

The Market for Ideas and the Great Enrichment

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Joel Mokyr,
Departments of Economics and History
Northwestern University
Berglas School of of Economics,
Tel Aviv University
J-Mokyr@northwestern.edu

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Introduction

The term “Great Enrichment” proposed by McCloskey (2016, p. 5) strikes me as a better term to describe the hockeystick-like time series of income and living standards after 1800 than the “Great Divergence” proposed by Pomeranz (2000), since the latter is a statement about *relative* income between the West and the Rest, whereas “enrichment” points to the world-wide increase in every measure of living standards than one can think of. What counts is material improvement, which is what economics is all about. The gap that opened up after 1800 between rich and poor countries is of course a major issue in global history, and has had profound implications. But what drove that divergence were the unprecedented events that started in western Europe in the eighteenth century and that started the ball rolling — and rolling it still is. The economies that fell behind the West in the nineteenth century have experienced dramatic improvements in absolute terms as well, even if the gap is still as gaping as ever. Yet if poverty is now declining world-wide, the “deep” reason is the growth of what Europeans called “the useful arts” or “useful knowledge.”

Why did this process start in Europe? The same question was already asked at the time. In an interesting (and widely cited) passage, Dr. Samuel Johnson’s fictional Abyssinian prince Rasselas asked his philosopher friend “by what means are the Europeans thus powerful; or why, since they can so easily visit Asia and Africa for trade or conquest, cannot the Asiatics and Africans invade their coasts, plant colonies in their ports... the same winds that carry them back would bring us

thither.” The answer that was provided would horrify ideologically pure historians of capitalism: “they are more powerful than we, sir, because they are wiser; knowledge will always predominate over ignorance. But why their knowledge is more than ours I know not” (Johnson, 1759, Vol. 1, p. 74). Yet this question is not unanswerable; by 1750, surely, Europeans knew more than non-Europeans about subjects that affected or would soon affect living standards. We can actually make some progress as to why this might have been the case. The summary of the explanation is differences not in “wisdom,” as Johnson’s philosopher surmised, but in culture and institutions, and the way they coevolved.

Culture.

One of the most striking phenomena in cultural beliefs is the widespread persuasion that earlier generations, for some reason, were wiser than the present. A famous dictum from the Jewish *Chazal* (earlier sages) has it that “if those who were before us (*rishonim*) were like angels, we are but men; and if those who were before us were like men, we are but asses” (Sabbath, 112, see [www.yeshiva.org.il/wiki/index.php?title= “chazal’s authority in the determination of the halacha”](http://www.yeshiva.org.il/wiki/index.php?title=chazal's%20authority%20in%20the%20determination%20of%20the%20halacha)). This was not, in its basic outlook, inherently different from the attitudes to the founding intellectuals of Chinese philosophy Confucius, Mencius, and Xunzi, and that of Moslems for the Quran and the *hadith* (sayings attributed to the prophet Muhammad compiled in the 8th and 9th centuries). This veneration for ancient knowledge has had a distinct dampening effect on the ability of society to experience knowledge progress, since it imposed constraints on what new knowledge was and was not permissible. It created a rigid box, and thinking outside that box could entail accusations of heresy. As Carl Becker noted in a classic work written in the early 1930s, “a Philosopher could not

grasp the modern idea of progress ... until he was willing to abandon ancestor worship, until he analyzed away his inferiority complex toward the past, and realized that his own generation was superior to any yet known” (Becker, 1932, p. 131).

One of the most dramatic developments in Europe’s cultural life after 1500 was the slow but inexorable melting away of this inferiority complex. In the late Middle Ages a powerful orthodoxy had been established that merged Christianity with Aristotelian philosophy and classical science, the monumental life work of Thomas Aquinas. Yet after 1450, small cracks in this structure started to emerge, and in the next centuries it showed serious signs of weakening. In the middle of the sixteenth century, the French philosopher Pierre de la Ramée (1515-1572) already wrote freely “on the errors of Aristotle” and by the early seventeenth century Francis Bacon insolently wrote that “[the Greek writers of science] certainly do have a characteristic of the child: the readiness to talk with the inability to produce anything; for their wisdom seems wordy and barren of works” (Bacon [1620] 2000, aphorism 121, p. 59).

By the late seventeenth century, at the dawn of the Enlightenment, European intellectual commitment to the science of the ancients was largely gone. The slogan of the Royal Society, *nullius in verba* (on nobody’s word) could well have been applied to the totality of European intellectual life. True, in the late seventeenth century both France and England witnessed a *querelle des anciens en des modernes* — a battle between the ancients and the moderns (Levine, 1981, 1991; Lecoq, 2001). But any notion that this battle ended in a draw as Swift implied in his priceless parody of the debate (Swift, [1704], 1753, p. 170) is mistaken: by the late seventeenth century Newton and his contemporaries had hammered the last nail in the coffin of ancient physical science.

To what can we attribute this rather unique cultural turn? One of them is rather obvious: from the late fifteenth century on Europeans were repeatedly confronted with discoveries that contradicted the received wisdom of the ancients, making classical science continuously lose credibility. In part this was due to the great voyages, which showed that the earth was not what Aristotle and Ptolemy had described. New scientific instruments and tools, new mathematical tools such as analytic geometry and infinitesimal calculus were not available to classical philosophers, underlined the superiority of the moderns who rightfully argued that they could observe things that the ancients could not.

Yet all those discoveries would not have been effective in overthrowing the classical orthodoxy had it not been for an environment in which intellectual innovation was rewarded and incentivized on the one hand, and could not be effectively suppressed by conservatives and vested interests on the other. A new set of institutions encouraged out-of-the-box thinking. Like every market, the market for ideas needed an institutional foundation that set the basic rules of the game and allowed it to function effectively.

The sixteenth- and seventeenth-century market for ideas in early modern Europe consisted of a demand side derived primarily from patronage that was offered to the most successful intellectual innovators. Success was measured by reputation — mostly created by peers who were in the best position to evaluate scientific work (Dasgupta and David, 1994). Reputation correlated with financial security and social standing. University appointments, then as now, were an important component of patronage for intellectuals, and the desire for a secure and comfortable income (if not riches) was a main driver of scholarly efforts. But such patronage could also be found in the courts of the nobility and royalty. Some of those court appointments are well-known, such as the Grand

Duke of Florence who employed Galileo as the court scientist, and that of the Habsburg Emperor Rudolf II in Prague, who employed not only the great astronomers Brahe and Kepler, but also scholars like Carolus Clusius, né Charles de l'Écluse (1526–1609). Many lesser rulers and wealthy nobles similarly extended patronage to leading scholars.

The demand for scholars had also pragmatic aspects. Many of the most successful scholars in early modern Europe had been trained as physicians and were employed in that capacity by their patrons. Mathematicians and physicists could help with military matters: Galileo, while still working in Padua, freelanced for the Venetian arsenal and invented a geometric and military compass (used for gunnery), as well as other militarily useful devices. Others were employed as tutors, most famously René Descartes at the court of Queen Christina of Sweden. Still others were political counselors, even if their mathematical and philosophical skills did not always match their political insights, as was the case with Leibniz, an advisor to the Duke of Brunswick. In all of those cases, reputations — as established through publication and correspondence with peers — were decisive.

On the supply side competition was equally fierce. Intellectuals shamelessly pandered to wealthy patrons, dedicating their books to them and writing fawning prefaces thanking their benefactors. Being a member of a court provided security and protection, but also involved a rise in social standing. For scientists and artists to be recognized by figures of high social standing and power mattered because such recognition conveyed respectability in an age in which outside the scholarly community “whom you knew” conveyed as much social prestige as “how much you owned” (Hahn, 1990, p. 7).

What made this market work, and what drove the culture and attitude of European intellectuals, was an underlying institution that set the rules of the scholarly game that were accepted

by the vast majority of participants. This was not a formal, state-run institution but a virtual international network of scholars who shared interests and scholarly ambitions. Known to its members as the “Republic of Letters,” it served as a clearinghouse for scholarly work written in Europe and thus created a mechanism to evaluate any kind of intellectual innovation. The vast bulk of the intellectual innovators recognized by posterity as having made major contributions to science were already world-famous superstars in their own time, no one more so than Newton himself. The Republic of Letters ensured the emergence of open science, since keeping discoveries a secret would do little for a scholar’s reputation. It surely is true that scientific knowledge that is kept secret can hardly contribute to economic progress, and that the emergence of open science was the critical development of the age (David, 2008). But it is only in a community that is both competitive and collaborative — such as is the case in a comparatively free market for ideas — that genuine progress was achieved and that the knowledge-foundation (or the epistemic base) of the techniques that drove the Great Enrichment was laid. To be sure, not everyone who desired peer recognition did so for financial reasons. Robert Boyle was one of the richest men in England, but this did not stop him from getting annoyed by people using his work without attribution (Shapin, 1994, p. 183; Hunter, 2009, p. 190).

In this competitive environment, the paralyzing respect for classical learning had little chance of surviving despite stubborn rear-guard actions by conservative writers defending the “ancients.” The most desirable sign of success was *influence*, that is, success in persuading others of the merits of a new idea or theory. Such influence depended on the rhetorical rules of science determined (if informally) by the Republic of Letters. Persuasion increasingly turned from exegesizing classical authorities to observations, experiments, and logic (including mathematics). Such transitions were

very gradual, and even when ancient truths were overturned, it was often hard to abandon Aristotelian concepts. William Harvey, whose discovery of the circulation of the blood challenged fundamental physiological principles, still adhered as much as he could to Aristotelian methods (Cook, 2006, pp. 425-426). Yet even Aristotle's immense prestige in the end was not sufficient to save the ancients. Scientists, in their eagerness to impress one another (and indirectly those who would extend patronage to them), criticized the conventional wisdom, and if they only could, shot it to pieces. Intellectual property rights assumed the form of priority: the first person to enunciate a new idea received theoretically the credit for the new idea and the reputation effects of that credit. The system, of course, did not work perfectly, but it worked well enough to establish the reputation of dozens of intellectual superstars active in Europe in the years between Erasmus and Newton.

Progress occurred, but the new interpretations did not invariably offer what we would judge to be improvements on existing knowledge: the iconoclastic Swiss physician Paracelsus and his seventeenth century follower Jan-Baptist van Helmont dismissed Galenian medicine, but in retrospect it is hard to conclude that the iatrochemical school they established constituted a dramatic improvement in terms of its clinical outcomes. Similarly, the phlogiston theory proposed by German scientists in the late seventeenth century revised Greek chemical theory by replacing the four elements by a new set, one of which was phlogiston that flowed out of a material when it burned. Yet the transformation of chemistry in the age before the Industrial Revolution is emblematic of how the competitive market for ideas worked. When the experimental work of Lavoisier and his students later in the eighteenth century showed unequivocally that phlogiston theory was erroneous and inadequate, it was discarded.

Europe's spectacular intellectual progress between 1500 and 1700 paved the road for the subsequent prosperity it was to enjoy, as well as for its ability to dominate, colonize, and exploit other civilizations. Yet the success of its market for ideas in generating this progress was the result of neither design nor intent, but a classic "emergent property," the macro-level consequences of lower-level interactions. What made Europe the birthplace of the Great Enrichment was a unique set of circumstances. Europe was highly politically fragmented, with city states, and small duchies and bishoprics interspersing larger nation states. Fragmentation has often been credited as a key to Europe's success (see Jones, 1981, pp. 104-126 for a canonical statement).

Despite its awful cost in terms of warfare and bad mercantilist policies, the political fragmentation of Europe was indispensable for its intellectual development. The reactionary forces in Europe, who were the natural allies of the vested interests defending the ancients faced an almost impossible coordination problem. Much as the Jesuits, for instance, would have loved to suppress Copernican astronomy and infinitesimal mathematics (Alexander, 2014), they could not impose their will north of the Alps. Not all Catholics were conservatives, and not all conservatives were Catholics. But iconoclastic intellectuals moved on the seams between polities and religions and were often virtuosos in playing the great powers against one another. Suppressing non-conformists became almost impossible, as many scholars found it easy to circumvent censors by publishing their work abroad, and when necessary could move across the border, where their international reputations often meant a warm welcome and a nice pension. As a result, despite some local victories, the moderns decisively won the battle.

While European intellectual life was thus benefitting from fragmentation, it was able to maintain a much needed unity. The Republic of Letters created an intellectual institution that was

truly transnational and that ensured that every scholar catered to a continent-wide constituency. Edward Gibbon observed that the philosopher, unlike the patriot, was permitted to consider Europe as a single “great republic” in which the balance of power may continue to fluctuate and the prosperity of some nations “may be alternately exalted or depressed.” But this apprehension of a single “great republic” guaranteed a “general state of happiness, system of arts and laws and manners.” It “advantageously distinguished” Europe from other civilizations, he wrote (Gibbon, 1789, vol. 3, pp. 633–34).

The long-run benefits to the growth of knowledge were substantial. Above all, it undermined the centuries-old monopoly of the Church on the European market for ideas. By 1650 or so, intolerance was fading away and by the Age of Enlightenment persecution for heresy or apostasy had become little more than window-dressing in much of Europe. The market for ideas in Europe had become more free and more efficient than it had ever been before, and more so than anywhere else. And so it came to be that one of the great winners in this market was a belief in progress, not just economic progress but also social and political progress toward harmony and a better society. Much of the latter turned out to be illusory. The only one in which there can be little doubt that the improvement is real and demonstrable is economic growth. The attitudes and beliefs that prevailed in the early modern market for ideas created the historical phenomena that created the great Enrichment: the Scientific Revolution, the Enlightenment, and the Industrial Revolution. The greatest outcome, however, was the Great Enrichment.

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