

Genetics of human behaviour

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Ascribing human behaviour to the influence of genetic factors is a reductionist idea that inappropriately applies the explanations of physical science to the human social world. The result is that the designation of some behaviour as deviant is disguised as objective science. The high profile of genetic research means that we must be alert to the potential social consequences of this type of reasoning.

The increasing technical sophistication with which genetic research can now be conducted has raised its scientific and public profile. The Human Genome Project has been widely heralded as the ultimate biological endeavour and one that will unfold the secrets of life itself. It was therefore predictable that the question of the genetic origins of human behaviour should again become prominent. Recent commentaries indicate that genetic explanations and solutions are already being greeted with uncritical enthusiasm in some quarters. Speculation about an X-linked pattern for the inheritance of 'genius' in the family of Erasmus and Charles Darwin has been published recently (Turner, 1996). In the psychiatric literature, Huxleyan visions of a technology of behavioural manipulation using drugs to correct for the consequences of having the wrong sort of genes, have been applauded (Farmer & Owen, 1996). These ideas are reminiscent of the socio-biology of the 1970s which in turn recalled eugenics movements of the past. Although these ideas have been thoroughly challenged and some would feel discredited (Lewontin, 1980; Rose *et al.*, 1984), modern molecular genetics has given them a new guise and with this a new respectability.

Positivism and reductionism

The belief that patterns of human behaviour can be explained by genetics is a type of biological 'reductionism'. This phrase has been coined to convey the manner in which the complex phenomena of human social activity is explained with reference to biochemical events and hence ultimately in terms of the laws of physics. Reductionism can be seen, in turn, as a form of positivism, a creed that recommends the application of the principles of physical science to the study of the human social world. There has been

a sustained and wide-ranging challenge to positivism, since its inception, from within philosophy and social science. However, this territory is unfamiliar to areas that are considered to be physical sciences, and hence it is worthwhile reviewing the arguments.

Opponents of positivism argue that there is a fundamental distinction between the type of explanation required in the physical world and that which is appropriate to human behaviour (examples include Winch, 1958; Heidgger, 1962; Taylor, 1964; Dilthey, 1989). The aims of physical science, our interaction with the material environment, are effective prediction and manipulation which require that we are able to generalise findings from one situation to another. The categories we have formulated to describe the physical world in science are therefore constructed to reflect the constant aspects of physical phenomena. They embody our understanding of objectivity, that is they describe features that are uniform, generalisable and appear the same to different observers. Objectivity implies that events can be conceptualised independently of the investigator and the process of investigation. The concept of causation in physical science emerges from these considerations. An event can be considered causal to the extent that it consistently predicts another event in a way that can be replicated or generalised. The explanation is independent of the time and place of the particular observation.

It is not clear that this paradigm can sensibly be imported into the realm of social understanding. In the case of physical science, the object of investigation, the material world, can be contrasted to, or set apart from, human beings as a whole. Scientific constructions of it are therefore, in theory, available to everyone. In contrast, a universal or objective perspective is not available in the study of human behaviour as the object and agent of investigation are of the same world. The acquisition and construction of knowledge about human beings cannot involve everyone equally as it has a different relationship to different people. Some people are constituted as objects of study by others that are the investigators or subjects.

Now human beings, as all organisms, are necessarily different from one another. Diversity

is intrinsic to living systems. It is the property that enables each individual to differentiate him or herself from others. The manner in which this diversity is ordered by the human mind is not dictated by the phenomena themselves, but by the social context which involves, most importantly, the needs and interests of the social group. The distinctions we make between the normal, the acceptable or the desirable and the deviant or unwanted are not impartial. Different groups within society, who have their own particular interests, will interpret and respond to the same behaviour differently. Types of behaviour that seem problematic to some will be regarded as advantageous by others. An act of behaviour may be labelled as aggressive, for instance, in some situations to convey disapproval but the same action in a different context may be heralded as heroic.

The issue of agency is also central to this debate. Human beings, as all living organisms, are agents who make choices and who influence their environment through these choices. Again, agency is a characteristic that distinguishes living organisms from inorganic matter. In physical science, concepts of prediction and causation are deterministic – they deliver a certain outcome for a given set of circumstances. In contrast the agency or intentionality of behaviour ensures that “it is in the nature of living organisms that their future is indeterminate” (Rose, 1997). We cannot, in principle, know the outcome of a situation involving human beings or any living organism, even if we could ascertain all possible contingencies. Individual human actions cannot be described as being caused by something in the same way as physical events can be. Human behaviour is chosen, not determined and human history is created not predestined.

Genetics as reductionism

Genetic reductionism locates the explanation of the phenomena of human behaviour at the level of the genetic code. This obscures the complex social processes that are involved in defining and understanding behaviour. It therefore directs attention away from the social context or the state of society to the biology of the individual. The individual is conceptualised as the problem for society rather than the particular nature of society being seen as a problem for some of its members (Lewontin, 1993). In this way genetic reductionism fosters a neglect of possibilities for social change and thereby serves the interests of those who already benefit from the current arrangement of the social order.

The quest for the genetic origins of life also encourages the division of people according to hierarchies. If the Human Genome Project fulfils

expectations, it will be possible to categorise people according to how close they come to some ideal genetic type. People will be discriminated on the basis of their degree of physical and mental genetic fitness. Although this hierarchy has the appearance of being derived from biology, it is a socially constructed hierarchy, which merely disguises the social values it encapsulates in biological language.

The political issues involved are highlighted when the intervention that is dictated by the reasoning of biological reductionism is considered. The individual becomes not only the focus of explanation, but also, logically, the prime target of intervention. The proposal, made in the 1970s, to use psychosurgery to manage the disruptive behaviour of inner-city militants is a crude example (Mark & Ervin, 1970). However, recent advocacy of the use of drugs to correct undesirable behaviours arising from putative genetic abnormalities is based on the same rationale (Farmer & Owen, 1996).

It is clear from this discussion that the discovery of biological correlates of human behaviour does not necessarily support the utility of the reductionist paradigm. Biological associations only reflect at the biological level the social and evaluative processes that determine the significance of different behaviours. In practice, biological, including genetic, associations of behaviour have proved hard to demonstrate consistently, although the contents of every major scientific, medical and psychiatric journal testify to the will and the resources dedicated to this search. In addition, the reductionist inference that genetic associations, if found, must be construed as causes of behaviour needs challenging further. The results of a certain genetic disposition cannot be anticipated either in absolute terms or in terms of conferring an increased risk of imposing a hypothetical limit to capacities. Expression of genes is influenced by environmental circumstances which cannot be predicted because individuals create their own environments through the choices they make. Rose *et al* (1984) explain succinctly that “the proper description of the difference between genetic types is not some hypothetical capacity but in the specific phenotype that will develop for that genotype as a consequence of some specific chain of environmental circumstances”. It is, in principle, impossible to know the effect of having a particular gene on an individual’s behavioural propensities.

The case of behavioural genetics

The case of behavioural genetics illustrates the tenacity of the reductionist paradigm in the

face of these challenges. Population research and molecular genetic techniques are widely believed to have demonstrated the heritability of conditions such as schizophrenia, depression and alcoholism, aspects of personality including intelligence, temperament and sexual orientation. However, positive findings are given extensive publicity and are received enthusiastically and largely uncritically in the scientific press. In contrast, thoroughly researched critical exposés of the epidemiological evidence in areas such as the inheritance of schizophrenia and intelligence are rarely acknowledged (Gould, 1981; Rose *et al*, 1984). The fraudulent work of Sir Cyril Burt was accepted for many years before being discredited, despite glaring omissions and inconsistencies (Kamin, 1974). In addition, the highest available estimates of heritability are most frequently quoted, the extent of non-genetic variation revealed is played down and inconsistencies and negative findings are circumvented. A host of theories are available to explain the inconsistency of the evidence with a clear genetic pattern of inheritance, such as the heterogeneity of the disorder, partial penetrance, multifactorial inheritance and genetic mutation.

For example, based on certain twin studies, schizophrenia is commonly asserted to be at least 50% heritable. However, studies that show that schizophrenia congregates in families also show that around 90% of people with schizophrenia do not have a first-degree relative with the disorder. High publicity has surrounded claims from molecular genetic studies to have identified relevant genes but little attention is paid when attempts at replication fail. A recent pan-European molecular genetic study boldly concludes that the genetic associations revealed are involved in the pathogenesis of the disorder. However, in common with much genetic research, this project suffered from some basic epidemiological problems. The comparability of the control group was questionable, multiple hypotheses were tested, and other than ethnic origin, there was no attempt to control for sources of confounding. In addition, the relevance of the findings is uncertain as the gene is common in the general population and was observed to be only slightly more common in people with schizophrenia (Williams *et al*, 1996).

Conclusion

The diversity and indeterminacy of life constitute the basic parameters of human experience. They constitute the foundations on which human communication and activity are predicated. But

they undermine the assumptions of the positivist enterprise. The search for laws as a basis of generalisation and prediction cannot be reconciled with the facts that people are necessarily different from one another and that a person's destiny is dependent on the choices they themselves make.

Critics of positivism have advocated a variety of alternative paradigms for understanding and investigating human behaviour including phenomenology, ethnomethodology and hermeneutics. They all acknowledge the contingency and partiality of the act of investigation and seek to examine the specific context or antecedents of behaviour rather than pursuing generalities. The type of understanding appropriate for the human world is held to be different in kind from that required of the physical world, where prediction and manipulation form the basis of knowledge.

Positivism and reductionism are not politically neutral. The positivist paradigm, by constituting some human beings as objects, undermines the authority of their perspective and sets up the values of the investigators and their patrons as universal. Reductionism, by casting social judgements as biological facts, obscures this process and thereby denies the legitimacy of alternative perspectives thus stifling possibilities for social change. Increasing technological sophistication and scientific enthusiasm mask the dubious foundations of behavioural genetics. However, the eugenics movements of the late 19th and 20th centuries, have already amply demonstrated the type of political interests that are served by this ideology. The scientific community must end its complacency and recognise the relevance of the debate about positivism and the critique of biological reductionism for research into the origins of human behaviour. Otherwise it continues to reinforce possibilities for stigmatisation and repression.

References

- DILTHEY, W. (1989) *Introduction to the Human Sciences* (eds R. A. Makkreel & F. Rodl). Princeton, NJ: Princeton University Press.
- FARMER, A. & OWEN, M. J. (1996) Genomics: the next psychiatric revolution? *British Journal of Psychiatry*, **169**, 135–138.
- GOULD, S. J. (1981) *The Mismeasure of Man*. New York: Norton.
- HEIDEGGER, M. (1962) *Being and Time*. New York: Harper and Row.
- KAMIN, L. J. (1974) *The Science and Politics of I.Q.* London: Wiley.
- LEWONTIN, R. C. (1980) Sociobiology: another biological determinism. *International Journal of Health Services*, **10**, 347–363.
- (1993) *The Doctrine of DNA*. London: Penguin.

- MARK, V. H. & ERVIN, F. R. (1970) *Violence and the Brain*. New York: Harper and Row.
- ROSE, S. P. R. (1997) *Lifelines: Biology, Freedom and Determinism* (in press). London: Penguin.
- , LEWONTIN, R. C. & KAMIN, L. J. (1984) *Not in Our Genes*. London: Penguin.
- TAYLOR, C. (1964) *The Exploration of Behaviour*. New York: Routledge and Kegan Paul.
- TURNER, G. (1996) Intelligence and the X chromosome. *Lancet*, **347**, 1814–1815.
- WILLIAMS, J., SPURLOCK, G., MCGUFFIN, P., et al (1996) Association between schizophrenia and T102C polymorphism of the 5-hydroxytryptamine type 2a-receptor gene. European Multicentre Association Study of Schizophrenia (EMASS) Group. *Lancet*, **347**, 1294–1296.
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