurations rests in the main on the use of the comparative method. In other words, data are obtained from different periods of time or from different contemporaneous civilizations and generalizations are then attempted by means of the methods of agreement and difference and concomitant variations. In this way, for example, a great deal of work has been done on the conditions under which the condensed aggregates of

* For fuller discussion of Max Weber's views *cf.* my article on "Recent Tendencies in Sociology," *Economica*, February, 1933.

human beings we call cities have been formed. The phenomena are extremely complicated and the relations found are often reciprocal, yet certain broad hypotheses emerge which are of value at least in suggesting further lines of inquiry. As a general minimum condition it appears that cities do not grow unless a society, or group within it, acquires sufficient control over natural resources to enable it to accumulate more than is necessary for the mere sustenance of life. Thereafter a varying role is played by the needs of defence, the growth of division of labour and a system of exchange involving markets, the concentration of labour energy and of materials, the growth of governmental organs guaranteeing a measure of tranquillity necessary for business relations and the enjoyment of the cultural and social opportunities which urban concentration makes possible. Increasing knowledge of the conditions determining the growth and decline of population and economic analysis of the effects of changes in agricultural and industrial technique are enabling us to study the factors making for urban concentration and determining changes in the proportion of rural to urban inhabitants, and in a measure to forecast future trends.* In studies of this kind, it seems to me, the comparative method, aided by theoretical analysis, aims with varying measure of success at discovering causal connexions.

(iii) Studies dealing with the co-variation of institutions rarely reach the stage of causal analysis and are concerned mainly with the establishment of broad correlations. The problem here is how far development or change in one institution, or set of institutions, implies development or change in other institutions. The view to which earlier evolutionary sociology lent countenance, that institutions undergo regular change through a given series of grades, and that differences in the institutions of different peoples are merely differences in the rate of development, is clearly not in harmony with the facts. Different societies arrive at similar forms of institutions by different paths, and agreement in

* *Cf.* Carpenter, *The Sociology of City Life*, and M. Poëte, *Introduction à l'Urbanisme.*

respect of any one institution is no evidence for agreement in other respects. We cannot infer, for example, from the fact that monogamy is the established rule among European peoples, in common with the Veddas or the Semang, any far-reaching similarity in their moral views as to the relations of the sexes, or any other social customs which elsewhere may be associated with monogamy. Nevertheless, if we find that in a considerable number of instances given institutions are correlated more frequently than we should expect on the assumption that each develops independently, we have a right to infer a connexion, though of course this connexion need not be a causal one. This procedure does not, I think, assume a uniform temporal order of development, and is not therefore open to the criticisms that have been made on this ground to the use of the comparative method.* In any event, unless such correlations can be established I do not see how there can ever be any general theory of civilization. They are a necessary preliminary to causal inquiry.

(iv) The numerous attempts that have been made to mark out ' stages ' of development and the somewhat similar efforts at ' periodization ' made by historians are not now regarded as having succeeded in formulating real laws of social development. They suffered from too great a readiness to generalize schemes which may have great utility within a restricted field and to apply them to other fields with which they may have only superficial similarity. Thus, for example, Bücher's scheme of economic stages—house economy, town economy, state economy passing to world economy—has been criticized on the ground that his conception of town economy in the middle ages was based on an analysis of German towns in the fourteenth and fifteenth centuries and ignored the much more developed communities of northern Italy, Tuscany and the Netherlands.† So again the extension of the scheme to the

* As, for example, by Prof. Morris Cohen and E. Nagel in their *Introduction to Logic*, p. 346.

† *Cf.* H. Pirenne, *Les périodes de l'histoire sociale du capitalisme.* Bulletin de de la classe des lettres et des sciences morales et politiques. 1914, No. 5.

ancient civilizations is rejected by such authorities as Rostovtseff who see very little similarity in the development of economic life in the ancient and the modern world in general.* Nevertheless it would be a mistake to conclude that schemes of this kind have no utility. So long as they avoid the assumption of regular and unilinear development they are useful in bringing out similarities, and so in suggesting problems for further inquiry, including especially problems of the influence of culture-contacts and diffusion. Similarly there is no doubt that a comparison of, say, present-day China with mediæval Europe can be seriously misleading, if it is taken to imply that the Chinese civilization is merely, so to say, less mature than the European instead of differing from it in kind. Nevertheless, as a study of Professor Tawney's survey of *Land and Labour in China* clearly shows, a flood of light can be thrown upon conditions in China by noting their similarities to, as well as their differences from, the conditions which existed in Europe in the fifteenth century outside the great commercial centres of Italy, Germany and the Low Countries. Be this as it may, theories of stages, however securely established, are not in themselves sufficient to prove ' laws ' of development unless accompanied by an analysis of the deeper causes of the sequences. They are of value rather in providing material for such analysis, that is, broadly for the application of such methods as agreement and difference and concomitant variations.

Similar remarks apply to the various forms of rhythmic alternation which have been formulated by historians and sociologists, though these are more frequently accompanied by attempts at causal analysis. To give but one example, Professor Pirenne's study of a thousand years of European capitalism leads him to the conclusion that we can trace with a " truly astonishing regularity " an alternation between periods of economic freedom and periods of economic control and a similar alternation between periods of energetic innovation and periods of conservatism and stabilization.

* *The Economic History Review.* January, 1930, p. 204.

The explanation would seem to be that, according to him, the evolution of capitalism does not follow a single line. Each phase is introduced by 'new men' who make their way by audacity and independence. Their descendants, on the other hand, when securely established lose the impetus of the early phases, are anxious rather to preserve what has been won and are inclined to lend their support to any authority, however stringent, capable of giving them the necessary security. This interpretation is supported by an inductive analysis of the social origins of the men who were influential in initiating new phases, and by an appeal to motives held to be ordinarily operative. Here again the causal analysis, in so far as it is attempted at all, seems to be in terms of common-sense psychology, that is to say, in accordance with what we know from our ordinary experience of the mentality of the 'parvenu' turned respectable. If the causal analysis were carried further it would presumably consist of a more accurate study of this mentality in relation to changes in the social environment which provide it with an opportunity or stimulate it to activity.

(v) The attempts which have been made to formulate long-range trends applicable to humanity as a whole generally rest upon or imply broad theories of the causes of social development. Spencer's law of a transition from militant to industrial types of society is brought under the general law of evolution, on the assumption that increasing differentiation of social functions must eventually limit the functions of governmental organs and encourage voluntary and contractual co-operation over ever wider fields of social life. Durkheim's law of a movement from what he calls mechanical types of society based on the resemblances between men to organic types based on division of labour, is established inductively, chiefly by a comparison of the different types of law prevalent in the two forms of social solidarity. The ultimate cause of this process of development he finds in the increasing density of population. Where areas are densely populated the intensified struggle for life necessarily leads to differentiation and specialization, since it becomes increasingly difficult for people to maintain

themselves so long as they all do the same things.* Just as in the animal world different species can thrive more easily within a restricted area than an equal number of members of the same species, so also in human societies division of labour and a differential use of natural resources makes it possible for large communities to flourish in conditions which without them would lead to bitter eliminative struggles. The effect of the ever-increasing division of labour, itself the result of an increase in the volume and density of population, is that intensification of social life which we call civilization. The explanation is not teleological. Civilization is not an end foreseen; not a function of the division of labour; it is merely its '*contre-coup*'.†

Hobhouse's theory of social development is, by contrast, frankly teleological. To him "the underlying truth of history is the opening out of the power of mind in man."‡ His work is devoted to a study of the development of mind in its various aspects and to an analysis of the conditions of development, arrest, or decay. He argues that the facts surveyed by him suggest that there is a broad correlation between phases of mental development and systems of institutions. Nevertheless he does not infer that the mental factor is necessarily the cause and the social system the effect. Mental development is itself pre-eminently a social process and the relation between mind and society is therefore reciprocal, so that if mind is a cause of development it is also its product. Its evolution is moreover limited in Hobhouse's view by conditions not of its own making and its interpretation involves an account of the way in which

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* Professor Mises (*Die Gemeinwirtschaft*, p. 278) argues that Durkheim inverts the real relations. The struggle is lightened under division of labour because the latter increases productivity and it is therefore this increase that constitutes the essential drive. Similarly population grows because labour becomes more productive and able to sustain greater numbers, and not conversely.

† *La division du travail social*, p. 308.

‡ *Social Development*, p. 314.

teleological factors are qualified and conditioned by mechanical ones. The task of causal analysis would then seem to consist in tracing the ways in which the immanent potentialities of mind are furthered or thwarted by the mechanical conditions in external nature and in the social environment, and especially in discovering the way in which the mind comes to understand its own nature, and so in a measure to be capable of controlling its future development.

In the Marxian theory—if I understand it aright—the ultimate causes of social development are to be found in changes in the 'forces of production.' At a certain point these come into conflict with the existing 'relations of production' (that is property-class relations) and eventually give rise to a new class alignment and to transformation of the whole social structure. Technological discoveries, though important in bringing about changes in the forces of production, are not necessarily decisive in their influence, since whether they are utilized or not depends to a large extent on the prevalent attitude to production. But every system of production is subject to change, whether as a result of changes in natural phenomena or in the instruments of production, and so carries within it the seeds of its own transformation. The process of social development is, however, not without direction, since it is believed that it will culminate in the class-less society in which men will regulate their relations with each other and with external nature in a rational manner. It seems then that the teleological element is not entirely eliminated in the Marxian system. Broadly causal analysis would consist in unravelling the ways in which changes in the forces of production are reflected in changes of the social structure, that is to say in class differentiation, and in the associated changes of the superstructure, which includes all other domains of social life. To what extent these other elements of social life are capable of undergoing independent development is not clear. In Durkheim's view, on the other hand, the collective representations, though a social product, follow laws of their own, and once generated they are capable

of novel syntheses not necessitated in any direct manner by the underlying social structure.*

(vi) The best examples of the regularities coming under this head are the laws of economics. Economists certainly conceive themselves to be laying down causal propositions, that is to say, propositions regarding matters of fact. But there is much difference of opinion as to the way in which the transition is effected from pure deductive theory to the facts of the real world, and especially regarding the role of induction in economic studies. According to some authorities the laws of economics are analytic propositions bringing out the implications of certain fundamental conceptions, for example, that of scales of preference in relation to goods whose supply is limited. Others regard them as hypotheses or as heuristic postulates which have to be tested or verified by appeal to the facts. On the former view the task of induction is not essentially verificatory. It seeks rather to ascertain how far the facts in a given situation correspond to the assumptions made in pure theory, and to suggest residual problems for solution. But to the extent to which the facts of a given situation correspond to the requirements of theory, no doubt is entertained that the consequences which are deduced theoretically will hold in fact.† The logical necessity of the conceptual theory is transferred without further ado to the perceptual phenomena. On the latter view this transference is regarded as unjustifiable without further appeal to the actual facts, and realistic studies become therefore an integral element of economic theory, and not merely a branch of "applied" economics. The difference between the two modes of approach is badly expressed in the antithesis "deduction *versus* induction." It is rather of difference of attitude to the problem of the relations between induction and deduction. To the one these are integral parts of one and the same set of logical operations; to the other the business of empirical studies

* *Cf. Les formes élemèntaires de la vie religieuse*, p. 605.

† "Economic laws describe inevitable implications. If the data they postulate are given, then the consequences they predict necessarily follow." Professor Robbins, *Nature and Significance of Economic Science*, p. 110.

is to reveal the fields within which theories otherwise established may be correctly applied, and to bring to light new problems; and though the solution of these may on occasion lead to a reformulation and an extension of the original theories,* yet their truth is fundamentally a matter of their inherent consistency.

As in the case of the empirical generalizations considered under (i) the link between cause and effect is obtained by reference to psychological forces normally operative. Yet, of course, the propositions of economics do not belong to psychology. The reason appears to be two-fold. In the first place in so far as economics proceeds by a method of isolation and abstraction, it does not need to go far in the analysis of motives. It works with definite ends rather than with the motives, which may be very various, that lie behind them. Thus, for example, it may assume that people will seek to obtain the greatest possible value with the least possible outlay of labour and capital, without inquiring further from what motives individuals will place this end before them. In the second place, economics is concerned not with the psychological conditions as such, but with the results of these conditions as they operate upon numbers of men and with the consequent changes in the character of their mutual relations. For this purpose it takes certain widely acknowledged ends as constant and assumes that the subtler individual differences will balance out. When, however, the method of abstraction is followed up by inductive verification, the detailed analysis of psychological interactions must surely become of great importance in dealing, for example, with deviations from the behaviour

* *Cf.* Professor Robbins, *Nature and Significance of Economic Science*, p. 109. "Realistic studies may suggest the problem to be solved. They may test the range of applicability of the answer when it is forthcoming. But it is theory and theory alone which is capable of supplying the solution." On the other hand in Professor Taussig's work on *International Trade* to which Professor Robbins refers induction has a verificatory function. Compare also the remark of Marshall, *Principles*, p. 773: "As surely as every deduction must rest on the basis of induction, so surely does every inductive process involve and include analysis and deduction."

expected on the basis of deductive theory, and generally in the interpretation of particular situations. The reason why economists have not availed themselves to any great extent of the teachings of psychology is, it seems to me, that these have not yet attained sufficient precision, and that they are not presented in a form which the economist can readily handle. More effective co-operation between psychologists and economists may be reasonably expected when these have learnt to understand each other's problems.

The notion of causation as a form of continuity in process seems to have its clearest application in those departments of science which lend themselves to representation in mechanical terms. In other spheres of knowledge continuous connexion can only be traced in a partial and fragmentary manner.* In the social sciences where we are concerned with highly variable and complex phenomena, and where even comparatively simple events are the result of numerous converging and diverging factors, causal continuities are perhaps most difficult to establish. Is it because of this that the notion of causation looms largest in these sciences, or is it because in dealing with human behaviour the notion of power or influence still has a hold over us which has been lost in other spheres of reality, or is it, finally, because pragmatically we need the belief that we can by our own efforts change social conditions and bring them into closer harmony with our desires?

* *Cf.* E. W. Hobson, *The Domain of Natural Science*, p. 79.