

‘Physiocracy, Guillotines, and Antisemitism?’ Did economics emulate the wrong Enlightenment?

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Introduction.

In our book we have attempted to understand uneven development paying particular attention to the history of economic thought and its legacies. Thus, our work would be incomplete if we neglected the main economic theory of the French Enlightenment: Physiocracy. Stephen Pinker’s book *Enlightenment Now* (2018) has brought this period into focus again.

In our view this Enlightenment theory started the tradition that made it possible to base economic theory on far-fetched assumptions and still appear reasonable to the majority of people for a time. This was an approach that would make it possible to create theories tailor-made to fit the vested interests of specific economic groups: the interests of the *feudal landlords* during the Enlightenment, and of *financial capital* today.

Briefly we would also like to point to other problems with the French Enlightenment, which appears to be Pinker’s main reference point. In 1789 Joseph-Ignace Guillotin had the idea that would lead to a very efficient way of killing people during revolutionary France. In 1793-94 about 17.000 people – aged from 14 to 92 – were guillotined in France. Some 25 years earlier, the Italian Enlightenment scientist Cesare Beccaria in his 1764 book *On Crime and Punishment* had come up with a much better idea: prohibit torture and death penalty altogether. The different Italian version of the Enlightenment: that of Milan (see S. Reinert 2018) and that of Naples (with economists like Antonio Genovesi and jurist Geatano Filangeri) had approaches, values and contexts very different from the French version.¹

Antisemitism was an ugly part of the French Enlightenment. In his 1764 *Philosophical Dictionary* Voltaire addresses the Jews ‘you are calculating animals; try to be thinking animals’. In the 1770s the majority of contributors to the famous *Encyclopédie* ‘who were busy defending the civil rights of the black inhabitants of the Antilles, the Hurons of North America, or other tribes, forgot got to plead for the emancipation of their immediate neighbours, the Jews of France, and instead covered them with accusations and mockery’

¹ To his credit, Pinker approvingly cites Beccaria.

(Birnbaum 2017). On the other hand, Italy was one of the few countries at the time where Jews had no restrictions.

There is a direct connection between Physiocratic economic theory and the guillotine. What we could call ‘the crowning achievement’ of Physiocracy – the main economic theory of the French enlightenment – was the shortage of bread in Paris that became the direct cause of the outbreak of the French Revolution. Adam Smith (1776) tells us that it is not by the goodness of the baker that we get our daily bread, but because of the baker’s own self-interest. But in France in the 1770s more money could be made by moving grain (wheat) *out of the city*, and make money as prices went up, than by baking bread. In other words, in opposition to Adam Smith’s teachings, the logic of the market showed there was more money to be made by NOT baking bread. High prices and shortage of bread created increasing discontent in Paris, and the French Revolution broke out on July 14, 1789, the day news reached Paris that the last anti-physiocrat in power – Jacques Necker – had lost his job as Minister of Finance (Kaplan 2015). *Feudalism* and *financial speculation* were the two basic causes not only of the French Revolution but are still – in general – the two main institutions that prevent the growth of the real economy and a fair distribution of income.

Renaissance: The missing piece in the puzzle.

Some years ago, a young man known to both authors started studying economic history at the London School of Economics. He wrote home scandalized that LSE seemed to think that the history of civilization started with the Enlightenment, totally skipping the Renaissance.

We think he had a point. In Europe, the human mind was first liberated with the Renaissance. To Mediaeval minds all knowledge worth having was found in the Bible and in Aristoteles. An early philosopher and natural scientist, Franciscan monk Roger Bacon (c. 1214-1292), went outside these borders. Bacon extolled experimentation so ardently that he has sometimes been viewed as a harbinger of modern science, but was condemned to prison by his fellow Franciscans because of certain ‘suspected novelties’ in his teaching (Taylor 1914, II, 514-538). Bacon was an early forerunner of Renaissance values, representing practical inventions, but also what Thorsten Veblen centuries later would call ‘idle curiosity’.

Modern society started with the Renaissance, when neo-Platonist ideas from the Byzantine Empire reached Florence in the early 15th century. Mankind having been created in the image of God, their duty was to also be creative (Reinert & Daastøl 1987). As has been mentioned in the introduction to this book, the new respect for knowledge expressed itself in that the prestige that cities had previously won from stealing bodies of Saints – like Venice stealing the body of St. Mark from Alexandria in 828 AD – now came from stealing the bodies of important philosophers. The body of Georgios Gemistos Plethon (who died in Greece in 1452) can now be visited in Rimini.

One important point which distinguished the Renaissance was the interest in inventions, technical knowledge, and machinery. Two recent books raise this issue: *The Italian Renaissance of Machines* (Galuzzi 2020) and *Renaissance Invention* (Markey 2020). Leonardo da Vinci (1452-1518) produced not only fine paintings, but designed irrigation canals, a prototype tank, and a prototype flying machine (ornithopter). Techniques of

visualization and quantification also received a momentous impulse by Italian Renaissance (Crosby, 1996).

The brief entry on ‘technology’ in the *Encyclopaedia of the Enlightenment* (Delon 2002, pp. 1317-1323) informs us that few articles on technology in the paradigm-carrying *Encyclopédie* of the French Enlightenment cover technology. This was the forum where the Physiocrats presented their theories. Supporting the intuition of our young man at LSE, regarding technology the *Encyclopaedia of the Enlightenment* states ‘Indeed, most of the objects, systems and procedures represented in that work date back to earlier centuries, and some of them even figure in the notebooks and treatises of Renaissance engineers’ (p. 1317).

Technology, the key preoccupation of the Italian Renaissance, was marginal to the Enlightenment: ‘an age of humanity, an age of rapid material progress and social upheaval of which the Enlightenment had only offered a glimpse’. Physiocracy, a French economic theory that appeared shortly before 1760, argued for the primacy of agriculture as the only source of value. Adding value to raw materials using technology and machinery was seen as ‘sterile’: the theory was in practice ‘anti-technology’. In a large German volume on the Enlightenment (*Aufklärung*), eminent German economic historian Bertram Schefold jumps all the way to Charles Babbage (Babbage 1832) to find a good understanding of mechanization (Schefold 2012).

We think the young man at LSE had a point. The Renaissance was an important foundation for later human development. In the introduction to this volume, we see how German historian Leopold von Ranke (1795-1886) explains how progress and economic development came to a halt in Italy with the end of the Renaissance, and progress moved Northwards in Europe. Stephen Toulmin (1992) had perhaps a point when he devoted a full chapter of his *Cosmopolis* to the “17th century Counter-Renaissance”.

Alternative Enlightenments.

The core idea of this volume is to understand uneven development. From that point of view, it is important that, up to this point, economics had everywhere – from Ancient China to Ancient Greece and the Arab world – been part of the larger subject of philosophy. With the French Enlightenment the school of Physiocracy was born. As the first economic science with a narrow horizon and a completely arbitrary assumption at its core – the idea that only agriculture created value – economics changed into a science easily manipulated by vested interests. Similarly today, economics has arbitrarily stopped distinguishing between productive capital and potentially unproductive financial capital – between what you can buy for money and money itself – a distinction that was important from the Bible until Joseph Schumpeter. The result is the process of financialization: a relatively sharp increase in size and importance of a country's financial sector relative to its overall economy.

Economic theory during the French Enlightenment clearly favoured the vested interests of the feudal landlords, against what we could call the industrializing bourgeoisie. With a theory based on the completely arbitrary assumption that labour was void of any skills – negating the role knowledge plays – David Ricardo (1817) managed to ‘prove’ that the world would become richer if England specialized in being the only industrialized country in the world,

with the rest of the world supplying raw materials and buying their industrial products. All countries that are presently wealthy have, for long periods, disregarded David Ricardo's trade theory. The sad thing is that even now the recommendations of the World Bank and the International Monetary Fund are essentially based on Ricardo's trade theory, leaving still today a large part of the world population with a comparative advantage in being poor and ignorant. While new knowledge was the core of the Renaissance, Ricardo's trade theory represents its antithesis: the participants in his theory of trade possess no qualifications whatever. Not only that, Ricardo's theory of international trade – which is the main theory under today's capitalism – is curiously also void of capital.

Physiocracy is given disproportionately high coverage in the history of economic thought, it was carried out in practice only in two limited geographical areas outside France: in the Duchy of Baden-Baden in Germany and in Tuscany. Still, in Paul Samuelson's *Economics* – the textbook that formed economics for generations from 1948 onwards – key physiocrat Quesnay is one of the two lines directly inspiring Adam Smith, from whom Samuelson lets all later economics, including Marx, descend. (Samuelson 1976, inside back cover).

If Samuelson was the only information we had on the subject, we would have thought that Adam Smith was a follower of Physiocracy. That is not the case. A contemporary report on Physiocracy lists European economists into two categories, physiocrats and antiphysiocrats (Will 1782, 71-72). In England Adam Smith ends up on the side of the antiphysiocrats.

In Scotland – in contrast to France – the Enlightenment was characterized by a thoroughgoing empiricism and pragmatism aiming for improvement and virtue in society as a whole. No arbitrary assumptions like those of Physiocracy. Comparing Adam Smith to the other economists of the Scottish Enlightenment, we find he was much closer to liberalism than his Scottish contemporaries. Indeed, economists in the English-speaking periphery – Ireland, Scotland, and North America – tended to be protectionists rather than free traders (Reinert 2015). Two important economists of the Scottish Enlightenment – quasi-contemporaries of Adam Smith – who went against the teachings of Adam Smith are briefly discussed below.

The writings of the Edinburgh-born James Steuart (1713-1780) can probably be seen as the highest point of mercantilism, the theory which – empirically correctly even today – claimed that a country needed manufacturing in order to be wealthy. Steuart's two-volume work published in 1767, *An Inquiry into the Principles of Political Economy*, was the first to use the term political economy in a book title in English. Steuart's voluminous work was published in at least 10 editions, in English, German and French, before 1850.

Another important economist of the Scottish Enlightenment was the Earl of Lauderdale (James Maitland, the 8th Earl of Lauderdale (1759-1839)).² Lauderdale's *Inquiry into the Nature and Origin of Public Wealth* was published in Edinburgh in 1804,³ Adam Smith's most important quasi-contemporary in the United Kingdom. Noteworthy points where Lauderdale takes exception with Adam Smith are 1) economic growth owes much more to

² This is made clear in Neill, pp. 42-45.

³ A second revised edition appeared in 1819. Lauderdale possessed an impressive collection of books and pamphlets on economics subjects, now housed at Tokyo Keizai University Library.

the use of machinery than to the division of labour per se, 2) demand is much more important for economic growth than savings, i.e. Adam Smith's *parsimony*, and 3) a clear distinction between public and private wealth, where parsimony may make the latter grow, but not the former.⁴

Scottish economist James Anderson (1739-1808) is credited by Schumpeter (1954: 263) to be the first to see how economic growth is a result of what Schumpeter calls *historical increasing returns*: a combination of increasing returns and innovations. These are two distinctly different factors that are perfectly separable in theory but not in practice. Since Henry Ford's mass production technology was not available in the scale cars were previously built, the two factors in practice become inseparable.

German economic theory during the Enlightenment shows the exact opposite of the Physiocratic theory. In German Cameralism of the period we find a cult of manufacturing industry, not of agriculture. An important book by Johann Friedrich von Pfeiffer (1718-1787) carried the title *The Antiphysiocrat*: Thus attacking the ideological enemy head on. The rest of Europe tended to do as the Germans: supporting manufacturing rather than agriculture.

⁴ For a comparison of Lauderdale and Adam Smith, see Suguiyama, Chuhei, *Lauderdale's Notes on Adam Smith's Wealth of Nations*, London: Routledge, 1996. Suguiyama had access to Lauderdale's own copy of Adam Smith's *Wealth of Nations*.

Der
Antiphysocrat

oder
umständliche Untersuchung

des sogenannten
Physiocratischen Systems

vermög welchem eine allgemeine Freiheit, und
einzig Auflage, auf den reinen Ertrag der Grund-
stücke, die Glückseligkeit aller Staaten
ausmachen soll.

Von dem Verfasser des Lehrbegriffs sämtlicher Oekonomi-
scher- und Cameralwissenschaften.

*Cherchons la verité, mais d'un commun accord
Qui discute a raison, & qui dispute a tort.*

VOLTAIRE.

Frankfurt am Main,
im Verlag der Eßlingerischen Buchhandlung,

1 7 8 0.

Figure 1: Antiphysocracy was the idea that won the day in terms of practical policy during the Enlightenment.

We should also briefly mention the Spanish Enlightenment, which shows us an example of experience-based economics winning over vested interests. At the time the Spanish economy was relatively backward, with the power vested in the same feudal interest as in France. The inflow of gold and silver from the New World had led to de-industrialization and inflation. The economic decadence of Spain did not occur for lack of competent economic advice from its native economists, says the main authority on the subject, Earl Hamilton, rather the authorities were not keen on listening to their advice (Hamilton 1932 & 1935).

The writings of Spanish economist Gerónimo de Uztáriz (1670-1732) were inspired by his military career of almost 20 years in Holland, which was under Spain until 1714. Uztáriz attended the Royal Academy at Brussels and served in the Low Countries both during his military service and later as captain in the infantry, before becoming Prime Minister to the Spanish viceroy of Sicily in 1705 (Hamilton 1935 & Reyes 1999). His main work was the influential *Teórica y practica de comercio y de marina* (1724/1751). The work contains many references to the wealth of the Dutch Republic, and advice as to create a similar economic structure – with manufacturing – in Spain. Lacking official approval, the first edition had a very limited edition.

Also with Uztáriz we can observe how ideas travelled in Europe at the time. His book was translated into English, French and Italian. Uztáriz' first publication was the foreword to the 1717 Spanish translation of Huet's *Commerce de Hollande*. Uztáriz' conclusion is in line with the contemporary mainstream, completely the opposite of the later Physiocracy outside France: '[Manufactures] is a mine more fruitful of gain, riches, and plenty, than those of Potosí',⁵ and he presents a long list of policy measures aimed at making the Spanish economy more like that of the Dutch Republic. To our point about the Renaissance vs. Enlightenment: While Uztáriz clearly wrote during the period we normally call Enlightenment, one of his biographers (Wilson 1978) refers to him creating 'an intellectual foundation for the Spanish Renaissance'. Renaissance being any period when technology and manufacturing comes into focus.

Who won the scientific revolution?

In the French Enlightenment, different visions of science, knowledge and progress came to life. Among those, the vision of Rousseau appealed to a knowledge that would be at the service of a moral and social regeneration, bringing fairness where privilege and class had reigned before. An alternative vision, held by Voltaire, had for science a more limited program, in which science was not to be mixed with ethical, political, or social concerns. This tension in turns reflects a much older tension, that between the science of the crafts and that of the academies.

In his 'A people's history of science – miners, midwives and low mechanics'. Clifford D. Conner (2005) sets out to show how the history of science – often presented as the achievement of 'Great Minds', owes more than we normally acknowledge to the work of artisans, midwives, brewers, blacksmiths, sailors and ordinary non-titled people. For Conner, in many circumstances the 'knowing how' of empirical crafts alimeted the knowledge of 'knowing why' nurtured by academic elites.

In this long and erudite work, Conner shows how the fight between the science of craftspersons and academic science was part and parcel of a power struggle, which had in the Enlightenment and the ensuing French Revolution a moment of climax. His analysis of the

⁵ Potosí, at about 4.000 meters in present Bolivia, was the richest of all mines in the world. At the time it was the second largest city in the world after London.

prodigies of Francis Bacon first, of and Tycho Brahe and Robert Boyle later, shows how these great thinkers were at the same time creature of their time and social class, accepting as natural an order where ‘low mechanics’ have no place in the progress of science.

Conner also discusses how artisans, whose names are in many cases lost, in fact performed the celebrated experiments of the titled virtuosi of natural philosophy. He tells us about the diaspora of the artisans who, following the death of Tycho Brahe in 1601, abandoned the observatory on the island of Hven – in the strait between contemporary Sweden and Denmark – *de facto* infusing European science with a new current. For the first time, a new class of middle-class scholars became visible (p. 352).

According to Conner, in the course of this struggle, official science of academies became the owner of the knowledge generated by artisans from the lower classes – including with the use of patent regimes that appropriated the ownership of artisans’ ingenuity. The French revolution initially gave a voice to Rousseau’s ideal of a science integrating moral and social values, and paved the way for a flourishing of artisans’ associations. These openly battled against the power and the programs of elite science, e.g. in contrasting Condorcet’s educational plans for a ‘super-academy’ with absolute power of control of scientific and technological life in France. While artisans in the end obtained the patent law they demanded, the elitist tendencies of enlightenment science – moulded on the Baconian and Newtonian ideals upheld by Voltaire, in the end prevailed. The Thermidorean period consolidated a conservative vision of science that would not disrupt existing social arrangements. This was associated to ideas of neutrality of science and to specialization of science into separate disciplines that persist to our days.

Thus, Enlightenment harboured different possible scientific futures, one of which, that of a democratized science with a mission of social betterment, did not come into being. In the end, Enlightenment and the French revolution set science on a different path. This led from the ‘small science’ of the disinterested gentlemen philosophers who – like Boyle – preferred ‘luciferous’ to ‘lucriferous’ experiments, to the academies of the 19th century. This eventually led to the present ‘big science’ configuration (de Solla Price 1963), with its power asymmetries (Ravetz 1990), convulsions and crises (Saltelli and Funtowicz 2017).

Nobody incarnates better the optimistic vision of Enlightenment than Nicolas de Condorcet (1743-1794), who in the last chapter of his ‘Sketch for a Historical Picture of the Advances of the Human Mind’ illustrates thus his vision of the future to come:

All the errors in politics and in morals are founded upon philosophical mistakes, which, themselves, are connected with physical errors. (Condorcet 1975, Ninth Epoch)

Thus, for Condorcet, once the enlightenment program will have solved the physical-philosophical problems of humanity, true progress will have been achieved. As an example, overpopulation and war due to scarcity of resources will not happen because technical progress and ethical progress will go hand in hand.

The only foundation of faith in the natural sciences is the principle, that the general laws, known or unknown, which regulate the phenomena of the universe, are regular and constant; and why should this principle, applicable to the other operations of nature, be less true when applied to the development of the intellectual and moral faculties of man? (Ibidem, Tenth Epoch)

Man will understand that his duty

... will consist not in the question of giving existence to a greater number of beings, but happiness. (Ibidem, Tenth Epoch)

This extraordinary vision of intellectual and moral vision going hand in hand, of knowledge of the law of nature leading to moral progress, represents the great promise of the Enlightenment to achieve

the destruction of inequality between different nations; the progress of equality in one and the same nation; and lastly, the real improvement of man. (Ibidem, Tenth Epoch)

The Cartesian Dream again.

In describing how the vision of enlightenment has shaped modernity, many authors talk about a ‘Cartesian dream’, (Pereira and Funtowicz 2015), referring to Descartes’ famous sentence about man as master and possessor of nature, capable to control and put to good use the forces of nature for the betterment of man. In chapter 4 in this book the authors of the present chapter have attempted to link the Cartesian dream to a Ricardian dream, this latter based on the use of abstract theorems to describe economic activity. Also for authors Davis and Hersh our age can be said Cartesian:

Now the ingredients of the method as reported in Descartes' Discours de la Methode are vague except in geometry. There they have been so fruitful, extending to all of mathematics and to science in general, that it would not be a mistake to call our age and all its scientific aspirations Cartesian.”(Davis & Hersh 1986, p.260).

Thus mathematics – loved by Descartes for algebra and geometry, and by Condorcet for his work on decision theory algorithms, was an important element of the dream. For Alfred W. Crosby (1996), it was a particular aspect of mathematics, its capacity to permit quantification and visualization (via perspective) that was responsible for the extraordinary success of the West after Renaissance – a thesis that Crosby illustrates with extraordinary effectiveness.

In a sense, it is difficult to blame Descartes for his inebriation with geometry and mathematics. As discussed by cognitive psychologists Lakoff & Núñez (2001) the popping up of Greek π from circles and squares, or of Neper’s e from compound interest computations, can inspire awe. How can one fail to believe that these numbers are divine, or that they attend to something fundamental and unchangeable in the writing of the book of Nature, as noted by Galileo? They point to a paradox here, in that:

...it follows from the empirical study of numbers as a product of mind that it is natural for people to believe that numbers are not a product of mind! (Lakoff and Núñez 2001)

For the already quoted Davis and Hersh (p.235), only the introduction of non-Euclidean geometries challenged this dream of Divine mathematics. This discussion of mathematics and quantification may appear a digression to the theme treated in this chapter, were it not for the fact that the understanding of the project of the Enlightenment, for the good and for the bad, needs its quantification agenda. As per the bad, when the state started measuring its subject, it did not forget the anti-Semitic program of enlightenment (Hacking 1990). Much of present day algorithmic revolution, and of the present impending dystopia of surveillance capitalism (Zuboff 2019) or governance by numbers (Supiot 2007), is the most evident sign of the presence of the dream in our times (Saltelli, Andreoni, et al. 2021).

Different visions of the Enlightenment

The classic text of critique of the enlightenment remains to this day the work of Theodor W. Adorno and Marx Horkheimer entitled *Dialectic of Enlightenment* (Adorno and Horkheimer 1997). Here the two authors from the School of Frankfurt set down to investigate to broken promise of enlightenment in crude terms:

Why mankind, instead of entering into a truly human condition, is sinking into a new kind of barbarism.

Written just after World War II and published in 1947, the book dissects the dialectic link between enlightenment and domination, and ultimately cruelty and suffering, illustrated with the lucid folly of Sade and the conflicted awareness of Nietzsche (p. 81-119). As per the promises of enlightenment,

Its herald Bacon dreamed of many things 'which kings with their treasure cannot buy, nor with their force command, [of which] their spials and intelligencers can give no news.' As he wished, they fell to the burghers, the enlightened heirs to those kings. (p. 42)

By opening the way to market-based domination of man on man, enlightenment, empowered by a subservient science, paved the way for a return to myth, illustrated by Nazi Germany and by antisemitism:

Anti-Semitism is a deeply imprinted schema, a ritual of civilization; the pogroms are the true ritual murders. They demonstrate the impotence of sense, significance, and ultimately of truth...

Reflecting what happened during the French enlightenment, the barbarism of antisemitism thus becomes the valve through which the masses, cheated by the unfulfilled promises of happiness and equality of enlightenment, can release their destructive lust.

With Enlightenment, science lends itself to a self-oblivious instrumentalization; it reflects hierarchy and coercion, and in its neo-positivistic version, metamorphoses the criticism of the encyclopaedists into affirmation and apology (p. xii).

Coming to more recent authors, and to the issue of the legacy of enlightenment in our global governance, political philosopher John Gray (Gray 1998) notes how a ‘worldwide free market embodies the western Enlightenment ideal of a universal civilization.’ Both Marxian socialism and a global free market share thus the nature of delusive Enlightenment-inspired experiments in social engineering. For this author (Gray 1995)

The legacy of the Enlightenment project – which is also the legacy of Westernization – is a world ruled by calculation and wilfulness which is humanly unintelligible and destructively purposeless.

Steven Shapin (Shapin 2019) describes the crisis of modern science in terms of its extraordinary ‘historical success in enfolding scientific inquiry and scientific findings into modern civic life, especially the practices of government and commerce’, as a result of the ‘asymmetric alliance between science, the state, and industry.’ This integration of science in all aspects of life comes to a price. This has been described in terms of a new endarkenment – in the sense of an undoing of the Enlightenment (Millgram 2015), dystopias (Saltelli and Boulanger 2019), and the loss of the Renaissance element of modernity (Toulmin 1992). These and other authors variously lament the loss of understanding for oneself – making sense of things in a world increasingly complexified by technology (Millgram 2015). Other elements of the picture are the loss of knowledge as a source of emancipation and personal maturation (Lyotard 1979), rationality winning over for reasonableness (Toulmin 1992), and in more recent times a new acceleration of a crisis entangling science, technology and policy (Saltelli and Boulanger 2019).

For Jerome Ravetz the rapid transformations taking place in the collective image of science correspond to the maturing of structural contradictions, among which that between science’s image and science’s role is the most important (Ravetz 2011). Most of the authors just quoted allude in some form or another to an undoing of the ideals of the Enlightenment.

Weaponizing the Enlightenment

Also Steven Pinker (Pinker 2018b) calls for a return to the Enlightenment, or, we should say, his vision of the enlightenment’s salient features. Pinker’s ‘Enlightenment Now - The Case for Reason, Science, Humanism and Progress’ has had a mixed reception, going from an enthusiasm without reserves to a stern condemnation.

This polarized reception, coupled with Pinker’s candour in sharing with the reader his radical vision of salvation via a return to his enlightenment, allows us to analyse in detail precisely those problematic elements of enlightenment that are the focus of the present chapter.

Bill Gates calls Pinker's book 'My new favourite book of all times.' The book is particularly appreciated by those who dislike the so-called fear-monger (Anon 2018), i.e. persons who are taken to disproportionately fear technology instead of appreciating it for its gifts.

To the opponents, the purpose of Pinker's book is to reassure liberals that they are on 'the right side of history' (Gray 2018), and to endorse a Manichean vision of reason against darkness which spoils Enlightenment of its principal attributes, that of a vigilant scepticism. (Riskin 2019).

According to a comment in the New York Times (Szalai 2018):

[Pinker] admits that the presidency of Donald J. Trump might be a 'setback' to the forward march of progress. But as long as he can consign Trump and authoritarian populism to 'a pushback of elements of human nature,' he can stay in thrall to the wonders of 'Enlightenment institutions' — and ignore the possibility that such institutions, with their blithe consolidation of power in the name of progress, might have helped to stoke such populist rage.

The academic limits of the work of Pinker are evident, as are the contradictions: 'Left-wing and right-wing political ideologies have themselves become secular religions,' he notes, while pushing his own candid version of scientism, a confusing mixture where Enlightenment – as Pinker defines it – can be 'called humanism, the open society, the cosmopolitan or liberal or classical liberalism' (p. 4). He is at best superficial in how he interprets the thought of both friends – such as David Hume, Adam Smith, and Denis Diderot, and foes from Friedrich Nietzsche to the 'cultural pessimists' who treat science with scepticism. Few philosophers are spared his elementary fury, from the school of Frankfurt to the deprecated post-moderns to the scholars of science studies (p. 396).

In spite of these limits, Pinker's unfettered apology of free-market capitalism may be considered as being mainstream, practised by what has been called 'the Davos set' (Hickel 2019). Pinker is undoubtedly on the side of techno-optimists, such as the current of the so-called Ecomodernists (Michael Shellenberger and Nordhaus 2015; Pinker 2018a) – for whom technology is the best solution to the problem created by technology; to exemplify, Pinker welcomes nuclear power, genetically modified crops and geoengineering to adapt to climate change.

While Pinker, considers himself '*something of a watchdog for politically correct dogma in academia*' (p. 138), he attacks unceremoniously the part of the same academia he dislikes – the 'second culture', the leftist intellectuals, the ecologists, and those who burden medical and psychological research with ethical protocols (p. 402).

All industrial actors, from pharma to agrochemical, from nuclear to information technologies, can find in Pinker the champion incarnating a vision of progress where these technologies must be allowed to roam free. For Pinker, decarbonization, dematerialization, and densification are just around the corner, provided fear mongers and cultural pessimists can be silenced. Perhaps the main contradiction of Pinker's work is in discounting how much of today's conquests are due to the fathers of the ecological movement, and to the upholders of

women's and workers' rights. When published in 1962 Rachel Carson's 'Silent Spring' received the same kind of broadsides from 'defenders of DDT' that Pinker reserves for present day ecologists. Needless to say, today Carson is considered the champion of the birth of the ecological sensibilities espoused by Pinker.

While much discussion (Hickel 2019; Lent 2018) surrounding 'Enlightenment Now' is about whether we really 'never had it so good', as argued by Pinker, with the end of war, hunger, enslavement and the world having already passed 'peak populism' (p. 451), we are concerned here with a less discussed part of his work. The last chapters of the volume are devoted to Science and Humanism, and it is here that we find with unexpected clarity the most sinister elements of Pinker's program.

In an opening move, Pinker turns the tables by presenting science as cornered and under attack:

... today the beauty and power of science are not just unappreciated but bitterly resented (p.387)

He resents the positions of the 'demonizers of scientism', and '*cultural institutions* [that] *cultivate a philistine indifference to science that shades into contempt*' (p. 395), and engages in an all-out defence of science's role in eugenics, the Tuskegee experiment on syphilis, and denies the existence of social Darwinism. His target is the perceived 'anti-science humanities program', without forgetting social sciences in general. An attack on the famous 'feminist glaciology' paper (p. 397) seals his theorem.

The author's true enemies are the sceptical intellectuals, the humanists and social scientists just across the corridor of his faculty building. Not the economists, though, whose effort at quantifying the real he praises (p. 403-404). His science-under-siege vision is unrealistic, but so were Ayn Rand's novels about a West collapsing under the weight of a socialist ideology. Yet these novels fortified the resolve of generations of *laissez faire* economists. Pinker's candid version of scientism, his weaponization of enlightenment and his praise of the victories of neoliberalism similarly aim to fortify the present techno-economic orthodoxy.

Conclusions.

The Enlightenment strove to eliminate superstitions about nature; in the process, it enthroned superstitions about science. This superstition thrives in the present dominating neoliberal vision of world affairs. We mentioned in our analysis the important role that Enlightenment-inspired technologies of measurement and quantification played in constructing modernity. On the same ground as we should revisit our ideas about a Platonic mathematics as holding the key to the fabric of the real, without abandoning mathematics as the extraordinary creation of the human mind that it is, our affection to the ideals of Enlightenment would need to be carefully reappraised. What is in that project that deserves preserving, and what has become a problematic legacy? At the time of writing the present chapter, the fight for the control of the public imaginary sees the values of Enlightenment at the forefront of the battle. A short example may help here: when it comes to protecting our common environment, a

new generation of self-appointed ‘Guardians of Reason’ defend science against its purported enemies by calling them anti-science, fear mongers and the like (Foucart, Horel, and Laurens 2020). The guardians are in fact stealth actors in a fight between corporate interests, e.g. in the agro-chemical sectors, against activists concerned with the use of pesticides, or genetically modified substances or nuclear energy. As discussed by (Foucart et al. 2020), the guardians also manage to enrol in this battle well-meaning individuals and associations, who sincerely share the vision of Pinker discussed above. These actors may fail to realize that – whatever the merits or demerits of the specific technology being discussed or defended – they may happen to be manipulated in a high-level exercise of regulatory capture (Saltelli, Dankel, et al. 2021). They are the ideal recipients of the theses discussed in the present chapter.

Pinker’s idea of the economy as a relentless forward-moving machinery ultimately relies on the simplifying assumptions by Anglo-Saxon economists as described in the Introduction and in Chapter 1 in this book: the basic one being that all economic activities are qualitatively alike. Renaissance economics – Italian economist Antonio Serra (1613) – describes the simple dichotomy that produced wealth and poverty: that of increasing and diminishing returns to scale (see Reinert 1980). On page 95 Pinker provides an example of the wonders of modern technology. It helped South Indian small fishermen, ‘increased their income and lowered the price of fish’ by using their mobile phones at sea to find the market that offered the best price that day. Chapter 10 in this book, by Sylvi Endresen, explains how diminishing returns and resulting technological retrogression had impoverished the same South Indian fishermen. The increase in income through cell phones is completely dwarfed by the decrease in catch and income caused by diminishing returns and technological retrogression.

The philosopher Pinker seems to hate the most, Friedrich Nietzsche, explains why Pinker fails: ‘There is only a perspective of seeing, only a perspective of ‘knowing’; and the more affects we allow to speak about one thing, the more eyes, different eyes, we can use to observe one thing, the more complete will our ‘concept’ of this thing, our ‘objectivity, be’. (Nietzsche 1999 [1877]). By accepting the assumptions of neo-classical economics as his only angle, Pinker fails to see qualitative differences between economic activities, between fishing in South India and producing software in the US. By using only the angle produced by neoclassical economics – assuming all economic activities to be qualitatively alike – Pinker’s analysis clearly fails Nietzsche’s ‘objectivity test’.

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