

Aspects of a Social Philosophy of Science

A distinction should be drawn between natural sciences and cultural studies such as psychology and history. A social philosophy of science must be based on bringing them into a fruitful relationship. What relations are possible? There is the role of natural science concepts and methods in cultural studies and the role of concepts and methods of cultural studies in natural science, determining standards of good work and particularly the choice of domains of research with respect to human welfare. Cultural studies of natural science as an institution emphasises the importance of standards of excellence and of the role of rights and duties in the life of scientific institutions.

There are many publications and study projects with 'Science' in the title. Before presenting my own contribution to this literature I want to pause and set out some of the things that the word 'science' encompasses in contemporary English. 'Science' is often used as the name of an institution when we talk about 'the science of an era' or 'Russian science'. It is also widely used to refer to a certain range of practices in phrases like 'medieval science' or 'natural science', and in a related way to the subject matter of such investigations. The members of the institutions of science devote themselves to practicing the accepted range of activities that constitute 'doing science' whatever the domain. The ultimate aim of all this activity is. It is hoped, an increase in the sum of reliable knowledge. This knowledge may include many items that are esoteric, in the sense that only certain people have access to them, whether by reason of the expertise required or by reason of various social barriers to that access, such as the character of the institution to which they belong or their place in it. Thinking of 'science' as an institution we must attend to such social hierarchies as are displayed by the life of the institution and at the same time examine the very strict moral code by which the activities of scientists are controlled. As a society, 'science' has rules and rituals, just as it has ways of punishing those who break the moral code. According to Polanyi's wonderful 1962 book *Personal Knowledge*, the institution of science is recruited through various rites de passage, and is characterised by conviviality and mutual trust. It is not the only institution that displays such a pattern of characteristics. An army might do so, and so might a religious order.

In order to avoid subtly prejudging the issues to be discussed in what follows let us drop the phrase 'social science' and instead use expressions like 'social, historical or cultural studies', summed up in the phrase 'cultural studies'. These studies are typified by attention to meanings and the use of rules, conventions and customs as the basic concepts of explanatory discourses apropos of human

affairs. This sketch of a criterion that would enable us to distinguish between Cultural studies and natural sciences. Cultural studies should include economics, theology, history, psychology, studies of the rise and fall of societies and the means by which they held together for longer or shorter times, political processes and so on.

A Social Philosophy of Science?

In effect reflecting on the shape of a social philosophy of science we are effectively asked to consider the possible relations between a society, and two of its own institutions. There are many kinds of societies and so many kinds of cultural studies, for example how far technology shapes social institutions belief patterns and so on. There are few variations of the core shape of the scientific institutions that research into material nature. This means that there may be many social philosophies of science as the differing features of different societies mesh in different ways with more or less similar scientific institutions. Does a certain society take the work of its scientists as contributions to national defence or to economic development or to some unstable combination of these directions? Is the work of scientists able to be conducted independently of the demands of the larger society of which they are also members?

Natural Science in a Culture and its Society and Cultural Studies in Natural Science

Does it make sense to suggest that science, in any of the meanings suggested above, has anything to offer those who would either manage social life or attempt to understand it, or both? Broadly speaking we have three possible relationships between the practice of scientific research and the management of social life:

- a. Complete independence - science is a discipline in which scientists confront a natural world which is independent of their activities within the norms of that discipline, in particular the natural world is unaffected by scientific research activities. This is a core doctrine of logical positivism.
- b. Complete dependence – science is just one among a great many normative human social activities, and the results of research are comparable to the results of football matches, that is, they are the outcome of rule governed practices.
- c. Partial dependence – social factors influence scientific research methods, the character of the minds of scientists and the problems they choose to study, and research is routinely driven by the possibilities of the application of the results in the social world. It might be the use of survey methods to plan a social programme; it might be to make money with an

antibiotic; it might be to help manage global warming by mapping ocean currents; it might be to clean up contaminated soil by using supercritical carbon dioxide.

Natural Science Concepts and Methods in Cultural Studies.

One useful source of ideas about the use of the concepts and methods of the natural sciences in all kinds of enquiries, including cultural studies, is the one time dominant and still lively program of 'Scientism'. This is roughly the idea that the only knowledge worth having, whether of the natural world or of human society, is that provided by the use of the 'scientific method', cluster of practices that is supposed to be responsible for the success of the natural sciences. This quickly becomes the dogma that all intellectual practices should be modelled on those of the natural sciences. What are the possibilities of a commonality repertoire of knowledge gathering and authenticating methods?

Then there is the ameliorative sociology developed from the Baconian tradition by Sydney and Beatrice Webb, which ties in with the late nineteenth century enthusiasms of the socio-biology of Herbert Spencer. The statistical findings revealed by the Webbs were to be the basis of public policy, and of course the writings of Karl Marx linking social formations to the science driven means of production. A scientific sociology modelled on the natural sciences, as then understood, would be the instrument for the transformation of society for human betterment.

There is a subtle undercurrent to this style of argument – one can hardly deny that the society of scientists is much the most morally admirable society people have ever invented. It is based on mutual trust and truth telling. Though it does have sanctions for those who break the moral code these sanctions very rarely need to be invoked. Perhaps when we hand the design of social institutions and practices over to scientists working with the methods of chemistry, physics and biology, the same strict moral code will now be the basis of all human societies.

Scientism as a Doctrine

Here are three main tenets of 'scientism'. Local versions differ in the details and the exact manner that these principles are interpreted.

1. Epistemology: All claims to knowledge, whatever their topics, should be judged by the criteria that have evolved in the natural sciences.
2. Semantics: A description of the world as human beings experience it, including their experience of themselves, has no essential use for predicates other than those that get their meaning from their use in the discourses of the natural sciences.

3. Methodology: Only those methods of enquiry that have been perfected in the natural sciences should be used to investigate any natural, cultural, historical or religious phenomenon or practice.

There are various versions of these tenets depending on how far the semantics of scientific discourse is designed to meet positivist criteria. And there are varieties depending on how far the shape and contents of explanations are determined by the hypothetico-deductive scheme of the logical empiricists.

Looking broadly at the many kinds of disciplined knowledge garnering endeavours people engage in there is a deep question. If the core of intellectual excellence is to be found in the three tenets of scientism, what *is* the status of the practices of historical research, ethical debates and theological disputes?

Problems with each of the tenets of scientism

The epistemological tenet is vulnerable to very simple counter-examples. The difficulties tie in with the methodology tenet, in particular the role of experiment. The principles of experimentation in the natural sciences requires that as much of the experimental milieu should be maintained in a constant state while the independent and dependent variables change with respect to each other. These requirements include the foundational tenet that the situation of the experiment can be replicated time after time. In the human sciences knowledge is local, idiographic and indexical of the actual then and there situation in which an observation of some social or psychological process is observed. Each person undergoes continuous and unpredictable changes just by the mere fact of living another day. Furthermore the complexity of the network of human contacts that are relevant to acquiring knowledge of some phenomena cannot be abstracted from in such a way that a simple cause-effect law can be established. In this respect knowledge of the social world in which real people engage in the activities we pick out as psychological which actually consists of local reports and local norms rather than universal laws and timeless experimental results.

The semantic tenet runs into a fatal difficulty, the first mereological fallacy. This arises when the failure to maintain the meaning of a word as it used firstly for a whole entity and then for one of that entities parts is ignored. For example, the famous discussion by Bennett and Hacker (2003) is based on highlighting the change of meaning that occurs when a word used for a whole person function or phenomenon is used to describe a part of that person. The fallacy is actually quite subtle and complex. There are many aspects of a person, such as height or weight or temperature that are projectable from the whole person to one or more of that persons parts. Nurses remark on how heavy a leg is when amputated. A dietician might remark on how heavy a self-indulgent patient has

become. However, if the word is used to ascribe some cognitive or moral quality to the whole person, such as deciding or suffering or gloating, it is a fallacy to declare that the frontal lobes are deciding, that the amygdala is suffering or that the hippocampus is gloating. One matter that distinguishes legitimate transitions of words from a whole to its parts maintaining meanings is that these predicates have no moral content. Those for which the transition from whole to part is fallacious have moral content – we remember that only a whole person can be praised or blamed. ‘It was not me but my hand that struck the fatal blow’ gets one nowhere in court. However, in some situations, an exculpating transfer of responsibility from whole person to person part does seem to be acceptable is one in which the cause of a morally significant feature of a person or that person’s actions, is plausibly assigned to a body part.

The methodological tenet depends on identifying what are the basic methods of the natural sciences, physics chemistry and biology. Observation of phenomena depending on the use of an evolving conceptual system is one source of factual knowledge while deliberate experimentation manipulating variables in a stable environment is another. Observation is a key method in cultural studies while experimentation is almost always impossible with respect some particular research project. Statistical methods are appropriate in both physics and biology, though not important in chemistry. But in the cultural studies statistical reports can only be of local and immediate validity. In psychology statistical analyses of the dependent/independent variable patterns displayed by a sample of human beings are inherently fallacious (Lamiell, xxxx). A statistical analysis eliminates the individual's behaviour pattern but it is individuals who think, feel, and decide and so on.

These critical analyses suggest that a distinction between natural sciences and cultural studies is essential, not only in the domain of phenomena to be studied but in the methods by which such study is carried on. Where and when are experiments useful and what sort of experiments might they be? Should they involve manipulation of variables, analysis of substances and situations, the activation of models and so on?

The Concepts and Methods of the Cultural Studies

What do we need to understand in order to describe and explain cultural phenomena, such as belief systems, patterns of social life, games, family practices, religious dogma, and so on?

The idea that the methods of the natural sciences, particularly chemistry, physics and biology, can be readily adapted to the study of social phenomena, the content and structure of belief systems, the history of institutions, the behaviour of people in daily life, has been largely discredited, though for

various reasons such methods continue to be practiced. A disinterested look at social and psychological phenomena shows us that these domains consist of patterns of meanings shaped by acknowledged and unacknowledged rules, conventions and customs. A social philosophy of social and psychological studies brings people as agents engaged in symbolic interactions and exchanges to the fore. Psychologists, sociologists, historians, linguists, political theorists and theologians are engaged in reflexive tasks working on systems and situations of which they themselves are part.

***Are there any Concepts that can be usefully borrowed by Cultural Studies from the Natural Sciences?*¹**

We now quite familiar with borrowing from Darwinian evolutionary biology for making sense of social change. But Jakob von Uexküll (1934), introduced an even more valuable way of looking at all life, concept in his distinction between *Umgebung*, the environment at large, and *Umwelt*, the ambient world, or milieu, proper to a given species, as it exists for that species. It is useful to introduced a distinction between Mesology, the study of the *Umwelt*, and Ecology, the study of the *Umgebung*. The general idea is that a species and its milieu are a *mutual elaboration*, in which the animal is not like a machine reacting to a situation with an automatic response, but rather like a bicyclist reacting to a signal with an appropriate action, stopping at a red light, for example. The signal has a meaning in that context and may have a different meaning in a different setting. The reality of a milieu (*Umwelt*) lies below the dichotomy between subject and object, which are not in a an oppositional relation. Uexküll was also a forerunner of biosemiotics, that is a study of signification in the world of animals and plants. His mesology entails the necessity of studying how the facts of the environment become, or do not become, *signifying traits* of the concerned animal's milieu. In other words, how the information contained in the environment becomes the system of significations of a milieu. (Berque 2013)

The Japanese philosopher, Watsuji Tetsurô extended von Uexküll's distinction to the human situation. He distinguished between *kankyô*, the environment, as abstractly objectified by natural science, and *fûdo*, the milieu, as concretely experienced by the members of a certain society. Von Uexküll deals with the ontological level of living organisms in general, whereas Watsuji deals with that of the human in particular. Uexküll did not have a concept for the coupling of an animal with its milieu. Watsuji introduced the concept of *fûdosei*, for the process by which environment and milieu are dynamically combined into a "moment" one which is individual, the *hito*, and one of which is collective. We

¹ I owe this elaboration of von Uexküll's proposals to Jean-Pierre Llored (2015)

could call this linkage between people and things, a 'mediance', by which a milieu (*fûdo*) is created.

The human being is medial, with a level of mediance higher than that of any other living being, because people have added a multitude of technical and symbolic systems to the animal body. There cannot be a private system of significations, so the ancillary constituents of the human being are necessarily collective, but at the same time they are constitutive of the very existence of people as individuals. It has not been easy to accept the idea that the reality which surrounds us is not an objective environment (*Umgebung*), of *objects* confronted by an individual subject, but a milieu, constituted with *things* which participate in our very being because of our mediance. (Berque 2014)

Watsuji stressed that *fûdogaku* implies a *hermeneutical method* in order to grasp the meaning of its milieu for a certain human society, or a certain culture. The notions of subjecthood, and that of interpretation rather than information, are crucial for mesology. Starting from Watsuji's conception of *fûdo*, Berque defines the 'ecumene' as the total sum of human milieux, and thus as *the relationship of humankind with the Earth*. The ecumene emerged from the biosphere by dint of the development of technical and symbolic systems, making possible the emergence of the human species as persons. The ecumene must be distinguished ontologically from the biosphere. It is at once ecological, technological and symbolic.

Are there any methods that can be usefully borrowed from natural sciences for cultural studies?

Presuming that by 'science' we mean the natural sciences taken as a whole, how could the practices and discoveries of the natural sciences find a place, if they do, in cultural studies? Though we must reject the hegemonic ambitions of scientism, it would be foolish to reject more modest borrowings from the natural sciences, in particular model making and testing. This is the technique by which the content of theories is developed beyond the bounds of observation. Model making occurs in both natural sciences and in human studies. In making and using models or analogues of the systems under study we are drawing on the knowledge we already have of some system or process or state of affairs that, as an analogue, will lead us to a new view of some phenomenon we do not see clearly or which we do not then and there understand how it has come to be. Models stand in for hidden mechanisms of the production of phenomena (Rothbart, D. 2002). The use of the dramaturgical model, that is seeing social

life as if it were a performance in the theatre, has been influential in the social sciences (for example in the works of Erving Goffman) and its use parallels more or less closely the use of models in the natural sciences, such as the kinetic theory of gases, Niels Bohr's atom and Darwin's model of breeding stock on the farm as the source of ideas for understanding change in natural species.

Statistics is of very restricted value in cultural studies, and in the case of psychology actually a barrier to productive understandings. What about the Webbs? They and many others believed that finding the proportions of people with certain attributes in the population at large was a fundamental prerequisite of enlightened or even effective social policy. This could apply equally to cleaning up the cities and to planning an army. No inferences can be drawn about the attributes any given person from such data, so the cognitive and emotional processes that lie behind human behaviour can play no role in this kind of sociology and even less in psychology. Yet, statistical findings are of crucial importance in analysing a field trial of a new drug, the spread of epidemics, the best way to fertilise crops And so on.

Cultural Studies Concepts and Methods in the Natural Sciences

We must look at the natural sciences as the work that is done by the members of the natural scientific community. As such we need to pay attention to social factors that impact the work of the members of this community (Llored, J.-P. & Sarrade, S. 2016).

Choice of domain to investigate and limitations on methods of inquiry: The Case of Green Chemistry

This shows how cultural factors play an essential role in the practice of natural sciences. J-P Llored has pointed out how socio-political factors have begun to infiltrate chemistry – in particular concerns about the effect of the release of new and old substances, the products of research by chemists, into the environment.

The Social conditions and Cultural Presuppositions of Natural Science Research

We have already noted the importance of the fact that the scientific community, or perhaps we should say 'communities', is a human society with many of the attributes of the kinds of human societies we find already existing in such institutions as the military forces, religious groups such as monks, nuns, dervishes, Buddhists, and many others. The most obvious but perhaps the least important feature of these societies is the way that each of them acknowledges norms of correct behaviour and has various kinds of punishments for deviants

and rewards for the faithful. The worst offence of all is to reject and abandon the society. Apostasy is the cardinal sin. But in the everyday working of a society the most important feature of the local moral order and one that shapes almost everyone's pattern of actions is the distribution of rights and duties to act and even to think in certain ways. A member has duty to perform such and such tasks and in advanced societies the right to comply or refuse. In the perfect society duties and rights enjoin the very same patterns of action. The study of how rights and duties are distributed among the members of a society, at whatever level, is Positioning Theory (Van Langenhove & Harré, 1992). Publishing results in the natural sciences, and increasingly in the human sciences, is disciplined by the right an investigator has to claim a discovery or a part in a discovery. Disputes about priority are often savage, including archaeology - who first opened such and such an Egyptian tomb? Who really first proved Fermat's Last Theorem? Who discovered oxygen? The names at the head of a scientific article are a clue to the hierarchy within which rights and duties are distributed. The team leader has the greatest rights in making claims and the technician who did all the work may have no rights at all to be recognised as a contributor.

Conclusions

What will be the leading concepts that will appear as we develop a social philosophy of science? We must choose concepts which permeate the whole of sciences, social, psychological, cultural and natural.

Excellence

By that I mean concepts which point to Eudaimonia, Aristotle's word for excellence in life. Different societies at different geographical and historical locations are likely to have their own versions of what is to count as Eudaimonia. In any analysis of a scientific program the fact that whatever it is must inevitably impact the Umwelt means that simple environmental studies fall short of what a social philosophy of science could demand. In a social philosophy of science we must track the various ways that 'medience' ties human thought and action to those aspects of the world that those very ways make available or in extreme cases actually create. The ecumene both gains content as new Umwelten are created but also loses content as inerior Umwelten become obsolete or discredited as fantasies.

Rights and Duties: Positioning

How scientific research is undertaken and now the results of such research are interpreted and perhaps implemented in projects in the everyday world, will depend on how rights and duties are distributed and allocated not only in the

scientific community but in the society at large. When do rights or perhaps duties to conceal the results of scientific research become salient and how are they determined? When is it legitimate to suppress the right of a person or community of scientists to make the results of their research public? How is credit for a discovery determined and by whom?

When as philosophers we attend to the activities of scientific communities with these questions in mind then we are undertaking the construction of a social philosophy of science. But above all we must turn to attend reflexively to build a social philosophy of science of the social philosophy of science. This opens a regress which terminates only when the value of these exercises diminishes towards zero.

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