

BOOK REVIEWS

Most orthodox heresy: Jensen on IQ myths

Steve Blinkhorn

Bias in Mental Testing. By Arthur R. Jensen. Pp.800. (Methuen: London/Free Press: New York, 1980.) £15, \$29.95.

CONSPIRACY theory ranks high in popularity among theories of psychological testing. According to this view, psychometricians, whether wittingly or not, have succeeded in constructing devices which systematically and unwarrantably discriminate against non-whites, lower social classes and possibly females. There is a popular belief that intelligence (mental ability, scholastic aptitude, mental maturity and so on) tests are constructed using scholastic achievement in a white middle-class educational system as a criterion and that devious means are adopted to force scores to a normal distribution. Accordingly, such tests are inappropriate for non-whites, for working, rather than middle-class, individuals and so on. The appropriate action is therefore either not to use them at all or to correct the inherent bias by using lower cut-off scores for, or adding a constant to the scores of, the disadvantaged groups.

Added impetus to the propagation of this point of view has come in the aftermath of the Burt affair, and phrases such as "the IQ myth" and "the new assault on equality" have gained currency. One of the few topics on which most psychologists (and not only psychologists) seem to feel entitled to pronounce is the validity or otherwise of so-called IQ tests. Sadly, such pronouncements do not always benefit from the technical competence and sense of history which make for an informed judgement. There is a notion abroad that what tests measure and how fairly they discriminate can be determined by inspection, the implication being that psychometricians are peculiarly insensitive to what is patently obvious or deliberately, and for the worst of motives, disingenuous in the pursuit of their craft.

The whole question of inherent bias in mental tests has been brought to a new crisis point by a series of court judgements, which have handed down verdicts as to whether or not particular tests are biased. The notorious 15 IQ points difference between mean scores of blacks and whites in the USA gives the topic social, moral and political importance. If this difference is the result of test bias, then something ought



Arthur Jensen, "scholarly and dispassionate".

to be done about the tests. If, on the other hand, the tests merely reflect a true difference, however caused, then no amount of advanced psychometrics will save an unhappy state of affairs.

Jensen's description of how, as a student, he "came to believe that nearly all standard IQ tests were grossly biased against virtually everyone but the white middle class" is an unexpected entrée to a book which amasses an overwhelming weight of evidence to the contrary. He then proceeds to spend nearly half the book developing the statistical and methodological basis for an examination of test bias. There is implicit in his treatment of classical test theory a criticism of the standard of public debate on test bias. Too many psychologists are either ignorant of, or dismiss as statistical conjuring tricks, elementary procedures such as correcting correlation coefficients for restriction of range or for attenuation by unreliability, or regard predictive validity coefficient of the usual magnitude (0.3 to 0.5) as hopelessly small and indicative of little utility. On the assumption that all interested parties were thoroughly acquainted with basic psycho-

metrics, the book could have been half its actual length.

On the question of bias itself, Jensen is remarkably up to date with the current state of theory and practice. The distinction between bias (a statistical concept and a matter of fact) and unfairness (which involves a value judgement) is well made, and the fact that different definitions of fairness conflict when made operational in terms of the practical use of tests is driven home. The kernel of Jensen's thesis is to be found in Chapters 10 and 11, in which the empirical evidence of test bias (1) in predicting occupational and educational success and (2) in the internal structure of tests, is reviewed. Much of this material is counter-intuitive. It is not the case that for a given test score blacks perform better at work or at school. On the contrary, using prediction equations based on white groups may disadvantage the whites, in that blacks have to do as well or better on the tests to do as well on the task. Nor does the notion that verbal tests yield lower scores for blacks than do non-verbal tests, stand up to scrutiny. Finally, there is no evidence from the internal structure of tests

that they are measuring something different in the different racial and social groups.

In short, Jensen provides methods for detecting bias, collates a large amount of empirical evidence and justly concludes that there is no substantial, replicable evidence of inherent bias in commonly used tests where native-born English speakers are concerned. He also disposes of several widespread myths about tests, such as the so-called Pygmalion (teacher expectancy) effect. There is a willingness evident in the psychological community to accept criticisms of psychometric techniques on blatantly *ad hoc* grounds, and a supreme unwillingness to pay attention to the large body of empirical evidence which supports the utility of tests, in particular in cutting across social and ethnic groupings and revealing talent where it is least expected (which, after all, was the original reason for their introduction).

Jensen has neither time nor patience for the overuse and misuse of tests, however. His last chapter is an indictment of malpractice which ought to be required reading for all those who actually enjoy using tests or like to treat IQ as the criterion of personal worth *par excellence*.

Undoubtedly many will feel that by restricting himself to a rather technical brief Jensen is missing the point. The abstractness for which test constructors often strive, they may point out, is itself a cultural variable, highly prized and cultivated in the white middle-class. The format of tests reinforces certain values (accuracy at speed, seeking to generalize, solution of problems in the abstract rather than the concrete) which may be dominant in white middle-class culture.

There follow from this two questions. Is it the case that the kinds of abstract reasoning abilities implicated in, say, Spearman's view of intelligence can be consistently assessed? Is it the case that an individual's capacity to deal effectively with his world depends on such skills? If the answer to the first is affirmative, as Jensen claims and by and large demonstrates, the answer to the second is by no means an obvious yes. Wechsler has defined intelligence as "the capacity of an individual to understand the world about him and his resourcefulness to cope with its challenges". Such a view clearly involves the nature of the world in which an individual exists, and non-intellective characteristics of the individual as important elements in the determination of intelligence.

Now, tests constructed in line with the views of both Spearman and Wechsler intercorrelate highly. This is hardly surprising, given the importance placed in Western society on intellectual skills, for we live in a society where some social security forms demand a higher level of reading skill than the *Times*. But the distinction needs to be maintained, not least because whilst a given level of

intelligence in Spearman's terms may imply capacity to cope with the business of living, the reverse need not be true. One wonders whether the high value placed on intelligence in our society is a universal feature, not so much in remote tribes as in ancient Egypt and Rome, or to choose a more immediate instance, in China during the cultural revolution. That is to say, could we choose to organize our society so that differences in intelligence are unimportant, and if so would that kind of society be successful, stable and desirable?

If, as Jensen shows, the accusation of test bias is unfounded, then the truth of the matter is that differences in achievement reflect the extent to which society demands the abilities assessed by the tests. Whether these demands are proper, necessary and fair is entirely open to question, but fiddling test scores to make racial differences vanish is as unworthy as the exaltation of IQ as the sole criterion of personal worth. It neither promotes the interests of those in sympathy with whom it is done nor protects them against the failure it makes more likely. It makes as much sense as subtracting 8 IQ points from the scores of myopics, on the grounds that this is the mean difference between myopics and non-myopics, and clearly myopics are advantaged in that their condition makes them read more books and play less football.

There is a widespread notion that since tests necessarily involve specific tasks, IQ is merely a matter of specific learned skills of a particular kind. Yet such evidence as there is suggests that coaching in specific skills has little transfer value. The point of intelligence testing is not whether an individual can solve problems having a certain logical structure, but whether he can identify the logical structure and find strategies to solve them. Many tasks can be made easier by making their structure more patent and immediately concrete: much of the recent work critical of Piaget has adopted this approach. Such studies point to ways of bringing a wider range of performances within the capacity of the individual, and have immediate relevance to education and training. Their relevance to the study of intelligence, seen as a high-level ability to detect the structure of problems and organize lower-level strategies towards a solution, is however seriously in doubt.

This book is informative, refreshing and a valuable contribution to the literature; its worth as a compendium can hardly be overrated, and it may well find a role as a textbook of psychometrics for the clarity of its exposition of classical test theory. Its scholarly and dispassionate tone will come as a surprise to those who know of Jensen only as a leading figure in anti-test demonology, however out of sympathy they may be with its content.

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Understanding nuclear astrophysics

Bernard Pagel

An Introduction to Nuclear Astrophysics. By Jean Audouze and Sylvie Vauclair. Pp.168. (Reidel: 1980.) Hardback Dfl.75, \$39.50; paperback Dfl.40, \$19.95.

SINCE the 1920s, the development of astrophysics has been closely associated with advances in nuclear physics which have led to our current understanding of stellar energy sources, stellar evolution, nucleosynthesis and nuclear cosmochronology, and to continuing attempts to understand the distribution of the chemical elements in the light of ideas about cosmology and the evolution of galaxies.

These topics are engagingly presented by two well-known French astronomers in this book, which is written at a level suited to first-year undergraduates, but will also be appreciated by graduate students and others desiring an up-to-date introduction to the subject. Succinct descriptions of the basic interactions of physics and of the observable Universe are followed by outlines of big-bang cosmology, stellar evolution and the abundances of the elements in the Solar System, stars and cosmic rays. The remainder of the book gives somewhat more detailed accounts of specific theoretical topics: nuclear reactions and the various nucleosynthesis processes currently considered significant, Solar System and galactic nuclear time-scales and the chemical evolution of galaxies. A brief concluding chapter sketches historical developments and a few outstanding problems.

By far the strongest feature of this book is the nuclear physics, which is carefully and clearly described at the appropriate level. Other aspects are more sketchily treated. This does not matter too much for the observational part, which is adequate as a background to the theory apart from occasional minor infelicities such as a reference to quasars as having "the same optical properties as the stars". A more serious gap is the lack of a coherent account of the non-nuclear aspects of stellar structure and evolution, which makes it difficult for the reader to envisage the context in which the nuclear reactions operate. The chapter on nuclear chronologies and the origin of the Solar System is especially good, but the one on chemical evolution of galaxies shows signs of over-hasty preparation and proof-reading — some equations (including one credited to myself!) are either nonsensical as written or inconsistent with the accompanying text; inconsistent and undefined symbols also occur. (There are also a few minor errors of fact here: the abundance ratio N/O is not as high in the Magellanic Clouds as in the solar neighbourhood and the simple model of