A Farewell to Alms: A Brief Economic History of the World

Gregory Clark (2007). Princeton: Princeton University Press, 418 pp., US$29.95, ISBN 978 0 691 12135 2

Reviewed by Hiram Caton, Griffith University, Australia

Economics arranges its topics as Big, Medium, and Small. Mr Big is the Industrial Revolution: How did it happen, and when? Whence did it spread, and at what rate? What were the costs and benefits? The literature is vast and the answers are numerous. But it organizes around a fundamental phenomenon: from about 1800, economic growth began an upward climb that in fifty years captured the world's purse and that in another half century had increased the wealth of industrial nations many times. Intoxication with this achievement is expressed in museums of science and industry and on websites featuring the Paris Exhibition of 1889 and the Chicago Exhibition of 1893.

We live in the wake of another century of exponential growth (despite the massive destruction of two world wars), and daily encounter comment on what makes it work, including doomsday speculation that it's about to stop working.

Gregory Clark's *Farewell to Alms* sets out his version of a new explanation developed over the past decade or so by a cadre of economists. One element of its novelty is the evolutionary premise identified in the opening chapter, A Sixteen-Page Economic History of the World. Sixteen pages?! The audacity charms some, while others growl. But let's see what he says.

> ... The basic outline of world economic history is surprisingly simple. Indeed it can be summarized in one diagram: figure 1.1. Before 1800 income per person ... varied across societies and epochs. But there was no upward trend. A simple but powerful mechanism explained in this book, the *Malthusian Trap*, ensured that short-term gains in income through technological advances were inevitably lost through population growth' (p. 1).

Figure 1.1 plots income variation from 1000 BC to the present. It shows small variation around subsistence income until 1800, when the rise begins, culminating in a twelvefold increase by the year 2000. The Industrial Revolution, we learn, is the second of two economic transitions, the first being the establishment of agricultural subsistence and urban life in the Neolithic. The relics of antiquity impose an awed appreciation of those achievements. It was a giant step up from what ancient civilizations disparaged as 'barbarism'. I mention this ordinary appreciation because Clark and his school deny it. He claims that Neolithic civilization was not an improvement on hunter–gatherer or tribal existence and indeed imposed hardships and risks, including malnutrition and disease, from which the 'savages' were free. Those splendid relics were luxuries enjoyed by small elites, whereas the life of the 'average person' before 1800 was 'no better than ancestors of the Paleolithic or Neolithic' (p. 5). Clark cites with approval Jared Diamond's endorsement of this view. Diamond believes that the transition to agriculture was 'the worst mistake in human history'.

This disparagement is more than a value judgment. It's ingredient to Clark's version of his evolutionary premise that until 1800 economic activity was caught in the 'Malthusian trap'. The Rev. Thomas Malthus wrote his *Essay on the Principle of Population* (1798) as a rebuttal to fervent belief in the coming utopia. He argued that abundance of goods promotes reproduction, but population increases exponentially, whereas food production increases only arithmetically. Accordingly, the human condition oscillates between prosperity and austerity. Austerity eliminates unsustainable numbers by war, famine, violence, infanticide, and sexual abstinence. The swing to prosperity follows when a diminished population is once again able to feed itself and imagine new horizons. Malthus had his eye on negatives. At that time there were some 2000 workhouses in England and Wales housing over 100,000 aged and infirm paupers, plus a system of relief for the able-bodied unemployed or low-paid workers. Curiously, Malthus took no position on the much debated Poor Law, but his logic was used to argue that poor relief should be made unpalatable, to discourage free-riders. It is a pity that Clark doesn't discuss this question.

Once we have Malthus, Darwin isn't far behind. Clark argues that selection pressure generated 'survival of the richest', meaning that 'economic success translated powerfully into reproductive success. The richest men had twice as many surviving children at death as the poorest. The poorest in Malthusian England had so few surviving children that their families were dying out' (p. 7). This created 'downward social mobility' among the offspring of the richest. 'Craftsmen's sons became laborers, merchants' sons petty traders, large landowners' sons smallholders. The attributes that would ensure economic dynamism — patience, hard work, ingenuity, innovativeness, education — were thus spreading biologically throughout the population'.

This analysis is based on the author's study of 2731 wills in England dating from 1250 to 1650. Most (2210) are rural; there are 344

from towns and 177 from London. Here are some findings:

- Sons strongly prevail over daughters in the share of wealth.
- Among farm laborers, birth rates barely exceeded death rates, but for high-income testators, the birth rate is 2.92 for rurals, 2.39 for townsmen, and 1.96 for Londoners.
- The sons of prosperous testators also accumulated wealth even though their bequest was small (owing to division among numerous sons).
- Bequests outside the immediate family were very limited (1%–3%), suggesting strong inclusive fitness.

A missing element in Clark's data is information about how the more affluent acquired their wealth, how their prosperous sons acquired wealth, and, perhaps most critical of all, what proportion of offspring, over generations, fell among the poor. Without this information, the data provide little evidence for his contention that the traits ascribed of the Industrial Revolution's makers — patience, hard work, innovation — were due to genotype. He offers indirect evidence by comparing stable agrarian England with death rates among six contemporary hunter-gatherers and foraging societies (p. 124ff). He shows that among them high death rates flow from violence to optimize reproductive advantage (the studies of Napoleon Chagnon, Laura Betzig and others are presumably meant). The homicide rate in England from 1250 to the present is, by contrast, very low. This finding contradicts Clark's earlier claim that the life of the average person before 1800 was 'no better than ancestors of the Paleolithic or Neolithic'.

Let us assume that Clark's evidence establishes the plausibility of a hard work genotype in England. What about populations elsewhere that also industrialized? If they didn't have the genotype, his central thesis fails. Clark does not address this issue, apart from speculations as to why the Chinese and Japanese didn't industrialize. The gap has been filled by one of his supporters. The Leipzig geneticist–historian Volkmar Weiss reports that the German Central Office for Genealogy has records of the fertility and descent of large populations of central and northern Europe that show the same patterns that Clark found in England (www.volkmarweiss.de).

The propensity to hard work goes by the popular name, the Protestant Ethic. Max Weber's elucidation is that Protestant defiance of royal and ecclesiastical domination entrenched a potent individualism whose code of selfhood committed the convert to dedicated self-control ('entrepreneurship of the self', as some call it). Clark cannot invoke this tradition since he requires medieval 'protestants'. Weber's critics have found the ethic's traits among medievals. Let me briefly invoke two examples that underline the cultural origin of the type and that support an argument I shall shortly make. The first example is the Society of Jesus, or Jesuits. Founded in 1540 as an elect order dedicated to opposing the Reformation, the Jesuits imposed severe self-discipline on their novitiates, which included unreserved commitment to their order and to the Pope. The order quickly established missionary stations from Paraguay to Beijing. They established control of Catholic education throughout Europe and they were influential in royal courts. And then there was money: within a century of their founding, the Jesuits had amassed great wealth and continued to accumulate it until their Papal suppression in 1773 because monarchs found their arrogance to be intolerable. The other example is the Janissaries, an elite military and political corps founded in 1361 by Sultan Murad I. Candidates were picked at an early age and were subjected to all-sided training, including learning a trade. Failure to meet the demanding standards meant dismissal. Marriage was not allowed because it interfered with total dedication to the Sultan. They were the first military unit to be equipped with muskets, cannon, and grenades and their military prowess expanded the Ottoman empire. Jesuits and Janissaries were drawn from many populations and hence had no common ethnic genotype.

That elite corps can be composed in this manner is common knowledge: it is a selection process of long-standing. There are also voluntary processes that assemble the like-minded in a common enterprise. They played an important role in bringing the Industrial Revolution on stream, as I have detailed in my study, *The Politics of Progress: The Origins and Development of the Commercial Republic, 1600–1835*. Let me mention one — the Lunar Society of Birmingham, composed of a dozen or so budding industrialists, investors, and scientists dedicated to advancing manufacturing technologies. James Watt and his partner Matthew Boulton were members. They owned Boulton, Watt & Co, a company that developed the applied science and manufacturing skills needed to improve steam engines. The engines convert steam's heat energy to mechanical work. The first commercial steam engine, introduced in 1712, was used to pump water from mines. Watt however incorporated the newly discovered physics of 'latent heat' into his engine design. By 1800, the firm had sold nearly 451 engines, producing a total 11,251 horsepower. Most were used in textile factories, which even then were extensively 'automated'. By 1825, Britain had an estimated 150,000 horsepower in fixed engines, representing a capital value of £10 million — five times the total British fixed capital a century previous. Fixed and mobile engine power at that time was equivalent to about 5 billion man-hours per day.

The momentous benefits of Watt's engine were appreciated by his contemporaries. One admirer, Lord Jeffery, stated at a memorial for Watt:

> 'The steam engine has increased indefinitely the mass of human comforts, and rendered cheap and accessible, all over the world, the materials of wealth and prosperity. It has armed the feeble hand of man … with a power to which no limits can be assigned … and laid a sure foundation for all those future miracles of mechanic power which are to aid and reward the labours of after generations.'

The Malthusian trap had been dissipated not by commerce as such, or factory production, but by a machine that created the equivalent of an immense labor force operable 24 hours a day. Let me return to the Jesuits and Janissaries. These organizations, relatively small in numbers, vastly 'outproduced' other religious and military orders. They show that a key variable in economics, average

output per worker, is a fragile measure because averages delete the exceptional, and the exceptional is sometimes decisive. Clark's extensive attention to technological innovation is alas inattentive to investigation of natural processes that gave rise to the telegraph, the light bulb, the internal combustion engine, plastics, and countless other industrial products. His oversight is so entire that he doesn't review economic data on the steam engine as the prime mover of the industrial revolution's first phase.

Manipulating natural processes is the key to the Industrial Revolution. The steam engine embodies this process because it utilized improvements in numerous technologies, such as iron smelting and metal working, but above all gave the world the first version of controlled use of enormous power. What then is the implication for Clark's central thesis that the Industrial Revolution arose from a work ethic genotype? The exciting investigations of Bryan Sykes on British genealogical genotypes (mtDNA haplogroups) is one area of a growing map of the world-wide distribution of human reproductive groups over the past 50,000 years. One might even imagine compiling a haplogroups database of individuals who substantially contributed to the Industrial Revolution. But since such data cannot as yet be interpreted for behavioral traits, the exercise would provide no evidence for Clark's thesis.

Behavioral Genetics (5th edition)

Robert Plomin, John C. DeFries, Gerald E. McClearn, Peter McGuffin. (2008). Worth Publishers, New York, 505 pp., US$115.95, ISBN 10 1 4292 0577 6

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The purpose of *Behavioral Genetics* 5th edition (BG) is to cover the knowns and unknowns of behavior genetics, conveying the excitement of the field, its prospects, and something of the methods. Like the important *American Psychologist* (AP) paper 'Intelligence: Knowns and Unknowns' (Neisser et al., 1996), BG is designed to convey a consensus, in this case across fields as diverse as autism and xenophobia. Establishing and communicating this consensus is especially important for behavior genetics when many students are relatively unaware of the existence of biological differences. To meet this bold purpose the book needs to be accessible to those new to genetics while remaining accurate, and this goal is met admirably. The text is suffused with a calm and even handed approach that allows it to address its pedagogical task far better than most texts. It has been honed across the decades, including a complete rewrite (3rd edition), and, now, two rounds of fine-tuning. This polish pays off: the book reads very well, is well indexed, and integrated.

Core topics are addressed in several places, reinforcing common themes and ensuring that those dipping into one section will gain a sense of context and the relationship of one finding to others. Information is presented in multiple forms: graphically, in textual descriptions, statistical tabulations, and even anecdotal presentations and insider-glimpses to the research process — all crafted to communicate the research and enable the reader to come to an informed decision. The book also uses autobiographical sidebars and photos of researchers. Those who have been in the field for a number of years will appreciate the varying dates of these pictures, forming as they do a family photo album for behavior genetics. Neither is this mere nostalgia: many in the social sciences are used to learning material through its history, past and present, and again, the pedagogical model of accurate presentation of material in compelling formats is enhanced. If the primary strength of BG lies in its virtues of prudent and temperate communication of the consensus, then in these sketches we can glimpse the fortitude that many in the field have displayed in winning this nascent status.

In study after study, BG makes clear how much of what is known about behavior has flowed from behavioral genetic studies, and how these studies continue to do much of the heavy lifting in parsing behavior into its component parts, often in extremely sophisticated ways, thanks especially to the developers of long-term twin and adoption studies, and the wider use of software such as *Mx* (Neale et al., 2002). If nothing else, BG helps dispel the notion that heritability can be disposed of now that the real genes are known, and a brief glance at the frequency of pseudo-functional gene names such as *KIBRA* (Kidney and Brain) and the ubiquitous KIAA genes of unknown function reminds us that we do not yet understand our genome.

Much has changed in this field since the last edition in 2000, in both the behavioral and molecular fronts. Organisms like the zebrafish that at the time of the 4th edition were 'likely to be next vertebrate after the mouse to be sequenced' now litter the past covers of *Nature* and *Science*. Exciting latent ideas such as a map of the more common variants of the genome have been realized and are accessible for anyone with a web-browser, as well as other advances in assessing copy number variants and the advent of cheap Single nucleotide polymorphisms (SNP) testing and SNPchips