

HOW TO MAKE USE OF THE SOCIAL SCIENCES.

Such a question seems to involve the following points for consideration:

Firstly, what is it in the nature of ^{the} sciences that makes it impossible to pool their results in a general scheme of knowledge, on which we could draw whenever there is a need?

Secondly, is there anything in the nature of the social sciences that accounts for the difficulty in making use of them in the same way as ~~of~~ the natural sciences?

I. Sciences cannot be pooled.

The reason for this fact is simple:

Man's native interest in his environment is the starting-point of all the sciences. But every science necessarily restricts its subject-matter to such elements in the context of the environment as are susceptible to its method. Consequently, the subject-matter of the sciences will deviate from the original subject-matter of the native interest, the matrix. That is why physics, chemistry and psychology do not 'add up' to a ^{model} ~~model~~ of ^{a cat,} ~~the environment~~; nor can mathematics and botany between them produce the complete pattern of a meadow.

It is an intriguing question how the various sciences can deviate from the matrix in different and undefinable directions and yet describe true facts. But the origins of science out of ~~which~~ native interest account for this too: Man seeks guidance for his conduct in many different ways and in respect to many different aspects of his environment. In other words, both the native interest and the matrix are composites. Scientific interest and scientific subject-matter are the results of a process of mutual selective adjustment between the factors comprised in native interest and the elements

the matrix

the matrix. Eventually, a method is evolved by which some elements of the matrix are ordered in such a manner as to satisfy some factors of the native interest either by convenient classification, or by direct prediction. In the course of this process of adjustment the sciences tend to become increasingly 'selective', or, with a more usual term, abstract, restricting themselves to the elements adapted to their methods. Although each of them represents true facts, the various segments of the truth tend to resemble one another less and less.

Method is the key to what science can do and what it cannot. It is the general rule applicable to ~~the~~ the operations ~~which~~ ^{are} constitutive of a particular science. That which is ^{selected} retained in it as its subject-matter and that which is eliminated from it as 'unscientific' matter, is ^{differentiated} delimited by method. It is to method that sciences ^{are} indebted for ^{their} its definitions, and therefore for ^{its} their grip on the elements ^{selected} it retains, as well as for the ^{rejection} expulsion of that part of the matrix which now appears as 'metaphysical'. The pedigree of Science is ~~unbroken~~ ^{of a Science, best way} by method (of out) matrix. ^{the} Its birth date is the matrix in which it was conceived. From the point of view of method, Metaphysics is the remnant of the matrix surviving in incomplete science. Thus ^{to become a} to become science Mathematics eliminates the magic of numbers; physics rid itself of 'matter'; chemistry shuns the ~~popular remnants~~ of alchemy; physiology eliminated 'life force'; logic divested itself of 'truth'. To the extent to which the sciences are able to achieve this feat, they rank as theoretical sciences. The more mature they become, the farther they wander from the matrix.

Now, while all this has for some time past been recognized in regard to natural sciences, it appears much less obvious in respect to social sciences. And yet the development of some of the

is strikingly similar to that of the natural sciences; The social sciences also start from our naive interest in the job of living, and only gradually attain that stage of development at which interest and subject-matter are mutually adjusted through method. In the course of this process of adjustment those elements of the matrix which are intractable to the ~~the~~ method fade out, leaving only those elements which form part of the 'situation' as determined, not by native interest, but by the strict application of the method in question. It may then appear that psychology is not concerned with subjective states of mind; that economics is not about production or gain; that politics is not the ~~science~~ ^{art} of government. In this manner psychology may cease to be the science of the human soul; economics, to be the science of wealth and value; politics, to be the science of sovereignty. Soul, value, sovereignty - these remnants of the matrix have no place left for them. Psychology may now redefine its field as that of behavior; economics, as that of choice; politics, as that of power; and so forth. The completed sciences will sometimes have no more the historical reference to the original matrix. Moreover after slim almost to the vanishing point, they may expand again in unexpected directions. Psychology may incorporate the behavior of ~~plants and animals~~ and plants; economics may apply to ethical, esthetic or religious situations indifferently, as long as they contain the crucial element of allocation of scarce means; politics may comprise any ~~situation~~ ^{situation} or institutions that give rise to power. And here also, the more advanced the sciences are, the more completely they will tend to divorce the various elements of the matrix from one another. Thus the social sciences as much as the natural sciences, in order to be effective, differentiate from one another and distort methodically the picture of the environmental universe to which man adjusts in the immediate living.

Incidentally, we did not trouble to define the natural and social sciences more particularly, but simply accepted the usual grouping of the disciplines. That distinction should always be regarded as relative to the question under discussion. The most stable line of demarcation between the various disciplines appears to be that between purely historical sciences dealing with the unique and non-recurrent aspect of nature and society, and those dealing with generalizations, as laws or other abstractions. An even more important division, but of a broader kind, refers to all human experience. It would tend to put science on the one side, and all non-scientific awareness of our environment as it occurs in the course of living, on the other, whether such awareness would otherwise be described as artistic, moral, poetic, religious, personal or simply as naive experience. Neither of these distinctions, however, is vital, at this stage, ~~it being~~ sufficiently ~~and~~ shows as our introductory analysis of the nature of science having done, ^{why} ~~the~~ the co-operation of these ^{social} sciences as that of the natural sciences cannot be sought through fusion, on the lines of popular demand such as 'economics should become political, political science more economic'. The widely held view that the various social sciences should be 'less abstract and one-sided' and thus help to link the different spheres of practical interest, is ^{a serious} ~~is~~ ^{seriously} ~~is~~ not uncommon even with eminent writers. Thorstein Veblen, ^{an ardent} ~~the~~ positivist, actually reproached the economists for not being interested in value, an obviously metaphysical concept. ~~and~~ More remarkable still, two decades later Robert Lynd still quoted Veblen's stricture with approval! In the natural sciences consciousness of method was achieved very much earlier. The elimination of metaphysics progressed greatly during the second half of the 19th century, ~~summarized~~ in the period separating Robert Julius Meyer from Ernst Mach, but no serious scientist is known to have ~~clear~~

lauded for the reinstatement of the metaphysical concepts of
~~force~~, 'matter', 'virtual motion' or 'absolute space' into the
 science of physics. Not fusion of the conceptual instruments of
 theory, but either the creation of a new science, or the application
 of the existing separate ^{& distinct} sciences to a specific task is the ~~normal~~
~~right~~ solution. For example: Economic and political motives;
 economic and political institutions; economic and political power
 can be separated only with difficulty/inpractice. In pre-modern societies
 economic and political institutions actually formed a unity, and even
 after they ~~separated~~ ^{had differentiated} into ~~an~~ ^{separate institutional} ~~bodies~~ ^{moderately}, inter-
 action was close and continuous. But does this imply, as is being ov-
 erly and covertly asserted, that the sciences of politics and economy
 should somehow be fused - two disciplines as different in respect to
 their subject-matter and method as law and embryology? The right
~~answer~~ ^{answer} ~~solution~~ can be found only in one of two ways:

Either by the creation of ~~new~~ ^{new} sciences, more closely related
 to the subject-matter of special interest than the existing ones. The
 relations between economics and politics/ ^{e.g.} are dealt with by various
 disciplines such as historical sociology, anthropology, and general
 sociology. ^{Numerous} ~~Very~~ sciences such as biochemistry or criminology came into
 existence in response to ^{similar} ~~such~~ needs. There is no valid reason why this
 process of scientific specialization should not proceed indefinitely.
 Whether ~~new~~ ^a new science will or will not emerge, is a question of fact
 success depending primarily upon how far ~~an~~ ^{and will} method can be
 found ~~to~~ deal adequately with the ~~peculiar~~ ^{sought} circumstances con-
 cerning which guidance is desired.

Or, the demand may be for ad hoc co-operation of existing sciences
 by applying them to definite problems. There is, in principle, no
 reason why the social sciences should not co-operate in the same
 fashion as the natural sciences in the solution of practical problems.

6.
The use of the sciences of statistics, law and economics in the mapping of a new branch of social insurance is an instance of such co-operation; they could be indefinitely multiplied.

To sum up. Sciences cannot be pooled. This is as true of the natural sciences as of the social sciences. The characteristic of ~~all~~ science viz., that it proceeds by elimination of the metaphysical element and secures its grip on the facts by following up the peculiarity of its method, applies to ~~the social sciences as such as to the natural sciences~~ ^{all science.} ~~usefulness~~ ^{usefulness} If the practical ~~usefulness~~ of the natural sciences has proved so much greater than that of the social sciences, this cannot be due to the lack of a 'continuum of knowledge' (Robert Lynd) in social matters, for the natural sciences too lack such a 'continuum.' *From the point of view of method the social sciences are hardly inferior to the natural sciences.* It is elsewhere that we must look for the reason ~~of the~~ ^{for the} ~~greater practical usefulness~~ ^{greater practical usefulness} of the natural sciences.

II. The sovereignty of ^{practical} man over science.

It is most plausibly argued that ^{practical} the/successes of the natural sciences are ~~due~~ ^{the result of} simply to ~~their~~ superior validity and precision of the knowledge they yield. Certainly, this is true to a large extent. And yet it is doubtful whether this explanation does ^{not} cover up, rather than reveal, ^{by} essential features of the position.

That the natural sciences can be used for the purposes of medicine ~~of~~ technology, and so on, is, inter alia, due to the fact that man's attitude towards his material environment is directed by definite ends which are but little influenced by the rise of these sciences. The development of mathematical physics or of bio-chemistry has, fortunately, not undermined man's interest in his health, in the ^{safe} crossing of chasms ~~in safety~~, and so forth. Thus it is possible to pool the results of the various sciences, not in a 'continuum of knowledge', but in a sheaf of different techniques, co-operating towards the same

Though the theory of relativity may have abolished space and time as non-scientific man understood them, he still wants to be able to cross a river without the risk of drowning. Agreement on the practical issues, a consensus, unaffected by the proceedings of the social sciences themselves, was the given condition of the successful use of the natural sciences in the advancement of technology, or medicine.

Precisely the opposite was the case in regard to the social sciences. Man has hardly a wish or purpose in respect to his social environment that does not contain elements of ambiguity suggestive of ~~conflicting~~ ^{conflicting} conduct. The social sciences have, in fact a dual function, and their usefulness must be judged by the balance of their achievements in both directions: It is not enough to inquire how far do they ~~help~~ assist us in attaining our ends; we must also ask how far they help or hinder us in clarifying them? Until recently, in effect, the attempt to clarify our conflicting wishes and ideals was almost the sole aim of the social sciences. It is human to crave for ends as opposite as 'security and risk, coherence and spontaneity, novelty and latency, rivalry and mutuality' in one and the same 'rhythm of living', as Lynd put it recently. ^{We can add that man} Man will crave for liberty and equality, for freedom and order and other mutually exclusive ideals while seeking guidance on matters as diverse and complex as sex and war, crime and tradition, fashion and business, education and ecstasy. It is almost a miracle that he can make up his mind at all, even when unhampered by the unsettling effects of scientific analysis on the conventional background of his judgment. The crux of the matter is that while social sciences may have enhanced man's ability to attain his ends, they certainly diminished his faculty of knowing what they are.

^{indisputably} For the social sciences have a massive influence on man's wishes

and purposes. Take the impact of the popular sciences of economics, sex, morals or politics ^{the} in our time on popular phenomena of economics, sex, morals and politics. Some assertions tended to ^{actually} be question-begging in a rather unexpected way, by creating the very phenomena on the existence of which they ~~insisted~~ were insisting such as utilitarian psychology in the business man, sex-consciousness in psycho-analyzed persons, or class consciousness in social groups. Others again, tended to be self-refuting such as the assertions concerning the psychology of propaganda or of the slump, cancelling, so to speak, the action of the very laws they alleged to have discovered. But the most important effect of the social sciences, we submit, lay in the direction in which their influence was ~~both extensively and intensively~~ cumulative viz., in great confusion in the minds in regard to the values underlying ~~many~~ social adjustments.

To some degree, such an effect was inevitable.

The elimination from natural sciences of the concepts of force substance, matter, of ghosts and goblins, the magic of numbers, the illusion of the flatness of the Earth, or of the simple nature of space and time did not necessarily disturb man in his job of living; in spite of Newton, Darwin and Einstein he continued to behave in respect to space, time and gravitation wild animals and the surface of ^{in the earth} ~~the Earth~~ very much as ~~before~~ before. We do not wish deny that some of the suggestions made by science caused perplexity and even confusion. ~~in every day life~~. Traditional responses regard to ghosts, the shape of the Earth, and the stability of animal species turned out to be intimately related to theological dogmas that had a direct bearing on social existence; ^{consequently,} ^{social} major adjustments had to be made. But ultimately these adjustments were made, as the evident practical usefulness of the natural sciences

worked decisively in favor of the reorientation of theological ideas. However, that the natural sciences were as useful as we assumed, proved sufficiently that man's practical purposes had been ^{wished} but little affected by them. Man still ~~wanted~~ ^{wished} ~~weights~~ ^{he should wish} ~~be lifted~~; sickness ~~healed~~; ~~and~~ rivers ~~crossed~~ without too much ^{insisted that} inconvenience. And the sciences themselves did not ^{insisted that} ~~otherwise~~ otherwise.

The gradual progress of the social sciences towards methodological purity involved a similar elimination of metaphysical remnants from the scope of these sciences. But the respective rôles played by these elements in society and nature was very different: Rivers run their course whatever we think of space, time and gravitation; changes ⁱⁿ our concepts of nature do not affect the laws of nature appreciably. Alternately, changes ⁱⁿ our concepts of society affect the laws governing social existence radically. Also while natural science does not threaten the clarity of our practical purposes, the social sciences may very well do so, unless our directive values are deliberately ^{art} protected from corrosive influence as the Roentgen manipulator's hands ^{art} from the effects of X rays.

In other words: Man's life is a process of adjustment directed ^{an} towards an environmental universe consisting precisely of the elements of the matrix which science tends to eliminate as metaphysical. Hence the opprobrium attaching to metaphysics when they can be shown up as a hopeless attempt of anti-scientific forces to compete with science through a vain conceptualization of those elements. But hence also the dignity of metaphysics ^{in its} ~~as an~~ insistence on the ^{as} ~~com~~prehensive character of common human awareness ⁱⁿ the matrix of of art, religion, morals, personal life - and science. In order ^{matrix and the nature. interests of life, or, in conceptualized form: the} to use science as an ~~instrument~~, the valuation of life must be maintained, out of which science arose, the difficulty ~~is the case of a~~

the social sciences
~~science~~ being that ~~they~~, naturally tend to influence these valuation
 themselves.

The implications of such a postulate must make us halt. Can the
 matrix of science be preserved without interfering with the progress
 of science, or at least with its choice of the most effective method
 of pursuing its aims? Should a conservation of the matrix be sought
 at all cost, or is it not rather to be desired that our wishes and
 purposes themselves should be clarified and ennobled in the light
 of science? How should mankind progress, if we are to exclude the
 influence of science on the core of life? And yet, how should
 these instruments of enlightenment be secured without ^{con}nfusing the
 ends of life in the process? Is a creative compromise possible, which
 would leave scope for progress, while protecting us from ~~losing~~ the
 danger of losing ^{it?} ~~our way~~ in our search for ~~progress~~. And, if so, what
 are the requirements of ^{such an a} ~~our~~ directed progress?

The answer to these questions would involve ~~us~~ no less than a
 critique of a civilization ^{practicing} ~~based on~~ the indiscriminate use of science
 and ~~on~~ the wholesale disregard of the essentially different ways in
 which knowledge affects man. The abstraction 'all knowledge is
 good' is as vague as the maxim that 'all freedom is good' or that
 'all order is good'. One of the most recent examples of the danger
 of the propaganda of science is the use made by fascism of the atti-
 tude of scientific scepticism in regard to human ideals. By a slight
 de main the general methodological postulate of scepticism is ~~tr~~
 formed ~~into~~ into a material doubt of the validity of these ideas.
 The typical progressive is thrown into a veritable panic to-day by
 the realization of the ambiguous effects of ^{such a use of} the social sciences on
 all ~~human~~ but those who have trained themselves to withstand ~~them~~
 them. The answer lies in the courageous facing up to the issue, which
 implies no less than ^{all} the transcending of the liberal axiom of the ^{indiscrimin}
~~usefulness~~ usefulness of ~~types~~ types of knowledge.

If we know one thing about knowledge it is the fact that ~~some~~ ^{types} of knowledge affect man's life radically and immediately, while other types ~~of knowledge~~ are merely instrumental in the sense of serving his ~~purpose~~ ^{formulated} ends and aims. This distinction is basic. While the broadcasting of instrumental knowledge should be ~~frantically~~ ^{actively} fostered by all means at the disposal of the community knowledge which by its ~~very~~ nature might be destructive of man's external and internal life, should be handled under the intellectual safeguards of social responsibility which are recognized where education or medicine is concerned. It is through a mature comprehension of the relation of man to science that the fascist reaction against an abstract liberalism in the handling of knowledge must be forestalled.

In a time of rapid growth and decreasing existential pressure lack of clarity about man's end and aims in life may pass unnoticed or may even be felt advantageous in facilitating swift adjustment. Yet, more or less unconsciously, ~~the community is~~ ^{even then} aware of the high price it is paying for the ease of transition and remains vaguely suspicious of the very sciences to the authority of which it owes lip-service. Of this there is convincing proof. Let an emergency call for ~~human~~ clear and categorical definition of its basic values on the part of the community, and the world stands aghast at the vehemence of the reaction against the disintegrating influence of the sciences. We agree with Kropotkin's penetrating remark on the subject: 'The denunciation of the intellect which has assumed such tremendous proportions in some part of our world with such far-reaching consequences, seems to me the outcome of the wrong scientific attitude, although for that reason it is no less wrong itself'.

One thing is certain: Whatever safeguards the mind will devise to protect itself against the dangers of the scientific handling of human affairs, their purpose cannot be to stop human progress either collectively, or in terms of the individual himself. ~~Man~~ will continue to change and one of the main factors of this change will be, and should be, the impact of the social sciences. Thus, inevitably, native interest will evolve, and man will not remain what he was.

It is at this point of our discourse that the need for a direct existence looms large. Unless man can define his destiny, he cannot hope to master it. Unless his social purpose is present in individual man, he cannot assimilate the new knowledge without losing his way. Unless his interest in life and the universe fixes for him the direction of which his own evolution shall proceed it is vain to expect that he can remain master of his own changing nature, ~~and not~~ ^{and not} lose his grip on life.

The use of the social sciences is not a technical problem of science. ^{a matter} ~~It is the question of~~ ^{finding} (such a definition of the meaning of human society, ^{as} ~~which~~ will maintain the sovereignty of man over all instruments of life, including science.

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