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Book Review

What is Intelligence? Beyond the Flynn Effect, James R. Flynn. Cambridge University Press, New York (2007). 226 pp., US$22.00, ISBN: 978-0-52-188007-7

Flynn's (2007) book examines the phenomenon of rising IQ scores during the past century – a finding known as the "Flynn effect" in recognition of his role in documenting the worldwide increase in IQ. This new book addresses some important questions about the interpretation of those gains, about their origins in the changing social environment of the past century, and about the nature of intelligence itself.

After a brief introduction in Chapter 1, Flynn shows the data on IQ gains over time in Chapter 2. The results are striking: between 1947 and 2002, scores on Raven's Matrices and on the WISC Similarities subtest increased by about 25 IQ points, whereas scores on the WISC Arithmetic, Information, and Vocabulary subtests increased by only about 3 IQ points. This leads Flynn to a statement of four paradoxes that can be paraphrased as follows:

(1) How can the increases in scores be so divergent across tests that are all rather highly *g*-loaded?
(2) If the increased scores represent gains in intelligence across generations, then why are these increases not obvious in everyday life?
(3) The rate of increase suggests that by today's standards, most persons of a few generations ago would have been mentally retarded, a conclusion that seems absurd: How can this be resolved?
(4) The massive increases in test scores suggest a large effect of the environment, but how can this be reconciled with the results of heritability studies showing weak effects of the environment on IQ?

Flynn suggests that the large gains on Similarities and Raven's Matrices are attributable to an increased familiarity with fluid, "on-the-spot" problem-solving. He argues that the past century has seen a massive shift toward a more abstract style of thinking that has accompanied the development of a modern scientifically-oriented society. Flynn explains that this improvement in abstract thinking has produced important gains in Similarities and Raven's Matrices without causing corresponding increases in those tests that demand more concrete thinking, such as Arithmetic, Information, and Vocabulary. Thus, Flynn interprets the test score gains as being entirely real and as having important consequences for the functioning of an economically

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advanced society. However, Flynn also argues that the gains do not entail an improvement across all domains of cognitive functioning, and that in many respects the young adults of today are no more mentally able than their grandparents. With regard to the contrast between within- and between-generation findings, Flynn's analysis suggests that individual differences in this orientation toward abstract thinking tendency are generally small within a given age cohort of a society. As a result, there is no sharp distinction between the more and less abstract kinds of IQ subtests when these are assessed in persons of the same age cohort.

Turning to the origins of the historical trends, Flynn proposes that initially modest increases in the extent to which abstract thinking is favored by a modernizing society – as expressed by its schools, its workplaces, its technology, and even its leisure activities – have produced a positive feedback loop in which improvements in abstract, on-the-spot thinking then produce social changes that further foster the trend toward greater abstraction. This "social multiplier" is in some sense analogous to the phenomenon of genotype-environment interactions that may influence individual differences within a given cohort. Flynn argues that the social multiplier resolves the apparent paradox whereby IQ scores have shown massive increases across time while also showing only weak effects of the environment at any one time.

In Chapter 3 Flynn proposes a new theory of intelligence in which he distinguishes between three levels of investigation: brain processes, individual differences, and social utility. Flynn warns against "conceptual imperialism", arguing that phenomena occurring at one level will not necessarily explain phenomena at another.

Chapter 4 discusses various possible ways to test the model of environmental influences on IQ recently proposed by Flynn and Dickens. In this chapter Flynn gives his prescription for increasing one's mental abilities by seeking challenging cognitive environments.

In Chapter 5 Flynn considers the possibility that the IQ gains over time might be attributable to reduced inbreeding, to improved nutrition, or to increased affluence. He concludes that these "static" environmental influences cannot explain much of the IQ gains, and that instead the environmental influences responsible for those gains are the "dynamic" ones described in Chapter 2.

Chapter 6 gives an interesting discussion of the problem of obsolete norms for IQ tests. Because of the steady increase in IQ test scores, the proportion of persons who would be classified as mentally retarded according to a given test's norms will decrease greatly across time. As a consequence, the proportion of persons who are considered eligible for remedial education, for disability benefits, and even for exemption from the death penalty will be much smaller than the 2% designated on the basis of the original norms. Flynn argues that the overall functional competence of the lowest-scoring persons remains very limited despite the secular increase in IQ scores, and that the use of obsolete norms therefore fails to give an accurate indication of those persons' limitations.

Finally, in Chapter 7 Flynn considers some recent data that raise the possibility that IQ gains may be ending in some economically developed countries. He suggests that this would have troubling consequences, including a failure to meet the apparently ever-increasing demand for persons who can perform the abstract thinking that he views as necessary for professional, managerial, and advanced technical occupations. (This concern reflects Flynn's view that the IQ gains are manifested in improved performance in at least some real-world activities.) Flynn also proposes that more effort be devoted to the assessment of critical thinking skills and of wisdom, and suggests that these important abilities might yet show future increases.

Flynn's writing style is conversational and engaging, and his book gives many insights into his own philosophical and political views. The organization of the book is free-flowing, with a wide range of examples and with rapid transitions from one issue to the next. Although all chapters of the book contain interesting and original ideas, many readers will likely find Chapter 2 to be the most informative, for it is in this single chapter that Flynn presents the critical facts, identifies the fundamental problems they raise, and proposes some plausible solutions. Flynn's book thus gives some compelling answers to many of the questions raised by the fascinating finding that bears his name.

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