

IQ, Genetics, Culture and Time

For most of the last century it was widely thought that intelligence was in decline. The idea was that those at the lower end of the intelligence spectrum were having more children, thereby reducing the general intelligence level. Then one November day in 1984 James Flynn, a New Zealand-based moral philosopher, had a Eureka moment that turned cognitive science on its head. He opened a package sent to him by an academic in Holland named PA Vroon.

Inside were data from an IQ test known as Raven's Progressive Matrices. IQ are the initials of 'intelligence quotient', the psychometric system by which the mental ability known as intelligence is measured. Vroon did not know how to crunch the raw numbers, but Flynn did. And he noticed that 18-year-old Dutch males had made a giant leap in IQ scores on the previous generation. Over the following month, he checked similar data from around the world and the answer was the same: IQ was going up, and dramatically.

Flynn found that in both the developed and developing worlds IQ had improved in the 20th century at the remarkable rate of 3 points per decade. This development has since become known as the 'Flynn effect'. The Flynn effect is noteworthy because, apart from anything else, it suggests a world-changing increase in intelligence in succeeding generations. IQ measurements are based on the score of 100 being allocated to the median average of a group (say 18-year-old Dutch males). Projecting forwards the Flynn effect predicts, for example, that someone with an average IQ today (i.e. of 100) will have grandchildren with a score of 120. Perhaps more shocking, it suggests that someone with an average score today would have had grandparents who were close to mental retards. Neither scenario makes much sense, particularly if you're a grandchild or a grandparent.

As Flynn writes in his recent book, *What is Intelligence?*: 'In either event, the cognitive gulf between the generations should be huge.' Plainly it's not. And thus the Flynn effect has become one of those phenomena that are almost universally accepted but little understood. Some psychologists have attempted to explain the gains in what Flynn calls 'artefactual' terms. It has been argued that children have got better at doing the tests partly because the administration of the tests has improved. Others put the rise in IQ down to improvements in diet. Flynn rejects both theories, pointing out that tests are frequently restandardised and that diet has been of marginal importance in the West since the 1950s.

Flynn is convinced that intelligence has improved. 'But,' he said, 'we have to rethink exactly what we mean by intelligence. For what the IQ gains really give us is a cultural history of the 20th century and an insight into the gulf that separates our minds from those of our ancestors.'

On the phone from Dunedin in New Zealand, where he is emeritus professor of political studies at the University of Otago, Flynn several times used the phrase 'detaching logic from the concrete' to define what is considered the mark of intelligence in the modern world.

'Imagine,' says Flynn, 'if we were archaeologists of the future and all we found were targets from target practice. We would see that in 1880 there were two shots per minute. In 1900 there were five shots. And later in the century, 50 shots. How could they have improved their aim, speed and steadiness by such an amount? We'd be totally baffled until we dug up pistols, rifles and machine guns. So it's not a change in human physiology. The same applies for intelligence. We've created tools and the environment to maximise those scores.'

In *What is Intelligence?* he gives a number of examples of how we now privilege abstract classification. A century ago if the question was asked what links dogs and rabbits, the most common answer would probably have been that dogs are used to catch rabbits. That's a zero-point

answer in an IQ test, where the correct answer is that both animals are mammals.

But if that seems a cultural rather than a cerebral development, the change is not just cosmetic. The ability to think in abstract terms underpins the scientific, material and, arguably, moral advances of modern society. Therefore the continued rise in abstract intelligence might be expected to produce a continued rate of scientific and material development.

Except there are signs that the Flynn effect is coming to an end, at least in western Europe. Recent studies in Scandinavia show a plateau in results, and a drop in arithmetic. Far from being surprised, Flynn has been expecting as much. '[The Flynn effect] is not like the law of gravity,' he says. 'Social conditions vary in each country.'

One of the key environmental factors, Flynn says, is adult-infant ratio. Basically, the more adults there are to children, the richer the cognitive environment. As you can't really get a better ratio than the two parents to one child, there is not much further that low-birth rate in Europe can go in that direction. Indeed, the rise of solo parents may push the trend in the opposite direction.

Flynn also believes that Scandinavian teaching methods are the best around, and perhaps they, too, have gone as far as they can go. 'There's got to be a limit to how much we can classify the world and to how cognitively challenging our leisure time can be. Everyone needs to relax sometime. And if IQ levels in the West slow down and those in the developing world continue to increase and catch up, then we could be in for some interesting times.'

Another study by the British psychologist Michael Shayer, of King's College, University of London, that looked at tests concerned with volume and heaviness, showed a marked reversal in geometric reasoning. In 2003 children of almost 12 years did as well as eight- or nine-year-olds in 1976. The biggest drop was in the performance of boys.

Shayer believes that boys today are less inclined to develop the 'differential play patterns' that previously accounted for their advantage over girls. In short, they have grown less prepared to explore further afield, to go beyond the comfort zone of their controlled environments. 'Presumably,' says Shayer, 'because they were looking at bloody computer games.'

Flynn thinks that computers can help with abstract cognitive skills, but, he warns, there is a price. 'They don't read, the little bastards,' he says of young people today. 'And I don't consider someone educated unless they can read Tolstoy or Plato.'

For his part, Shayer is sceptical about the value of the psychometric tests by which IQ is measured. 'All they will tell you is how someone compares with a representative group of that age,' he says. 'They won't tell you what they can do.'

What constitutes intelligence is a question over which generations of psychologists and educationalists have argued. And there is still no conclusive answer.

The phrase 'Flynn effect' was first coined by Richard Herrnstein and Charles Murray in their 1994 bestselling book *The Bell Curve*. The book argued that IQ was a vital factor in a whole range of social issues, including employment, crime and single-parent families. It also placed pronounced emphasis on the differences in average IQ scores between black and white Americans and suggested that these differences were in some sense innate.

A number of scientists and psychologists have subsequently argued that much of the research underpinning Murray's findings (Herrnstein died around publication) was flawed or skewed,

pointing out that it drew on the research of eugenicists. The controversy unleashed by The Bell Curve continues to dog the study of intelligence. Last year, James Watson, the Nobel prize-winning biologist who co-discovered DNA, triggered a whole new round of the dispute when he said that he was 'gloomy' about Africa's prospects because 'all our social policies are based on the fact that their intelligence is the same as ours - whereas all the testing says not really.'

Watson was widely criticised, but some notable voices came to his defence. In America, the journalist William Saletan wrote a three-part series for the online magazine Slate in which he stated: 'Tests do show an IQ deficit, not just for Africans relative to Europeans, but for Europeans relative to Asians... It's time to prepare for the possibility that equality of intelligence, in the sense of racial averages on tests, will turn out not to be true.'

He later issued an apology when it was pointed out that he had based much of his research on the work of J Philippe Rushton, a psychologist who speaks at conferences held by an American segregationist organisation and whose work on what he terms the 'Negroid' brain involves measuring the length of the 'Negroid' penis.

Murray and Watson are what might be called genetic determinists. They look at the various IQ data relating to different ethnic groups and conclude that race is the cause of the variation. Watson's comment on Africa occupies the crude end of this argument. There are obvious environmental reasons - poverty, lack of schooling, the less pressing importance of abstract reasoning in every day life - why Africa might lag behind in the IQ league that have nothing to do with gene distribution. As Flynn says: 'This idea that developing countries are too dumb to industrialise - well, our IQs were the same 100 years ago and we industrialised. It's like climbing a ladder. One foot goes up one rung - industrialisation - and that leads to the next rung, improving schools, etc.'

Murray presents a more challenging statistical argument than Watson. In a debate last year at the Manhattan Institute in New York, Murray examined the continuing gap in IQ scores between black and white Americans. He argued that for a period in the post war years the gap was narrowed, as the IQ of black Americans rose, in group terms, more rapidly than that of their white counterparts. Then around 1970 that process came to a halt and since then results show a stable advantage in favour of white Americans. The average white American IQ is estimated to be around 15 points higher than the average black American IQ. Murray attributed the gap to inherent genetic difference. 'By the 1970s,' Murray told his audience, 'you had gotten most of the juice out of the environment that you were going to get.'

Opposing Murray in the debate was Flynn. He described himself as a 'democratic socialist'. A civil-rights activist, he grew disillusioned with the nation of his birth when his opposition to racial segregation lost him his job at the University of Kentucky. He left the United States for New Zealand in 1963. He is soon to publish a book entitled, *Where Have All the Liberals Gone?*, in which he aims to defend neglected concepts like equality.

Flynn agrees with the biologist RC Lewontin that the overwhelming part of genetic variation is within, rather than between, population groups. He also estimates that genetic advantage in individuals accounts for 25 per cent of the variation in intelligence scores, and that the rest is determined by environment. But he goes further to suggest that the environment acts as a kind of echo chamber for genetic endowment, so that such advantage as exists is amplified by social conditions. The analogy he uses is that of a talented athlete. Society rewards the talent with coaching, dietary advice, material support and competitive testing, thus greatly enhancing the raw talent, especially by comparison with the norm that goes unrewarded.

And something like the opposite takes place, Flynn posits, if you start with an environmental

disadvantage. 'If you go into a school where the kids have a mean average [IQ] of 95,' he told the Manhattan Institute, 'kids who want to be above average don't have to shoot as high if you're surrounded by kids with a 95 IQ as [compared with] a 100 IQ.'

On the phone, Flynn characterises the problem in slightly different language. 'I think there are many aspects of black culture that emphasise utilitarian skills. And it had better as well because typically young black men face more immediate problems of survival.'

In the debate, Murray challenged Flynn's proposition by comparing the IQ and educational data. The IQ gap remained roughly the same in favour of whites, even in circumstances of apparent economic and educational parity.

Flynn, however, rejected the notion that there was an equality of environment in Murray's example because, in short, he said there was less priority given to mental discipline in black households. Furthermore, drawing on the work of the Harvard sociologist Orlando Patterson (who happens to be black), Flynn stated: 'In black teenage culture there is seemingly a much greater emphasis on dressing sharp, having money, being in shopping malls and speaking an atypical brand of English. Now I can't see that any of these things would be helpful in terms of an enriched cognitive environment.'

This kind of analysis, of course, shows what a minefield IQ has become. In countering Murray's racial determinism, Flynn would earn the title of 'racist' in many fields of academia. Once the simplistic nature argument is rejected, it leaves you with nurture. To look at environment, necessitates an assessment of culture, which can lead to some unpopular conclusions. Thus the study of IQ occupies territory that many scientists prefer to avoid. Flynn has little time for sensitive evasions. 'The answer is to grow up,' he says, 'follow the evidence wherever it leads, and acknowledge that reality never extracts as heavy a price as ignorance of reality.'

In this respect, it's worth remembering that the key findings behind the Flynn effect are not in dispute: IQ has been going up. But that does seem to call into question the very notion of innate, hereditary intelligence. For if IQ is simply handed down the generations, how is it that IQ scores rose so rapidly in the last century?

Stephen Jay Gould, the late zoology professor at Harvard, wrote a riposte to *The Bell Curve* in the 1996 edition of his 1981 book *The Mismeasure of Man*, declaring, 'the theory of unitary, innate, linearly rankable intelligence' to be full of 'fallacies'. The often-heard version of this criticism, much like Shayer's comment, is that psychometric intelligence testing only measures the ability to perform psychometric intelligence tests.

In any case, the steep rise in IQ would seem to lend weight to the idea that IQ does not evaluate some objective totality of intelligence but rather a cultural definition loaded towards the kind of abstract thinking that forms the basis of everyday life in post-industrial societies. In which case a discrepancy between Africa and the West, or poor and rich (or its too frequent manifestation, black and white), or working class and middle class, is effectively built in to the system. As the writer Malcolm Gladwell put it, IQ 'measures not so much how smart we are as how modern we are'. Or the fact that the social system produces winners and losers in an entirely predictable manner.