

Out-Dated Prophets still profit from the “Nature Vs Nurture” debate

A number of books have appeared recently in the USA and the UK purporting to explain the development of talent and excellence in the sporting and business environments. A common feature of these books is that they are written by journalists, who attempt to deal with complex scientific concepts.

Four of the most popular are: **Talent is Over-rated** by Geoff Colvin (Nicholas Brearley 2008); **The Talent Code** by Daniel Coyle (Random House Books 2009); “Outliers” by Malcolm Gladwell (Little Brown & Co 2008) and **Bounce** by Matthew Syed (Harper Perennial 2010).

The common message of these books is that to achieve excellence in a chosen field, all that is needed is hard work and the correct - so-called **deliberate** - type of practice. The books all suggest that talent is not innate.

Through a basic misunderstanding of science, all four books re-open the false dichotomy of the nature versus nature debate. The authors present stories in order to support their cases but repeatedly confuse correlation with causation.

The books’ messages appeal simultaneously to two opposing ideals: one of the largely American free-market right, who profess that whatever a person’s social and economic circumstances, he or she can get to the top in society through hard work; the other, the liberal left tradition that all individuals are born equal with a **blank slate** that is then molded by society (the environment). One review of Bounce describes it as **banalities for egalitarians** with good reason.

Ordinarily, the topics contained in popular literature would be largely of no concern to the coaching and sports science fraternities, but this is different. These books are increasingly described in reviews as if they were scientific masterpieces on sporting performance and talent development.

First, the general message that talent is not innate, **not in the genes , not genetic**. All the authors suggest that those they perceive as being on the “nature” side of the debate believe that there are **genes for sport** and that a person is born with this immutable advantage. Nothing could be further from the truth; none of the geneticists quoted in their books believes this to be true and to suggest otherwise is the most simplistic form of reductionism.

But I am of course not suggesting that small genetic units work in isolation from each other, any more than a chemist thinks that atoms do. (Dawkins R. The Extended Phenotype Oxford 1982 p113)

The authors also variously describe DNA as being a **blueprint**, but geneticists don’t believe this to be the case (The blueprint myth is dealt with adequately by Dawkins in The Greatest Show on Earth, chapter 8).

There are approximately 30,000 genes in the human genome. These genes interact with each other and both the cellular and external environment from conception to death. This process is very fluid and some genes switch on or off other genes,

depending upon certain environmental conditions; we are certainly not born with a blueprint that remains fixed for the rest of our lives.

There are, however, relationships between certain genes and many human conditions, including certain diseases; I.Q.; grip strength; VO2max, willingness to train. Some of these can be related to single genes and others not as yet identified but whose heritability is verified through twin studies. To deny this as the authors do, is to deny science in the same way that creationists deny evolution or homeopaths deny chemistry. What is also very damaging is that genetic mapping is only in its infancy having previously concerned itself with what is known as single nucleotide polymorphisms which is a bit like looking for a needle in a haystack, whereas now we are entering the start of **genome wide mapping**, which will aim to identify correlations and possible causes across a whole range of human expressions. Adopting the **not in our genes** stance within sport would retard scientific advancement in the areas of talent identification, development and injury prevention.

The books themselves contain errors:

Here is what Professor Steven Pinker says about Gladwell's *Outliers*: "The reasoning in "Outliers," which consists of cherry-picked anecdotes, post-hoc sophistry and false dichotomies, had me gnawing on my Kindle. Gladwell frequently holds forth about statistics and psychology, and his lack of technical grounding in these subjects can be jarring. He provides misleading definitions of **homology**, **sagittal plane** and **power law** and quotes an expert speaking about an **igon value** (that's eigen value, a basic concept in linear algebra). In the spirit of Gladwell, who likes to give portentous names to his aperçus, I will call this the Igon Value Problem: when a writer's education on a topic consists in interviewing an expert, he is apt to offer generalizations that are banal, obtuse or flat wrong."

The common thread in Gladwell's writing is a kind of populism, which seeks to undermine the ideals of talent, intelligence and analytical prowess in favor of luck, opportunity, experience and intuition. Unfortunately he wildly overstates his empirical case. It is simply not true that a quarterback's rank in the draft is uncorrelated with his success in the pros, that cognitive skills don't predict a teacher's effectiveness, that intelligence scores are poorly related to job performance or (the major claim in **Outliers**) that above a minimum I.Q. of 120, higher intelligence does not bring greater intellectual achievements.

(Gladwell responded in the New York Times (SW) and the stats dept of the NFL intervened – and sided with Pinker)

Talent is Over-rated is the least reductionist and dogmatic of the books, and on p81 the author says: "...but practice proponents do not dispute the possibilities that genes could play a role in a person's willingness to put himself through the extremely rigorous demands.. "

In chapter 11 he refers to: '*an intrinsic drive working alongside extrinsic forces and practice*' (i.e. nature and nurture).

He also admits on p196 that many things remain a mystery, but he still makes many basic scientific errors e.g.

“Since talent is by definition innate, there should be a gene for it... scientists could yet find the piano playing gene or investing gene or accounting gene.....
....genetic changes which take thousands of years.”

Genetic changes do not take thousands of years; they happen every generation. This is discussed in Dawkin’s “Greatest Show on Earth”

When talking about mainly sporting potential, Colvin states: “..clear evidence that such non-physical (by this he means **anthropometric** SW) constraints exist has not been found so far ...”

This simply is not true, since there is evidence for example of differences in inherited VO2 max potential.

There is also a theme common to all books of picking an isolated paper and printing its findings as fact. Colvin refers to a paper **A day at the races** from 1986 and treats the results as fact. This paper was criticised and the results dismissed the following year in the same journal and again by different authors in the same journal in 1988.

He later states: ” but it’s important to note that advocates of the deliberate practice framework have never excluded the possibility of a genetic role in high performance. Their stance has been that they have not seen the evidence supporting it.”

As Matt Ridley says about personality: “ Indeed, given that twin studies could find almost no effect of shared environment on personality, the genetic hypothesis should actually be the null hypothesis; the burden of proof was on nurture. If a socialization study did not control for genes, it proved nothing at all. Yet socialization researchers went on year after year publishing these correlations without even paying lip-service to the alternative genetic theory “

The Talent Code

The book is largely about myelination i.e. the laying down of myelin (white matter) in the neural pathway via extended practice. What is not mentioned is that this process is highly heritable.

The author describes the birth order of 100-metre world record holders and attributes success to chasing siblings, which myelinated their sprinting neurons. At least one of the men in the list did not grow up with his siblings and another’s birth order is simply wrong.

The Spartak tennis club in Russia that he writes about screens kids at five years old and they continue to screen them and remove them from the program at every stage if they are not up to par. Any population that starts pre-screened cannot purport to demonstrate that everybody and anybody can become excellent.’ For the last century and a half, we’ve understood talent through a Darwin inspired model of

genes and environment....Since Darwin the traditional way of thinking about talent has gone something like this: genes...'

This shows complete ignorance of the facts, since Darwin knew nothing of genes.

Bounce

Bounce contains factual inaccuracies e.g. the claim on p242 that sickle cell anaemia does not just affect "black" people is plain wrong (see S. Jones, **Language of the Genes** p219-220). The author suggests that geneticists Yannis Pitsiladis and Daniel MacArthur are of the opinion that genes have no role to play in athletic talent development when what their research papers reveal is the opposite. On p59, he writes: "there is no evidence at the moment for differences in innate specific capacities for mathematics."

There are a number of published papers showing this statement to be wrong. The same is true of the genetic component in children's reading, IQ, VO2 max, response of muscles to training, inclination to train, response to endurance training and so on. This is part of Syed's denial of genetic influences against all the available and growing body of evidence.

For Simon Worsnop's detailed critique of Bounce, see [The Rugby Edge Journal Coaching Journal on rfu.com](#).

For a comprehensive overview of the false dichotomy between nature and nurture, see Matt Ridley's "Nature via Nurture" (Harper Perennial 2004)

For an accessible book on evolution and genetics, see Richard Dawkins' **Greatest Show On Earth** (Bantam Press; First U.K. Edition edition (3 Sep 2009)

For an accessible book on genetics, see Steve Jones **Language of the Genes** (Flamingo; New Ed edition (14 Mar 1994)

For a review paper, see Keith David's and Joseph Baker's **Genes, Environment and Sport Performance – Why the Nature-Nurture Dualism is no Longer Relevant** Sports Medicine 2007:37 (11)

For a magazine article, read David Epstein's **Sports Genes**, Sports Illustrated May 2010

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Simon Worsnop