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The Future of Economic Development between Utopias and Dystopias

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What lies ahead in terms of economic development? Utopia versus dystopia

“Without the Utopians of other times, men would still live in caves, miserable and naked. It was the Utopians who traced the lines of the first city ... Out of generous dreams come beneficial realities. Utopia is the principle of all progress, and the essay into a better future¹”

While these wise words by Anatole France (1844–1924) no doubt are both important and correct, the Spanish painter Francisco de Goya (1746–1828) made what almost amounts to the opposite point in his 1797 *The Sleep of Reason Produces Monsters* (*El sueño de la razón produce monstruos*) (Figure 1).



Figure 1. Francisco de Goya, *The Sleep of Reason Produces Monsters* (*El sueño de la razón produce monstruos*)

Source: Metropolitan Museum of Art, Gift of M. Knoedler & Co., 1918

<http://www.metmuseum.org/collection/the-collection-online/search/338473?=&imgno=0&tabname=label>.

¹ Anatole France, quoted in Mumford (2003 [1922], 14). See also Fuz (1951, 2)

The full epigraph for this etching reads, 'Fantasy abandoned by reason produces impossible monsters: united with her, she is the mother of the arts and the origin of their marvels'. The slumbering artist is surrounded by bats, symbols of ignorance, and owls, which somewhat surprisingly are interpreted as symbols of folly. If there is any symbol of bravery and good judgement in the picture, it is the watchful and worried lynx, the symbol of wisdom².

Utopias – literally meaning 'nowhere' or 'no place' – essentially arise from our desire to make the world a better place. There have been many of them: *The Faber Book of Utopias* (Carey 1999) lists more than 100. When they work well, they function, in the terminology of Francis Bacon (1605), as 'feigned history': histories of the future written in order to influence the future, attempting to create self-fulfilling prophecies. When they do not work – when their assumptions are inconsistent with basic human nature and/or their methods are too brutal – they may turn into what Goya calls 'monsters': utopias that become dystopias.

It is worth noting that academic economics during the early part of the 20th century showed considerable interest in utopias, both at Harvard and Columbia.³ The textbook used at the time to give an overview of utopias 'or schemes of social improvement' in many languages was Kaufmann (1879).

Bacon's logic for utopias, mentioned above, may also apply to dystopias. Accounts of future perils may function as 'feigned history' as well. As Cambridge economist Herbert Somerton Foxwell (1899, xxi) put it: 'Just as we may avoid widespread physical desolation by rightly turning a stream near its source, so a timely dialectic in the fundamental ideas of social philosophy may spare us untold social wreckage and suffering.' In this spirit, this paper will discuss some dystopian themes of the present, among them the apparently contradictory simultaneous trends of, on the one hand, a fear of losing jobs to mechanization by robots, co-existing with a real and observable trend towards technological retrogression ("primitivization") on the other. In some parts of the globalized world economy adding extraordinary amounts of capital behind every worker in robotized factories seems in other geographical areas to be matched by the exact opposite trend: sharply decreasing amounts of capital ("substituting horses for tractors") behind every worker.⁴ As we shall see this trend is also visible inside the European Union.

² Tellingly, the world's oldest scientific academy, from 1603, Rome's Accademia dei Lincei, has the lynx (Italian: *lince*) as the symbol of the institution.

³ For a discussion see <http://www.irwincollier.com/kaufmann-bibliography-utopias-more-to-marx/> (accessed June 2016)

⁴ This is discussed already in Reinert (2007), chapter 5.

An interesting case of using a dystopia in a constructive way is Derek de Solla Price's 1963 book *Little Science, Big Science, and Beyond* which predicted that science would reach saturation (and in the worst-case scenario, senility) under its own weight, a victim of its own success. This paper should be seen in the same light: the authors are worried that economics, as the result of the tools that the profession has chosen to employ, has come to disregard a number of issues that threaten general welfare. It just may be that the post-World War II (WWII) period brought together a unique set of technological⁵ and political factors which at the time were taken for granted, but which will be difficult to replicate. We find it particularly worrisome that while growth in the post-WWII period⁶ clearly took place under dynamic and very imperfect competition – in the markets both for goods and for labour – the economics profession at the time built static models based on the opposite, on perfect competition. What we may be seeing now is that the world actually starts behaving less like it used to do in the heyday of capitalism, and more like the models of that era. Not understanding what made the West rich prevents us from seeing why so many now are getting poorer. The failure of the profession to foresee the financial crisis is one thing; its present failures to understand increased poverty, the disappearance of the middle class, and migrations caused by de-industrialization may be even more serious. As we shall briefly discuss, the profession's recent leaps into the mysteries of 'institutions' and 'human behaviour' do not solve the basic underlying problem of explaining why economic growth, by its very nature, is so uneven. A venture into the complicated field of industrial dynamics would have been more fruitful, but that remains the path not taken. This paper should be read not in the spirit of pessimism, but in the positive spirit of bringing back past tools and types of understanding that will offer us a better grasp on reality.

What in the end developed into monsters are not only the products of what Keynes (1982 [1933], 233) called 'madmen in authority', but also apparently rational economic theories and visions that went wrong because they did not comply with the test of reality, with Goya's reason. Just like the true metabolism of Volkswagen's diesel engines – exposed in the autumn of 2015 – the brutal results of dysfunctional economic theories can be withheld from the public at large for a long time, but rarely forever. The dysfunctionality of neoclassical economics, for a long time a curse for the non-Western world, has now come back to haunt the West itself. Therefore, a main thrust of this paper is how neoclassical economics, like Frankenstein's monster, in many ways is turning against the West itself.

⁵ For a discussion of the different properties of technological periods, see Perez (2002).

⁶ As well as during the latter part of the nineteenth century.

At the time of writing, in spring 2016, the world is facing many pressing issues, and again there are visions of both utopias and dystopias in the area of economic development. Here we attempt to analyse some of the more pressing concerns, and seek some assistance from history in assessing them. With neoclassical economics gradually fastening its grip on world economic policy, we have seen processes of de-industrialization and falling real wages that started in the mid-1970s. This was the period when real wages peaked in the United States, but it was also the time of de-industrialization and a dramatic fall in wages in many small Latin American countries. Next followed a dramatic fall in real wages, and life expectancy, in the former Second (communist) World. Now the European Union⁷, starting from the peripheries, is experiencing the same falling real wages.⁸

The negative trends that can be observed at the moment are not new, they have been experienced and tackled before. But left with what is largely a caricature of its own past, it is doubtful whether the economic profession will be able to recover the qualitative – rather than quantitative – understanding it once had. Or, as Thorstein Veblen put it, education (in this case in economics) may contaminate healthy instincts or healthy common sense.

In our view there are many examples of dystopic – rather than utopic – mechanisms presently at work in the world economy. Our contention is that we did not understand how the West got rich, and as a result we: (1) failed to make most Third World countries rich, and above all failed to understand the relationship between economic structure, wealth and human fertility; (2) failed to understand why we in the West are getting poorer; and (3) failed to understand that the waves of migration towards the West are a case of ‘the chickens coming home to roost’: of the price paid for Western colonial economic policies. As Harvard political scientist Karl Deutsch put it long ago:

If Asia and Africa have nothing better to choose as an alternative to communism than local dictators backed by foreign governments and dependent upon foreign aid, it is very doubtful indeed that the West will win. There is the danger that the forces of nationalism will merge into a torrent of popular hatred towards the West – a torrent of hostility that would very seriously strain our limited manpower and resources that might involve us in a chain of conflicts without foreseeable end. (Deutsch 1969, 90–91)

⁷ For well-informed comments on the dystopian developments inside the European Union, see the blog of former chief economist of UNCTAD, Heiner Flassbeck <http://www.flassbeck-economics.com/>

⁸ This is discussed in Reinert (2012b).

What was difficult for Deutsch to see in 1969 was the increased role of religion and the diminished role that communism would play in this process. Apart from that, it is probably fair to say that the prediction was accurate.

We would argue that after WWII, with the 1947 Havana Charter allowing for global industrialization, the world was on the right track. However, with neoclassical economics gradually becoming 'the only game in town', David Ricardo's trade theory and accompanying colonialist trade policies again came to virtually monopolize Western economic thinking. In order to understand this development it is necessary to look at the broad picture of twentieth-century ideology: how the ideological 'ahistorical twins' of communism and what was once called Manchester liberalism were tamed, only for one of the two – at the death of its peer – to destroy what once was a pragmatic Western ideology.

The decline of the west as seen from the east

In 2015 Singapore celebrated its fiftieth anniversary as a nation-state, marking an astonishing 3700 per cent per capita growth over the period. Situated a few degrees off the Equator, with a large number of religions and ethnic groups, Singapore belies at least three old-fashioned and recently occasionally rediscovered ideas about economic development: that the keys to economic success lie in the white race, in the Protestant ethic, and in a temperate climate.

In a few years Singapore went from being a poor and sleepy tropical port to becoming a powerhouse of wealth and technology. The occasion of the anniversary prompted comments on the reasons for its success.⁹ One reason cited was the 'peaceful embrace of diversity'. Singapore's ethnic and religious diversity is impressive. The goal of union in diversity is a much-used motto: '*E pluribus unum*' is on the official seal of the United States. The related concept, 'United in Diversity' (*In Varietate Concordia*) – in a total of 23 languages – was adopted in 2000 as the official motto of the European Union, and is also the motto of Indonesia and South Africa. Yet, in the same year that Singapore celebrates its success, racial disturbances in the United States and a European Union torn apart by its common currency and by refugees from the de-industrialized or never-industrialized periphery called the practical execution of the ideal of combining diversity with unity into question. Again we are left with a gap between rhetoric and reality.

⁹ http://www.huffingtonpost.com/nathan-gardels/weekend-roundup-78_b_7957602.html.

Singapore is a good example of how diversity can and should function. Paternalistic, some will say; but paternalism – the duty of the rulers to improve the lives of their citizens – was key also in the development of Europe. We may perhaps now see paternalism with a hint of nostalgia, as the *noblesse oblige*, which was part of this paternalism, slowly yields to social Darwinism and democracies appear to be weakened or fail under the impact of globalization and new technologies.

Arriving by boat from Indonesia to Singapore a few days after the devastating 2004 tsunami, one of the authors was asked by the taxi driver why he thought Singapore was saved from the disaster. The driver's own answer was because in Singapore people from six different religions were praying to the same God. A key to understanding this is that 'the mode of production' heavily influences religious practices. Muslim religion in the Singapore setting differs from the same religion in a nomadic desert setting. And when the pie is shrinking – as presently in the United States (US) and the European Union (EU) – religions under different modes of production more often than not lead to ethnic hatred rather than to tolerance. Wars can be clashes between aspiring industrial nations, like WWI and WWII, but they can equally well be clashes between religions based in different modes of production, industrial and post-industrial, as in the case of Europe today.

Kishore Mahbubani, Dean of Singapore's Lee Kuan Yew School of Public Policy, mentions meritocracy, pragmatism and honesty as Singapore's key success factors. Meritocracy was also the feature which most impressed the Europeans about China during the time of China's secular decline from the 1500s onwards, and honesty was certainly also part of the same Chinese ethics. Meritocracy and honesty accompanied the sharp relative and absolute decline of China.¹⁰ Why do meritocracy and honesty sometimes accompany decline, and sometimes – as in Singapore – spectacular growth?

For Graham Allison, Director of the Belfer Center for Science and International Affairs, Harvard Kennedy School, 'Singapore Challenges the Idea That Democracy Is the Best Form of Governance.' (Allison 2015). For Ali Wyne, of the same institute, Western democracy could learn two things from Singapore's success: the importance of quality leadership based on merit and the lack of ideological predisposition in tackling problems (Gardels 2015).

In power for 31 years, longer than any other Prime Minister, Singapore's leader Lee Kuan Yew (1923–2015) is history's latest example of the

¹⁰ This is argued in Reinert and Xu (2013).

enlightened despots – from Ernst der Fromme in Saxe-Gotha to Otto von Bismarck – who led Germany, and also the rest of Europe, through what Albert Hirschman (1958) called ‘multidimensional conspiracies in favour of development’. It should be obvious that such developmental conspiracies differ significantly from waiting for an invisible hand to act, but neither in present economic theory nor in present political discourse – still organized around a Cold War understanding of the world – is it clear what this conspiracy consists in.

The analysis of Kishore Mahbubani, speaking from the vantage point of Singapore, of what went wrong with the West is worth attending to:

The world is entering a new era, an era marked by two major changes. The first is the beginning of the end of Western domination – not the end of the West, though. The second is the Asian ‘Renaissance’, because the 21st century will be the century of Chinese and Indian economies. This is a Western financial crisis because the problems are the results of Western leaders’ failure to understand that they faced a new competition. Western minds couldn’t think that other societies were becoming more successful than they. People in the US and the EU live beyond their means. Does Western wisdom say ‘keep borrowing’ despite mounting budget deficits? The West has to ‘relearn’ Western wisdom from the East.

Asian societies are doing well (today) because they understood and absorbed the main pillars of Western wisdom, including the market, science, education and rule of law. But Western societies are gradually walking away from these pillars.¹¹

The literature on the problems and decline of the West is already vast and growing, and in the English-language literature the word ‘great’ – once reserved for a handful of events like the ‘Great Depression’ or the ‘Great Irish Famine’ – is very frequently used to describe the changes that are taking place.

Kishore Mahbubani himself has contributed to this, the ‘great one-thing-or-the-other’ literature, with *The Great Convergence: Asia, the West, and the Logic of One World* (2013). David Stockman, once White House Office of Management and Budget director in charge of ‘Reaganomics’ – also called supply-side economics and ‘voodoo economics’ – is surprisingly candid in his huge volume *The Great Deformation: The Corruption of Capitalism in America* (2013). Supply-side economics brought back what Schumpeter labelled ‘the pedestrian view that it is capital per se which propels the capitalist engine’ (Schumpeter 1954, 468). This theory

¹¹ http://www.chinadaily.com.cn/opinion/2010-12/23/content_11742747.htm.

justified tax cuts for the rich – the 1 per cent – as an engine of growth, whereas what actually happened was that the concurrent destruction of demand among the rest (the 99 per cent) killed off investment and led the rich to seek revenue in what was often financial speculation: instead of making money from the production of goods and services, increasingly money was being made in schemes that never left the financial sector.

In *The Great Degeneration: How Institutions Decay and Economies Die*, economic historian Niall Ferguson (2011a) roots his gloom in the current economist fashion that everything not fitting into mainstream analysis is put into a black box labelled 'institutions'. On the eastern side of the Atlantic we have *The Great Eurozone Disaster: From Crisis to Global New Deal* by Heikki Patomäki (2013) and *The Great European Rip-Off: How the Corrupt, Wasteful EU is Taking Control of Our Lives* by David Craig and Matthew Elliot (2009).

Times of crisis tend to increase inequalities, so we have *The Great Divergence: America's Growing Inequality Crisis and What We Can Do About It* by Timothy Noah (2012) and *The Great Risk Shift: The New Economic Insecurity and the Decline of the American Dream* by Jacob S. Hacker (2008). On the European side we have Alex Brummer's (2010) *The Great Pension Robbery: How New Labour Betrayed Retirement* and Richard Brooks's (2013) *The Great Tax Robbery: How Britain Became a Tax Haven for Fat Cats and Big Business*.

Marxists convincingly say that those few who get to Volume 3 of *Das Kapital* find an excellent explanation of financial crisis, so it is indeed useful to bring old perspectives back, as in Michael Roberts's (2009) *The Great Recession: Profit Cycles, Economic Crisis. A Marxist View*. An economy out of balance requires *The Great Rebalancing: Trade, Conflict, and the Perilous Road Ahead for the World Economy* by Michael Pettis (2013). Debts have grown too much, so there is obviously time for *The Great Deleveraging: Economic Growth and Investing Strategies for the Future* by Chip Dickson and Oded Shenkar (2011). Speculation is clearly part of the crisis, so we have a timely republication from the last depression in 1932: Aaron M. Sakolski's (2011) *The Great American Land Bubble: The Amazing Story of Land-Grabbing, Speculations, and Booms from Colonial Days to the Present Time*.

A self-help book in the 'great' literary genre has been around for some time: *The Great Reckoning: Protect Yourself in the Coming Depression* by James Dale Davidson and Lord William Rees-Mogg (1994). Urbanist and trend-chaser Richard Florida presents us with *The Great Reset: How New Ways of Living and Working Drive Post-Crash Prosperity* (2010). And, to

add to the problems, Paul Gilding (2011) points to *The Great Disruption: How the Climate Crisis Will Transform the Global Economy*.

All these volumes on the 'great' changes capture and hold on to a facet of reality. However, a better interpretative angle in our opinion proceeds from an understanding of the reversal of the mechanisms that were once harnessed successfully by the West as well as in Kishore Mahbubani's remarks at the start of this section. His analysis, that the West seems to have lost its previously successful approach, is in our view both correct and important.

Present mainstream economics, essentially based on the economics of Adam Smith (1776) and David Ricardo (1817), was written from a perspective supporting the English Empire and perfected by Ricardo's 'comparative advantage'. Its main tenet is that it would be in the interest of all if every nation stuck to the economic activity at which it was least bad. Later – when the European continent and North America had industrialized with very visible hands against the recommendations of Smith and Ricardo – these countries also took over the Smithian–Ricardian position towards the rest of the world.

In short, the West lost the Renaissance and Enlightenment perspectives, and with them the key success factors producing growth and welfare. The West came to believe in its own propaganda: theories originally made to keep the colonies poor boomeranged and backfired, leading to the present dystopia.

Unrealistic utopias that boomerang as the curse of Europe and the West

The naive optimism of 'laissez-faire' and the childish and frivolous appeal to revolution, the naive hope that the tyranny of the proletariat would lead to world happiness, increasingly showed their real nature, they were twins of an ahistorical rationalism ...The period 1870–1890 led to the theoretical and practical bankruptcy of both the old schools. (Gustav Schmoller, German economist, Inaugural speech as Rector of the University of Berlin, 1897)

Austrian–Swiss economist Felix Somary (1881–1956) made the perceptive observation that all big universalist projects of Europe have boomeranged: the Crusades brought about the fall of Constantinople and the loss of the Eastern Roman Empire; aspirations of religious tolerance suffered the indignity of centuries of religious wars (including anti-Semitism); and the French Revolution ended in four generations of dictatorship (Somary 2010, 18–19). Today we can add – in the spirit of Somary – that the

lofty ideals of the European Union project resulted in countries divided by a common currency, while the United States is faced with falling real wages and a rapidly dwindling middle class.

Gustav Schmoller (1828–1917) was by far the most influential German economist of his generation. What is particularly worth noting here is that the ‘ahistorical twins’ – communism and Manchester liberalism (today’s neoliberalism) – are both ‘cosmopolitical’ schools. Both schools imagined the role of the state as very limited; also Marxism saw the state as necessarily ‘withering away’. The fall of the ahistorical twins that took place from 1870 onwards brought about a degree of nationalism. In most countries this was a fairly healthy form of nationalism. Only in Germany and Italy – the two last countries in Europe to be unified – did this twentieth century nationalism take an ugly path.

Interestingly enough, David Ricardo – who again is seen as the founding father of formal economics – from the 1870s on came to be vilified as the spiritual father of these irrational twins, of both communism and what we today call neoliberalism. His simple modelling of world trade as the barter of qualitatively identical labour hours opened the way for economics as a *Harmonielehre*, as a system creating automatic harmony (later called ‘factor-price equalization’; Samuelson 1948, 1949). David Ricardo’s labour theory of value also created the foundation stone for communism.

The criticism just mentioned, which Gustav Schmoller voiced against David Ricardo and his theory at the end of the nineteenth century, could also be voiced against mainstream economics today. A key problem is that this theory operates at a level of abstraction too high and too decontextualized to give meaningful recommendations. At around the same time, English economist Herbert Foxwell said about his fellow countryman Ricardo: ‘The fact seems to be that, after the appearance of Ricardo’s *Principles*, the economists were largely given over to sterile logomachy [that is, disputes about words, controversy turning on merely verbal points] and academic hair-splitting’ (Foxwell 1899, p. lxxii).

As already mentioned, it was Foxwell who spelt out the danger of what Schumpeter later labelled the ‘Ricardian Vice’ in economics:

Ricardo, and still more those who popularised him, may stand as an example for all time of the extreme danger which may arise from the unscientific use of hypothesis in social speculations, from the failure to appreciate the limited applications to actual affairs of a highly artificial and arbitrary analysis. His ingenious, though perhaps over-elaborated reasonings became positively mischievous and misleading when they were unhesitatingly

applied to determine grave practical issues without the smallest sense of the thoroughly abstract and unreal character of the assumptions on which they were founded. (Foxwell 1899: xli)

We shall later see how Milton Friedman (1953) reintroduced the Ricardian Vice as the basis for neoliberalism. To this should be added the 'Krugmanian Vice', after Paul Krugman: developing more realistic theories – like Krugman discovering the fundamental difference between increasing and diminishing returns – but refusing to apply them in real-world policies. The combination of these two vices has made economics ideologically very malleable according to demand; a point recently made by economist Paul Romer whose recent contributions are described later in this paper.

This criticism fits today's mainstream economics just as well as it fitted Ricardian economics in the late 1890s. Since then, communism and Manchester liberalism have represented Europe's ideological counterpoints, and they did so for about 140 years until the 1989 fall of the Berlin Wall. At that point – the logic seemed to go – communism lost and the Manchester liberalism, under the new name of neoliberalism, had won. It is, however, important to note that the two political extremes of communism and neoliberalism are both cosmopolitical theories that reduce or totally eliminate the role of the nation-state. In line with this, 1989 was – as the literature told us – not only *The End of History* (Fukuyama 1992) but also *The End of the Nation State* (Ohmae 1995). Thus the fall of the Berlin Wall led to a time of intellectual hubris and triumphalism. Since one of the ahistorical twins had died in 1989, the conclusion was hastily – and illogically – drawn that the other ahistorical twin, now in the guise of neoliberalism, had won. But again it is important to note that both twins represented the cosmopolitical view, and that the nationalistic political horrors of the 1930s were a reaction to both these cosmopolitical theories (communism and Manchester liberalism). This time around not only nation-states, but also religion, stand in the way of the neoliberal cosmopolitical utopia.

As the number of refugees from de-industrialized and war-torn countries – plagued by religious extremism – overwhelm Europe, we seem to have totally unlearned the Enlightenment wisdom quoted in the Introduction: 'From manufacturing you may expect the two greatest ills of humanity, superstition and slavery, to be healed' (Galiani 1770, 121). When manufacturing dies we see this process in reverse: a rebirth of superstition and slavery. Or to use the terminology of Max Weber, the *Entzauberung* (demythification) of society gives way to a *Wiederverzauberung* (re-enchantment). Western dreams of 'spontaneous order' if only 'evil dictators' were removed – based on economic theories in fashion – proved instead

to produce 'spontaneous chaos' of a seemingly very durable kind. We do risk creating a rootless 'army of the unemployed', but with no Karl Marx scaring the capitalists into action, the likely result is a slow transition into a kind of post-industrial feudalism as discussed in this paper.

On the ruins of two world wars, about 70 years ago, Europe embarked on a long road to integration. The process was built on strong idealism, and for decades there was little doubt that the process was very successful and that, as a consequence, the EU was seen as simultaneously creating peace and economic prosperity under a process of economic and social convergence. 'The incoming tide lifted all boats', as the saying goes, and the projects and processes met with little political opposition.

At the time of writing in spring 2016, the European project may appear dystopian, though there seems to be disagreement as to which brand of dystopia one should invoke for the present predicaments. Again, an overdose of supranational cosmopolitanism, this time both globally and inside the European Union, has caused protests. Game-theorist turned Finance Minister of Greece Yanis Varoufakis sees the EU as a case of Jean-Jacques Rousseau's 'stag hunt dilemma', where the different hunters risk starving one another for the pursuit of a humble hare because they fail to coordinate themselves in the pursuit of the worthier hunt. For *Financial Times* editorialist Wolfgang Münchau the EU member states are an illustration of Mancur Olson's *The Logic of Collective Actions*. As argued by the US economist in his 1965 book, vested organized interests are better at working the system than large collectives. For Münchau this failure to act can be seen in all the most urgent EU matters, from banks to sovereign debt to refugees.

Those who oppose present European Union policies now hypothesize fiscal colonialism¹² and 'Latin-Americanization' of European countries.¹³ Others see the present crisis as the result of a secular tension between capitalism and democracy, whereby the present regime of fiscal consolidation is the most recent episode of a drama in which the fiscal states become debtor states, hostage to globalized markets, and the citizens lose all chances to influence a conflict which develops on a global scale between financial markets, international organizations and states. In this scenario the European Union becomes an executive federalism: 'a reconstitution of capitalist democracy in Europe in the sense of a solidification

¹² An expression used by Philippe Legrain, a former economic adviser to the European Commission President; see http://www.nytimes.com/2014/04/22/opinion/euro-zone-fiscal-colonialism.html?_r=0 (accessed April 2014)

¹³ See Reinert and Kattel (2004), and Reinert (2011). For the Baltic case see Reinert and Kattel (2014).

of the results of three decades of economic liberalization'.¹⁴ Whether this should lead to the dissolution of the European project or to its completion is the subject of a heated debate between Wolfgang Streeck and Jürgen Habermas.¹⁵ But if we fail to understand the mechanisms which at present increase the gap between the core of the EU and its economic periphery, how can we solve the underlying problems?

Other scholars share a more optimistic view. Jeremy Rifkin¹⁶ sees the internet of things as harbingering a new era of growth: the shared economy. Brynjolfsson and McAfee (2014) are confident that a 'beautiful partnership' can include the intuition and creativity of humans and the high routine processing, repetitive arithmetic and communication abilities of computers. In France, Attali's Positive Economy Manifesto¹⁷ sees space for an unselfish economy. Progressive Economy, an initiative launched in 2012 to stimulate a debate on economic and social policy and to promote progressive thinking, held a successful forum in March 2014, enrolling Joseph Stiglitz.¹⁸ Advances in information technology and robotics are already transforming the workplace, and even greater changes lie ahead. Elliott (2014) looks at what the next two decades might bring. According to Steele (2014), what the world needs right now is the restoration of trust collapsed by rampant corruption at all levels of government and representation, and this can be achieved by a grass-roots movement for collective decision-making based on open source everything: 'The open source ecology is made up of a wide range of opens – open farm technology, open source software, open hardware, open networks, open money, open small business technology, open patents – to name just a few'. Steele, a former US Central Intelligence Agency (CIA) officer, sees a revolutionary tipping point as being very close.¹⁹ It only needs a trigger, he says; a Tunisian fruit seller, as was the case for the Arab Spring.

¹⁴ The point is made by Wolfgang Streeck (2014), author of *Buying Time: The Delayed Crisis of Democratic Capitalism*. See also 'The Crises of Democratic Capitalism', <http://newleftreview.org/11/71/wolfgang-streeck-the-crises-of-democratic-capitalism> (accessed May 2014).

¹⁵ A full rendition of the terms of the debate is available online at http://www.india-seminar.com/2013/649/649_jurgen_habermas.htm (accessed May 2014).

¹⁶ See Rifkin (2014). People and communities are at the heart of this new economic paradigm, building the collaborative economy where consumers have been replaced by 'prosumers'.

¹⁷ The Movement for a Positive Economy is a platform to develop relationships and create knowledge about an economy that seeks more than profit; see <http://www.lh-forum.com> (accessed April 2014).

¹⁸ See <http://www.progressiveeconomy.eu> (accessed April 2014).

¹⁹ 'The preconditions of revolution exist in the UK, and most western countries. The number of active pre-conditions [*sic*] is quite stunning, from elite isolation to concentrated wealth to inadequate socialization and education, to concentrated land holdings to loss of authority to repression of new technologies especially in relation to energy, to the atrophy of the public sector and spread of corruption, to media dishonesty, to mass unemployment of young men and on and on and on' (Steele 2012).

But, if in the past a key mechanism for economic growth has been the substitution of labour for capital, as a result of the ever-increasing price of labour compared to that of capital, how are we going to replicate the pattern of growth we had if wages are falling? We probably fail to see the role of imperfect competition in the labour market, assisted by strong unions, as a key to fast growth under equity. The ideological tension between Schmoller's ahistorical twins – communism and Manchester liberalism (neoliberalism) – created strong unions, and therefore costly labour, starting in the late nineteenth century and, particularly, in the decades after WWII. The question is whether we can recreate this kind of wealth-creating mechanism, based on increasing capital intensity induced by increasingly expensive labour,²⁰ under the present conditions.

The golden years of economic growth after WWII coincided with a huge expansion of the manufacturing sector. Centuries after it was first formulated – after the author had studied the wealth of Holland – *Petty's Law*²¹ as regards sectorial growth of economies still seems to apply: Initially agriculture is the dominant sector, then manufacturing grows fast, while in the last phase the service sector will grow at the expense of the two former. Given the important role of manufacturing as the key to economic welfare, as is argued in this volume, future growth is likely to be in the service sector and of the more "invisible" kind (as when free Skype calls substitute expensive traditional transatlantic phone calls).²² The largest potential for "traditional" growth is clearly in the poor countries – where the production and consumption of manufactured goods are still weak – if they are able to re-create the type of conditions that dominated in the West after WWII.

The hoarding dystopia: finance in charge, not production

And therefore so much of them ought not to be allowed to be applied to other uses that there should not be enough left for money. It was this consideration that led Theodoric, King of Italy [493-526], to order the gold and silver deposited according to pagan custom in the tombs, to be removed and used for coining for the public profit, saying: 'It was a crime to leave hidden among the dead and useless, what would keep the living alive'. (Oresme 1956 [1356])

²⁰ For a discussion of the role of expensive labour and high inflation in creating wealth, see Reinert (2014).

²¹ Named after English economist William Petty (1623-1687).

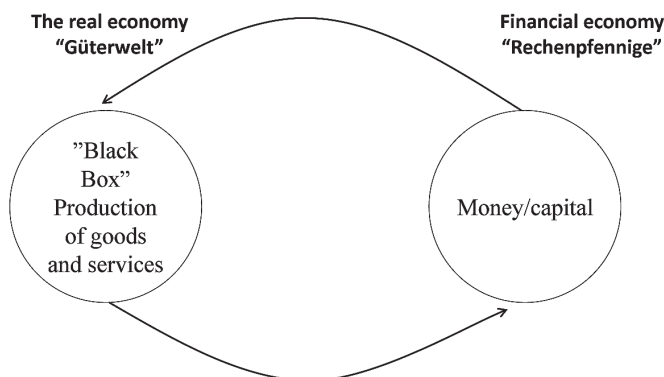
²² For a discussion of "invisible growth" see Reinert (1994).

A key element in Western culture has been the prevention of hoarding; in other words, making sure money was circulating, not idle. The quote from fourteenth-century monetary theorist Nicolas Oresme testifies to the importance of keeping money in circulation in order to keep the real economy going. An early expression of it is in the Bible (Mathew 25, 14–30) where servants are given money (talents), and the servant who has simply buried the money, instead of putting it in circulation, is punished.

An important element in German-language economics has been the separation of the ‘financial economy’ from the ‘real economy’. We find this from Marx on the left of the political axis to the conservative Schumpeter on the right. Figure 2 renders Schumpeter’s idea of separating the money (*Rechenpfennige*, accounting units) from what you can buy for money in the real economy (*Güterwelt*, the world of goods and services).

Figure 2. Separating the real economy in a Schumpeterian fashion

The Circular Flow of Economics



Notes: *Güterwelt* = the world of goods (and services), *Rechenpfennige* = accounting units.

The EU solution to the financial crisis has been to create more ‘accounting units’, inflating the size of the financial sector, but – through austerity – preventing these newly created accounting units from reaching the real economy in the form of increased demand for goods and services. In this way the financial economy goes from working in symbiosis with the real economy into being a parasite decreasing the size of the real economy.

In good times the financial economy serves as scaffolding for the real economy, a ‘bridge in time’, as Keynes (1982 [1933], 236–237) put it. If allowed to grow in ways that do not positively impact upon the real

economy – by making money on money without going through production in the real economy – the financial sector will become like a parasite that grows at the expense of the real economy. Since the times of Hammurabi, 1792 to 1750 BC, societies which survived have managed to cancel unpayable debt. Bankruptcy, like bookkeeping, was a necessary invention in the early centuries of capitalism. At the moment the combination of printing new money, which creates assets in the financial sector but liabilities in the real economy,²³ coupled with austerity in the real economy, appears to be producing the situation that Lenin looked forward to: the last stage of capitalism will be when financial capital reigns – presumably because the real economy would then collapse under the weight of debt and underconsumption.

Also in this case there were warnings. Interestingly enough, Mario Draghi himself has issued a written warning against monetary power coming into the hands of the wrong people: ‘The currency ... is one of those precious institutions which may become malignant if used to the advantage of organized groups’.²⁴

This is an exact description of what happened to the euro in the hands of Mario Draghi: the currency is used to the advantage of the financial sector – of high finance – and the detriment of the real economy. Germany’s fear of inflation and that country’s obvious short-term benefits from the present situation increase the power of the financial sector. What is now taking place is financial hoarding on a large scale. Huge amounts of money are essentially flowing inside the financial sector, not touching the real economy in other ways than shrinking it. In Europe the cases of Ireland, Cyprus, and Greece are examples of how the European Central Bank has failed to follow the traditional rules of bankruptcy, deciding in favour of the financial economy at the cost of the real economy (Reinert 2016). It is time to go back and read Nicolas Oresme and Martin Luther (Luther 2015, see also Rössner 2013) on the subject of hoarding.

The power dystopia: the disappearance of montesquieu / galbraith checks and balances

At the origins of civilized societies lies a balance of power, in a modern context first theorized by Montesquieu (1748). We find this idea of

²³ This is one of the basic principles of double-entry bookkeeping, a system which macro-economists rarely study.

²⁴ Draghi writes this in reference to economist and first President of Italy, Luigi Einaudi: ‘La moneta, nella sua visione [i.e. Einaudi’s], è una di quelle istituzioni preziose che possono però divenire perniciose se usate a vantaggio di gruppi organizzati’ (Draghi 2011).

checks and balances also in the Republic of Venice, and it was very prominent in the thinking of the US founding fathers as well.

In John Kenneth Galbraith's (1949) *American Capitalism: The Concept of Countervailing Power*, the massive powers of big business meet countervailing powers in big unions and citizens' organizations. Says Galbraith: 'It requires only a moment's reflection to conclude that a businessman with power neither to overcharge his customers nor to underpay his labour (and for similar reasons his other suppliers) has very little power to do anybody ill'. In this situation, Galbraith continues, government authority over the economy may be removed: 'In a state of bliss there is no need for a Ministry of Bliss' (ibid., 31).

However, with the weakening of labour unions and consumer power, and the state of bliss – a natural system of checks and balances – we shall have to bring back the Ministry of Bliss, in spite of all the shortcomings of governments, in an attempt to readdress the balance of countervailing powers. The disappearance of the experienced Weberian bureaucrat in favour of a system of new public management only reinforces this need.²⁵ We are again fighting those excessive market powers which we managed to rein in from 1870 to 1900.²⁶

In conclusion, the decision to put bankers like Mario Draghi in charge of the economy resulted from a lack of theoretical understanding of the huge imbalances which might be created if the real economy was sacrificed to the interests of banks. With a single-minded focus on preventing inflation at all costs, Mario Draghi was elected head of the European Central Bank for an eight-year period, from 2011 to 2019. It is tempting to compare the length of Mario Draghi's term, as a not publically elected de facto economic dictator, to the terms of elected officials of early democracies in the Italian city-states. Officials of the *signoria* of Florence were elected for three months, and the ruling council was so distributed between the professions that only one banker could be a member. Venice's Council of Ten (*Consiglio dei Dieci*) was elected for six months at a time.

²⁵ For a discussion of the problems of New Public Management in the context of development see Drechsler and Randma-Liiv (2015).

²⁶ What was then called Manchester Liberalism was in the United States reined in by the Institutional School of Economics, with Thorstein Veblen as a key figure. In Europe the German *Verein für Sozialpolitik* played a leading role in the same process.

The dystopia of vicious circles: morgenthau plans

The warnings of a Marx, a Veblen, or a Mitchell²⁷ that economists were neglecting changes in the world gathering around them, that preoccupations with states of equilibrium led to tragic neglect of principles of cumulative change, went unheeded (Arthur F. Burns, Chairman of the Board of Governors of the US Federal Reserve, 1970–1978, and Chair of the Council of Economic Advisors under President Eisenhower, 1953–1956; Burns 1954)

The equilibrium metaphor has blinded economics to all the forces that produce disequilibria. In this way economics developed into a system producing an illusion of 'spontaneous order', of automatic economic harmony. The quote above from Arthur F. Burns (1904–1987) is remarkable. It shows us that once presidential advisors were also intellectuals, and that a Chair of the Council of Economic Advisors at the peak of McCarthyism, and later President of the US Federal Reserve, could actually quote Karl Marx. It is also remarkable because it points towards an explanation of the present huge migratory flows: the cumulative downward economic spirals accompanying deindustrialization.

Figures 3 and 4 show – in a circular flow-chart form – the cumulative effects of the vicious circles of de-industrialization and poverty contrasted with the virtuous circles of economic development. The main point here is that advanced economic development is activity-specific, it can only occur in certain economic activities (Schumpeterian-type activities), and not in others (Malthusian-type activities). This is why, for a very long time, the term 'industrialized country' was considered synonymous with 'rich country'. The policies of the Washington institutions have since the late 1980s left this traditional understanding behind.

²⁷ Burns here refers to Wesley Clair Mitchell, founder of the National Bureau of Economic Research, and a student of Thorstein Veblen.

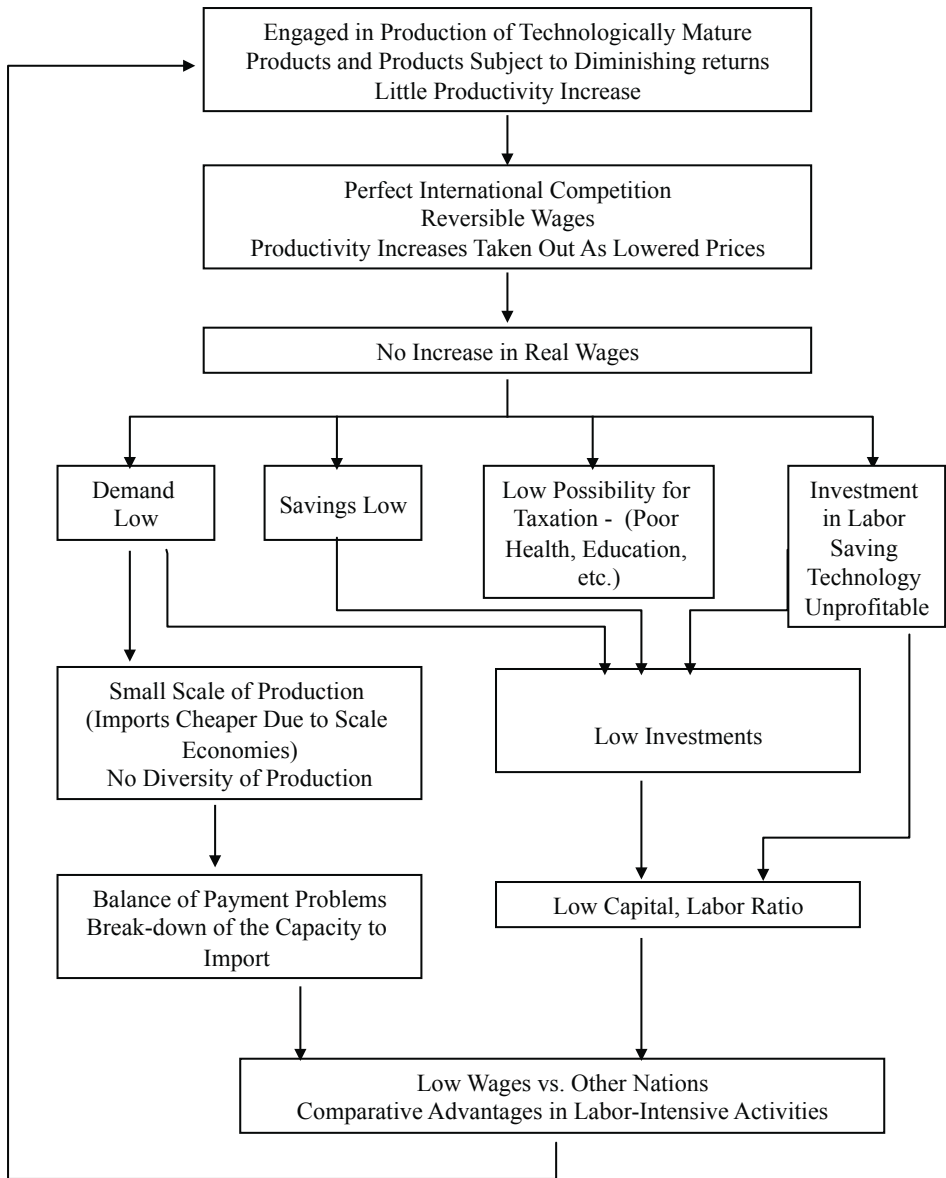


Figure 3. The vicious circles of poverty: Morgenthau Plans

Notes: It is futile to attack the system at any one point, for example, increasing investment when wages are still low and demand is absent. An instance of this is poor capital utilisation and excess capacity in Latin American LDCs

Source: Reinert (1980, p. 41)

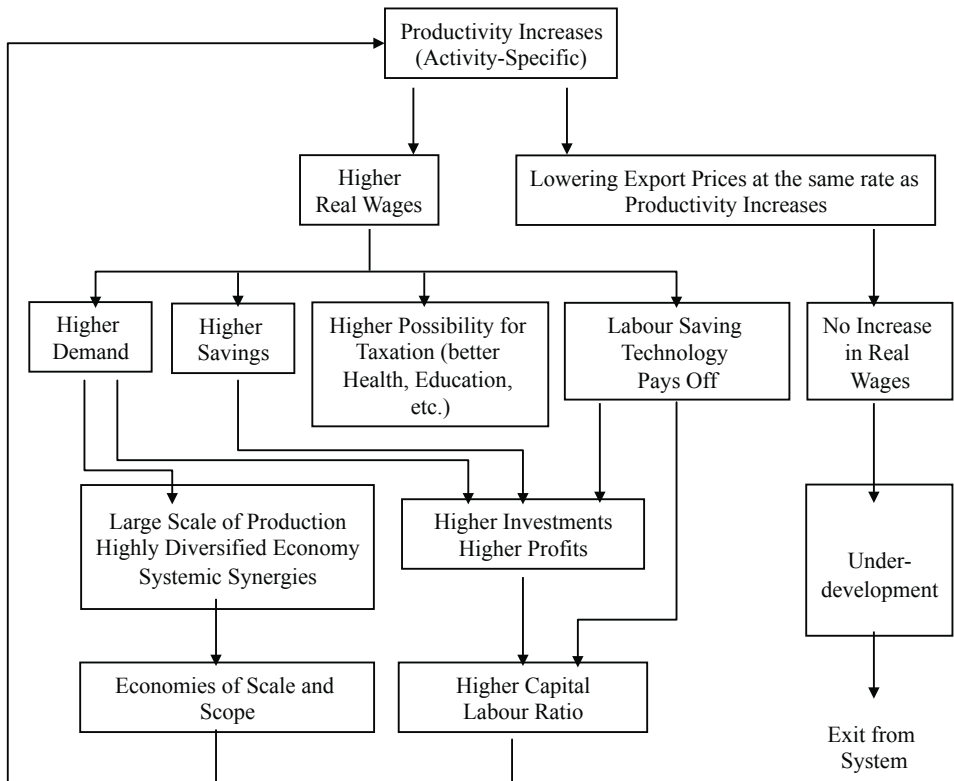


Figure 4. The virtuous cycles of economic development: Marshall Plans

Notes: In a closed system, with constant employment rate, the only way GNP per capita can grow is through the 'virtuous circle'. However, the system can be cut off at any one point; for example, if higher demand goes to foreign goods alone, the circle will break.

Source: Reinert (1980, p. 39)

We seem to have totally unlearned that the refugee crisis in Europe after World War II was to a large extent solved by nourishing, rebuilding and protecting the industrial structure of the war-torn countries through the Marshall Plan. Reshaping the economic structure of their home countries made it possible for refugees to come back. No plans of the kind seem to exist for the present refugee crisis in Europe, previously discussed in this paper. Comparing the post-war policies of the West as carried out in Iraq after the 2003 – a shocking disregard for rebuilding the economic structure of that country – with those carried out in Germany and Japan after World War II – the Marshall Plan – gives us what is perhaps the most telling proof of the invisible hand of the market producing spontaneous chaos rather than spontaneous growth. In the long run the lack of attention to the productive structures of the countries in the Muslim world will cause increased human suffering, increased fanaticism, increased migration, and may indeed threaten world civilization as we have known it. The Muslim world needs a Marshall Plan – a plan that changes their economic structure – as does the majority of African nations.

Even in a more static system – as opposed to the dynamics illustrated in Figures 3 and 4 – there will always be a large number of low-skilled activities, void of any barriers to entry that will consistently produce low wages. These activities represent the low-quality activities in the Quality Index of Economic Activities (Figure 5), fashioned on factors that are important in industrial economics (Reinert 1994). The core idea of colonialism was that the production of high-quality activities was not allowed in the colonies, while the key success factor of classical development economics was the opposite: the understanding that these high-quality activities needed to be spread to every nation (to every labour market).

The Quality Index of Economic Activities

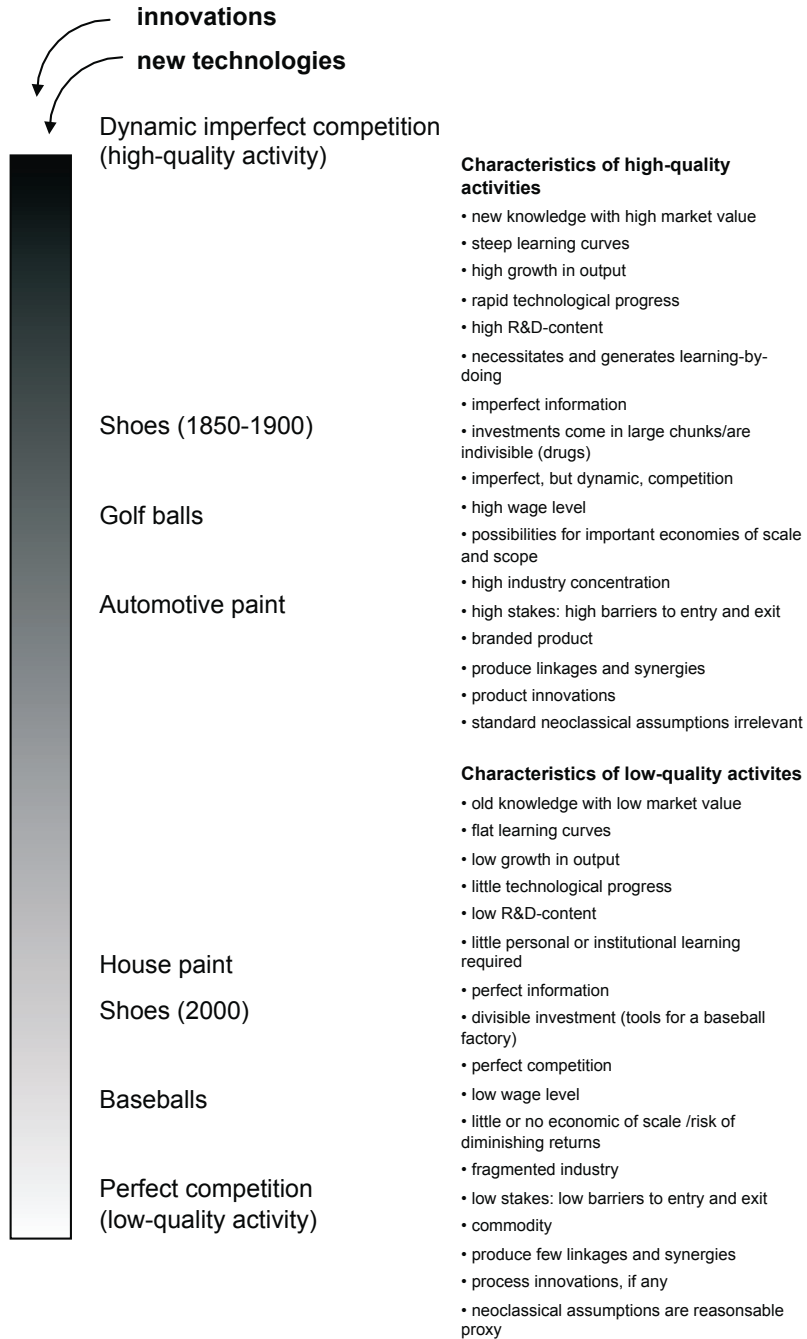


Figure 5. The quality of economic activities.

Source: Reinert 1994

The current fashion is to list the lack of openness of the industrialized countries towards agricultural imports from the Third World as one of the reasons why globalization causes poverty in some parts of the world. In other words, the problems are seen as being created by a lack of openness to free trade. In our opinion, the historical record proves these assertions to be wrong. No nation has ever taken the step from being poor to being wealthy by exporting raw materials in the absence of a domestic manufacturing sector. Malthusian activities alone have never been able to, and will never in the future be able to, lift a nation out of poverty without the presence of a domestic manufacturing sector. The only results of any importance that will be achieved by freeing the imports of foodstuffs from the Third World to the First World are:

1. A destruction of First World farming and of the rural areas of the First World.
2. A change to industrialized farming in the Third World, where the income will fall to an extent that the local workers will not be able to afford to purchase the food they produce for the rich, and the natural resources will be overexploited with resulting environmental degradation. This is in essence a mechanism of subsistence as the natural wage level, as foreseen already by Malthus.

The only way to achieve a global trading system without hunger is to strike the following deal between the rich and the poor countries: the rich nations selectively target, nourish and protect some of their Malthusian activities (agriculture), whereas the Third World is allowed selectively to target, nourish and protect some of their Schumpeterian activities (industries and advanced services subject to increasing returns) while at the same time protecting their own food production and environment, all under a system of internal competition. This must be done under a system of regional integration of the Third World countries.

The present policy of blind globalization coupled with increasing 'development aid' is essentially a policy of applying palliative economics; economics that addresses the symptoms of poverty without at all attacking its causes. Instead, the essence of economic development is a violent structural change leading down steep learning curves towards increased productivity. Providing a better water supply to subsistence agriculture is purely a palliative medicine, unrelated to the process of economic development in the real sense.

Today there are, broadly speaking, only two possible solutions to solving the increasing poverty problems caused by globalization:

1. We can globalize the labour market, the only main institution that is not yet globalized, by allowing all the poor to move where the 'Schumpeterian' economic activities are located. This will lead to an unprecedented exodus, to enormous social problems, and to a neoclassical-type 'factor-price equalization' where world wages will tend to be equalized downwards. All will tend to get equally poor.
2. We can follow the nineteenth- and early twentieth-century path taken by all the presently rich countries – of which Australia is an excellent prototype – by creating national Schumpeterian sectors which initially are not competitive in the world markets, and slowly over time letting the economy 'graduate' to compete on the world market. This is the only way to create dynamic 'factor-price equalization' upwards. Only in this way can we make the poor countries into middle-income countries.

In our opinion, option two is the only viable solution. Since close to 1 billion people do not get sufficient nutrition, a mass migration of a large number of the world's poor to the rich countries entails an overwhelming likelihood of a factor-price equalization downwards: that the wages in the First World will fall towards the wage level of the majority of the world's population, close to subsistence level. Thus the world risks being caught in an irreversible market-driven underconsumption equilibrium.

The dystopia of standardization: killing diversity

How fortunate we are in this regard that there are still so many distinct and separate German states! What is so often said to be our disadvantage can perhaps work to our advantage in this important national matter. Perhaps imitation on the part of the majority, and the desire to get ahead of the others, will bring about something that the tranquil self-satisfaction of the individual states would not; for it is plain that the one state among all German states that makes a start with this will gain a definite lead in the respect, love, and gratitude of all; it will be the supreme benefactor and true founder of the nation. It will give the others courage, provide an instructive example, and become their model; it will remove all reservation that they might still have; it will be the source of the first teachers and the first textbooks, upon which the others may draw; and whichever state becomes the second will have the reputation of having been second. (Johann Gottlieb Fichte (1762–1814), *Addresses to the German Nation*; Fichte 2013 [1807/1808])

While Johann Gottlieb Fichte above emphasizes the importance of diversity, a key characteristic of the twentieth century was the opposite: standardization. The need for standardization was brought about by industrialization: lowering costs was intimately tied to standardized mass production. The use of standardized and interchangeable parts had already started with gun production during the US Civil War, but the real starting point for mass production was Henry Ford's assembly line. 'Any customer can have a car painted any colour that he wants so long as it is black' was Ford's message in 1909. The information technology (IT) revolution in the 1990s made more flexible production possible, and the need for and cult of 'sameness' diminished.

As noted in the introduction to this volume, neoclassical economics – and therefore also the economic logic behind the European Union – came to conform to the standardization zeitgeist: as economics Nobel laureate James Buchanan (1979, 231), wrote: 'Any generalized prediction in social science implies at its basis a theoretical model that embodies elements of an equality assumption. If individuals differ, one from the other, in all attributes, social science becomes impossible.' Faced with this trade-off between 'science' and 'diversity', neoclassical economics chose the 'scientific' path, by in effect making all human beings (perfect information) and all economic activities (perfect competition) qualitatively alike. The basic metaphor of economics became equilibrium, taken from the physics profession of the 1880s.

A great intellectual mystery of the twentieth century is how, on the one hand, standardized mass production and the concomitant growing importance of increasing returns to scale under imperfect competition came to dominate economic life in the rich industrialized countries, while on the other hand, sometime in the 1930s, increasing returns to scale – the very basis for standardized mass production – was thrown out of economic theory because it was not compatible with equilibrium. The logical thing to do would have been to throw out equilibrium because it was not compatible with the most prevalent of all economic 'laws' at the time: increasing returns. The 1988 Cecchini report, which made the theoretical case for the European single market, was heavily influenced by the importance of increasing returns to scale. Around 85 per cent of the benefits from the single market were seen to come from this factor alone.

The trend towards standardization and ever-increasing size of firms and organizations was very much the reality of the twentieth century, but not in economic theory. A theory which assigned increasing returns and imperfect competition to industrial activities and diminishing returns and perfect competition to agriculture and mining would have contradicted

the overriding paradigm of the need for free trade. That understanding – which in practice had been basis for most of European history – slowly died out after its extremely successful reintroduction with the Marshall Plan.

In 1982 two US economists, Richard Nelson and Sidney Winter, published a volume which would bring back Fichte's perspectives on the role of diversity: *An Evolutionary Theory of Economic Change*. In the spirit of Schumpeter, Nelson and Winter base their economics on metaphors from biology: the market – rather than merely a machine setting prices – becomes a laboratory where different products and different solutions compete; innovations become the equivalent of nature's mutations; and the end-point is not an equilibrium, but rather an open-ended development where 'optimality' (from whatever viewpoint) is not secured or perhaps not even likely. Note in this respect the similarity with evolutionary biology's theory of punctuated equilibria. In this setting, diversity becomes an important asset: the more different approaches become available, the better the outcome is likely to be. This approach was taken over by an Organisation for Economic Co-operation and Development (OECD) programme, *Technology and the Economy*, in the early 1990s (OECD 1992), but in terms of practical influence over the policy of the European Union the influences of the neo-Schumpeterian wave boiled down to 'a laundry list of good intentions' (Reinert 2006a), not capturing the key differences between economic activities and, consequently, not the importance of economic structure. Thus today's European Union came to resemble Immanuel Kant's (1724–1804) cosmopolitan federation rather than the Fichtian ideals.

In his opposition to Kant, Fichte did not see cosmopolitanism as necessarily being the optimal solution. 'Fichte sought to establish that there were no inherent limits on the extent to which a world of multiple states would come to approximate his humanitarian ideal, despite remaining a world of states' (Isaac Nakhimovsky in the introduction to Fichte 2013 [1807/1808], xvi). With an asymmetrical economic integration tearing the union apart, Fichte's perspective is certainly worth reconsideration in Europe.

The dystopia of technological retrogression

Technological retrogression results from producers' adoption of technologies that reduce labour productivity by lowering the capital-labour ratio. This development – the exact opposite of the vision of higher automation and robots that is discussed elsewhere in this paper – may cause entire subsectors to retrograde; lead to market withdrawal and production for subsistence. The 'theory of technological retrogression' (Endresen 1994)

seeks to understand the technology component of decline, trapping societies in cumulative downward spirals of lowering income, lowering capital accumulation and low investment. Historically, technological retrogression has been associated with poor countries and diminishing returns in agriculture, fishing and mining, as when destitute workers with primitive tools work mines where modern technology can no longer mine profitably. What we observe now is that technological retrogression can be found also in rich countries and outside the raw material sectors (Reinert (2007, Chapter 5) discusses the economic mechanisms of primitivization also outside the raw materials sectors.)

Endresen (1994) provides an archetypal case of technological retrogression. For centuries Sri Lankan fishermen use sailing boats in their trade. At one point, bigger boats with inboard engines are introduced, and the most skilled fishermen – those trained in sailing – are recruited to the modern boats. A relatively long period of progress and prosperity follows, but then an increased price of oil dramatically reduces profitability. Boat owners try to ride off the storm, but gradually lose their crew members, who turn to traditional boats. However, sailing skills are lost. With the loss of sailing skills traditional deep sea fishing is also lost, and fisheries become an inshore activity based on the use of rowing boats. The inflow of labour to this inshore fishing results in resource depletion. In this tale of technological retrogression survival is secured, but standards of living are severely reduced as resources are depleted. With technological retrogression – the return to less advanced technologies – it seems inevitable that labour will involve physical hardship, while the daily struggle to make ends meet and provide for children's education becomes harder. In short, labourers experience immiseration. Migration may provide an escape; and technological retrogression becomes reinforced where this option is lacking or perceived as fruitless. After all, Alfred Marshall, the founder of neoclassical economics, pointed to diminishing returns as 'the cause of most migrations of which history tells' (Marshall 1890, 201). Both for society and for individuals alike, these are situations of lock-in. The lock-in phenomenon raises several questions. What motivates technology choices that contradict the main thrust of economic history? What triggers such processes, and what are the contextual preconditions?

A major precondition of technological retrogression is lock-in of the producers in particular production systems and places. In some cases this may be a result of apparently 'voluntary' technological choices, as when the unemployed computer engineer in Greece or Spain returns to his grandfather's farm. In other cases retrogression seems to be forced on individuals by structural coercion. The latter may be desperate measures when other options are (or are perceived to be) non-existent. When in the

case of voluntary retrogression there are other options, the producers may be said to have locked themselves into production systems of the past. From one point of view technological retrogression may appear as a desirable form of de-growth (D'Alisa, Demaria & Kallis 2014). But a future scenario of societal polarization emerges, 'idyllic', low-productive, old-fashioned producers with no market power at the one extreme, and hi-tech production units with huge market power, and the political power that comes with it, at the other. This invites reflections on the causal relationship between technological retrogression and socio-economic marginalization, and implicitly, socio-economic polarization and increased inequality. Furthermore, where technological retrogression involves return to organizational models of the past – like the neo-feudalist trend discussed in the next section – this affects the political leverage of labour and may reverse social progress. Clearly an economic theory postulating 'perfect competition' and 'the representative firm' – disregarding differences in barriers to entry and market power – is unable to capture the qualitative differences between economic activities which in turn lead to measurable income inequalities.

The grandest perspectives within history and the social sciences concern the evolution of human society and the rise and fall of civilizations. Is it useful to discuss technological retrogression in terms of such grand narratives? We would then look for evidence of this phenomenon during periods when empires disintegrate and vanish, and during prolonged crises of societies. Grand narratives are more concerned with progress than with decline. In his *History of the Idea of Progress*, Robert Nisbet claims that between 1750 and 1900 the idea of progress 'reached its zenith in the Western mind in popular as well as scholarly circles. From being one of the important ideas of the West it became the dominant idea' (Nisbet 2009, 171). Progress provided the developmental context for ideas such as equality, social justice and popular sovereignty. Philosophers of that time – Turgot, Condorcet, Saint-Simon, Comte, Hegel, Marx and Spencer – saw history as a slow, gradual, but continuous and necessary ascent to some given end.

Grand narratives proclaiming progress as 'an inexorable march of mankind' (Nisbet 2009, 171) do not generally obtain the status of theory of social science, where researchers concentrate on contemporary issues and testable hypotheses. But social science abounds with grand narratives, whose concepts have become ingrained in our language, scientific as well as vernacular. In a historical perspective, post-modernists' proclamation of the death of grand narratives (Lyotard 1984) is very recent, and is at present marginalized by entrenched resistance of the prevailing modern order. What should be credited to postmodernists,

however, is that their questioning of grand narratives has inspired a renewed critique of the idea of progress, hegemonic in Western thought for nearly 300 years. Progress is not something we think 'of' when discussing societal change; it is what we think, and this impairs our critical capacity to analyse it.

The periods of abrupt change are considered to be evidence of gradual emancipation of human agency, allowing history to jump forward. However, for our specific purpose, this stressing of what we may term 'contingency of progress' is important:

There is no necessity of progress, it is not pre-ordained that people will be willing and able to exercise their creative capacity. The constraining natural, structural, or historical conditions, or the suppressed motivations for activism ... may prevent creativity from flourishing. And similarly, the process of cumulation, passing on of tradition may get disrupted, both at the biographical and at the historical level ... In such cases, stagnation or regress rather than progress will be a likely result. (Sztompka 1990, 258)

The idea of progress is at the heart of modernization theory, where developmentalism dominates: every society progresses towards greater modernity. The classical economists, Adam Smith and David Ricardo, envisioned a future steady state. But they did not predict retrogression. Within neo-Marxist development thought, developmentalism has been questioned since the days of Paul Baran (1909-1964). Amin (1976) introduces the concept of retrogression in agricultural technique, inspiring our analysis of causes of decline. He describes a situation where modernization is reversed: average labour productivity of the production unit is lowered, and entails more men and less capital (Amin 1976, 206).

However, until now two different mechanisms have prevented this from happening in the West. First of all, since Western farmers are part of the same labour market as industrial workers, there are limits to how large the income gaps between the two sectors could be even at times of negative growth. Secondly, generous subsidies to farming and guaranteed farm prices have prevented the negative processes anticipated by Samir Amin from taking place. Recent developments in Greece and Spain seem to move in a direction that may make Amin's prediction come true. It should be noted that policy, not 'the market', has prevented this from happening earlier.

Discussing regress, Sztompka (1990) notes, firstly, that individuals may be socialized into passivity, or harsh lessons from past failures can result in limited capacity for innovation. These are conditions which limit cre-

ativity. Secondly, the process of 'cumulation', passing on of tradition, may be disrupted, and therefore the transfer of human experience over time may be prevented. The role of institutions such as schools, churches and the media in preventing loss over generations may be crucial here. The dominant idea of progress hampers our ability to observe and conceptualize regress, reversal and retrogression. We therefore need to shed our 'progressive lenses' and to operationalize the concept of decline. The theory of technological retrogression is an attempt at constructing a testable theory of reversal of technological modernization. This theory has gained new relevance due to economic setbacks in Eastern Europe during the transformation to capitalism. In rural Western Europe, the relevance of the theory is linked to deindustrialization after the financial crisis.

For Nisbet (2009), with the triumph of Christianity, a linear conception of change took over from ancient cyclical conceptions of change. With the Enlightenment the Christian linearity conception, which includes a prophecy of the 'end of time', waned and the modern secular conception of linearity came into being, together with the belief in the science-driven eternal progress of society. Since the Industrial Revolution, history can be read as a narrative of continuous scientific progress, carrying through every sphere of society, and nowhere has the idea of progress been more pronounced than in the narrative of technological change, mimicking 'old beliefs in the permanence of human progress' (Nowak 1990, 237).

An important descriptor of decline is the changes in the composition of gross domestic product (GDP) or the workforce according to economic sector. Here we confront our conceptions of societal evolution: a society that is predominantly agricultural is considered lower on the development ladder than industrial countries. Sejersted (1979) and others analyse economic growth during industrial transformation in terms of 'surplus of transfer', with a shift of labour from traditional to modern, from primary to secondary occupations. Consequently, a shift in the opposite direction, where labour flows into agriculture, would result in 'transfer losses'.

Figure 6 depicts a conception of technological change that caters for the possibility of decline. Technological retrogression is defined as the adoption of technology that reduces labour productivity. In this vision there are two levels of knowledge involved: knowledge linked to the immediate operation of a tool (the instruction manual), and knowledge on how production should be organized for tools to function.

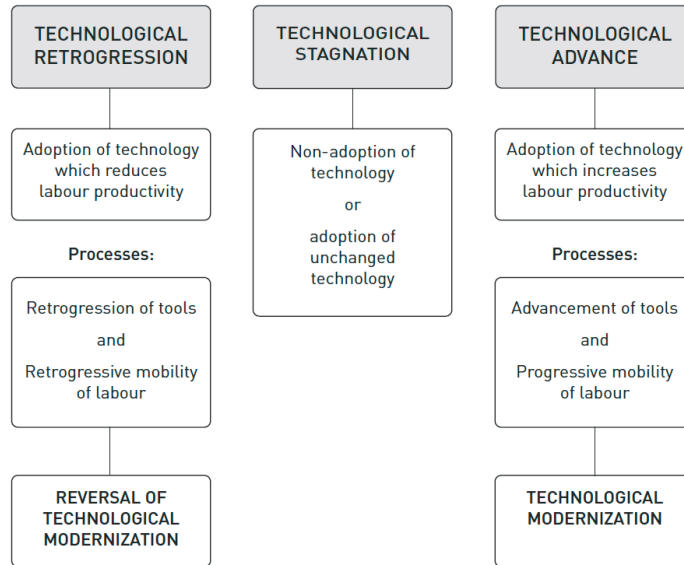


Figure 6. Technological change, the concepts

Source: Endresen 1994

‘Retrogression of tools’ in the figure refers to incidents where producers move; for instance, from tractor to horse. Technological retrogression may affect entire subsectors and cause market withdrawal and subsistence production. ‘Retrogressive mobility of labour’ refers to flows of labour from high-productive to low-productive industrial activities. A viable hypothesis is that this occurs with informalization of economies: the factory closes down, and the workers survive with primitive tools in back yards and on the streets. The concept of retrogressive mobility of labour also covers counter-historical flows of labour from secondary industries to agriculture, resulting in transfer losses.

As already mentioned, our ideology of progress hinders our understanding of technological retrogression. To compound this difficulty, retrogression is also ‘statistically hidden’. In statistics, technological modernization by some producers may outweigh retrogression and produce ‘an aggregate illusion of stagnation’. Reconstruction of technological change therefore demands a methodological approach that enables the reconstruction of technological change and sectoral and geographical mobility over time (Endresen 1988).

Necessity, Choice and Profit Opportunity

What motivates producers to adopt technologies that lower labour productivity? Underlying causes may include structural coercion, ideological

trends and profitability considerations. Here 'purpose' or 'justification' describes what actors themselves express as being the reason why certain choices were made. If producers are forced to abandon modern technology and go for technologies that are inferior in terms of labour productivity, they face technological retrogression by necessity. But technological retrogression may be the result of a lifestyle choice, such as when the Amish adopt and preserve production equipment of the past, aiming to replicate the society of a bygone century. Beside motivations of necessity and choice there is a motivation of technological retrogression by profit opportunity. With costs of labour falling compared to the cost of capital, the substitution of capital with labour becomes profitable; instead of investing in machinery, cheap labour can be hired, and production becomes more labour-intensive. Cheap labour may lead to a change in technology. This motivation may become important during periods of economic recessions and political turmoil. Where there is oversupply of labour, wage levels may drop to what the most desperate of workers are willing to accept (Ricardo 1817); while in industrial societies, increased price of labour resulting from working class struggles has spurred the advance of technology.

Empirical Evidence of Technological Retrogression

The most thorough verification of technological retrogression is found in Endresen (1994), in her study of Asian fishing villages. In one case, retrogression was due to the price increase of imported inputs; in another it was due to the disastrous ecological effects of technological modernization. Both situations involved diminishing returns and a severe lock-in of primary producers caused by lack of diversification of the economy. The modern crewmen were the first to turn to traditional boats as a survival strategy, but this did not lead to a labour shortage on modern boats. In the societies in question, the labour supply was almost unlimited; workers were willing to work for very low pay. The owners of modern boats exhausted their capital funds before they finally gave up and went back to traditional technologies. However, the traditional sector they (re)turned to was not as productive as before: local knowledge such as sailing skills and old fishing techniques were lost during the modernization period. Harsh economic realities led to retrogression in these cases; thus it was retrogression by necessity.

There is historical evidence of retrogression in Europe. During financial crises in the eighteenth century as well as during the Great Depression in the 1930s, Norwegian fishermen had to move from modern boats to traditional ones, becoming less productive, and therefore they had to 'struggle with oars and destitution'. In both cases, de-industrialization, capital

shortage and lock-in were factors of explanation. Capital shortage during the latter period led to incidents of 'primitivization' (Bull 1988, in Endresen 1994, 236) in Norwegian manufacturing as well. Small apparel producers survived during the hard times by squeezing labour and reducing technology levels (Wicken 1982).

The results from a pilot study on technological retrogression and poverty in rural Russia (Tkach, Bogdanova and Endresen) are included in Papalexioiu (2015). She concludes that 'shock therapy' (opening of the economy, liberalization, land reform), led to a sharp rise in the price of agricultural input factors, such as harvesters and cars. Food imports increased immensely and prices fell. At the same time, subsidies were removed, creating a squeeze preventing investments in machinery to secure efficient production. Monoculture in large production units now exists side by side with many smaller farms with a multitude of types of produce, and rural poverty persists. But this small-scale agriculture does not constitute the modern, competitive farming that the reformers had in mind. It relies mainly on manual labour, and serves as a survival strategy in the absence of employment or income from the indebted agricultural collectives (Kalugina 2014, in Papalexioiu 2015, 15).

The parallels with the case of the fishermen are evident: lack of diversification, lock-in, high cost of capital and capital shortage, and poverty trap. The technological choices made are good for the immediate survival of the producers, but less so for sustained growth and development. Unfortunately erroneous perceptions regarding rural poverty in Russia (such as reluctance on the part of villagers to change their way of life) echo the flawed explanation of 'traditionalism' used for the technological retrogression literature on the Asian cases.

Adding Decline to Schumpeterian Thought

The theory of technological retrogression contrasts progressive dynamics as developed by Schumpeter with retrogressive economic dynamics of technological change. We may observe Schumpeterian 'destructive destruction' in reverse.

Cast in Schumpeterian terms, technological retrogression may be considered the resurrection of 'dead' technologies which brings with it detriments to economic growth, and social and regional development (Endresen 1994). Thus, progressive Schumpeterian dynamics has an 'evil twin'; retrogressive dynamics is set in motion where (un)favourable contextual preconditions prevail. Producers, incapable of escaping crises through innovation, do not cease to exist (except, it seems, in economic theory).

For the sake of short-run survival, they try many survival strategies, including technological retrogression, resulting in reduced labour productivity and economic decline. Both dynamics can be cast in Myrdal's (1957) terms of positive and negative 'cumulative causation', describing spiralling effects of economic upturns and downturns. Whereas cyclical-ity of capitalist economies is of major importance in Schumpeter's optimistic theory of technological progress, many different triggers are relevant in its retrogressive twin process: collapse of political systems, exploitation of labour, and ideological lifestyle trends.

A Dystopian Omen?

Should evidence of technological retrogression be considered dystopian omens? Yes and no. Yes, because it signifies a reversal of modernization that has meant increase in labour productivity, the historical way out of poverty for billions of people. Going for low-tech, labour-intensive production runs counter to what has created wealth since the agricultural and industrial revolutions began. However, negative effects for long-term growth are probably the least of the producers' worries when they make the decision to reduce labour productivity or move from urban to rural occupations. The motives are to be sought either in the need for immediate survival, or in a changed lifestyle, or in an accumulation strategy of capital owners. These categories may overlap: losing a job during a recession may spur life-style changes, as when the unemployed computer engineer returns to his grandfather's farm to survive.

There is a development quandary associated with the existence of both progressive and retrogressive outcomes of technological change. De-industrialization may lead to re-industrialization at a lower technological level, and such survival strategies can be interpreted as expressions of resilience. However, choosing technological retrogression comes with lower labour productivity, which in turn limits opportunities for capital accumulation. Throughout the history of economic prosperity, we find technological modernization at its core. Capital-intensive production units innovate their way out of recessions through technological progress, leading to virtuous spirals of enhanced productivity and growth. When producers resort to technologies that secure survival but decrease labour productivity, the possibility of capital accumulation diminishes, depriving economic actors of modernization as a route of escape from poverty. Vicious spirals of decline are formed, leading to social and economic decline, and entailing a marginalization of producers as well as an increased inequality. We may very well be on our way back into what early development economists referred to as 'dual economies'.

The dystopia of neo-feudalism

The twenty-first century has been celebrated as a century of convergence, which could be achieved by means of three guideline elements: 'creative healthy individuals, a sustainable planet and full global development' (Perez 2013). Even a summary analysis reveals that in this century, as well as possibly in the next few centuries, the desired convergence – factor price utilization – is no more than an unusually unrealistic and naïve utopia. It is worth noticing that the idea of factor price equalization entered economics at a high point in the Cold War, during the communist blockade of West Berlin (Samuelson 1948 and 1949).

Advance in technology remains the driving engine of economic development, putting a very promising future within the reach of a large portion of mankind. More than three decades ago, Leontief (winner of the Nobel Prize for economics) said that 'the role of humans as the most important factor of production is bound to diminish in the same way that the role of horses in agricultural production was first diminished and then eliminated by the introduction of tractors' (quoted in Lanchester 2015).

But what happens in a reverse situation, if the tractor is replaced by the horse? This question is relevant to the economic processes that occurred in a large part of Central and Eastern Europe after the collapse of communism, and the answer resides in at least four mutually dependent drivers:

- the vulnerability of economic development, aggravated by a utopic ideology; communist society reached its limits after exhausting its own resources and after the collapse of its own economic mechanisms in the face of the new challenges of the contemporary world;
- the incomplete type of economic education, by means of the elimination of private property and the free market from the equation of development;
- the degradation of the human being, in collective-type dictatorial regimes after the collapse of the communist regimes;
- the need to survive under the conditions of sudden de-industrialization.

Replacing tractors by horses was one example of incoherence and political incapacity to cope with the global trend of acceleration of economic development. Is this a case of technological retrogression, or modernization reversal, or both (Endresen 1987; Blumer 1990; Endresen 1994; Reinert 2011)? Was this kind of de-technologization of the economy a necessary action so as to build another, more competitive one? It is obvi-

ous that technological retrogression cannot be assimilated with a creative destruction, but rather with a destructive creation, with elements of dystopia encouraged by a return to more primitive technologies.²⁸

The post-communist evolution of the socialist countries indicates that de-industrialization could just as well have been conducted by way of a gradual modernization, by capitalizing on the less demanding markets, and agriculture could have continued its market-oriented development, even in the heavily centralized countries such as Romania. In that country, for a decade, the dominant characteristic of agriculture was its focus on subsistence, as the restitution of land to the villagers led to an excessive fragmentation of the land unaccompanied by adequate financial and economic policies of credit and modernization. Perez (2004, 233) remarks that 'the social consequences of each transition are vast and profound'. As described in the previous section on technological retrogression transitions may also produce technological retrogression. This idea applies well to many former socialist countries after the collapse of the Soviet Union, which saw the return to manual labour in farming, the use of animals and rudimentary farming techniques. This explains the low yields and the high cost of agricultural produce on the individual farms.

In most of Europe industrialization slowly replaced feudalism, a system that – even in the eastern parts of Germany – prevailed into the twentieth century. What we are seeing in the EU periphery, such as Romania, at the moment is a return to a system which closely resembles feudalism. People with available capital buy up houses and allow unemployed workers to live there without paying rent, under the condition that they work free for the landlord whenever he needs their services. Although there is a certain logic in the fact that the death of industrialism again opens up for the system which preceded it, this is a truly dystopian development which ought to attract our scholarly and political attention.

The possibility of a different path is demonstrated by the example of a local community, Curtici, in Arad county (Western Romania). This was an obvious case of the power of persuasion of the leader, who although a former collective farm president (personally decorated by Ceaușescu himself on numerous occasions), managed to avoid the collapse that had occurred nationwide and to transform the former collective farm into a very efficient enterprise. This virtuous example sees the creation of a genuine agro-industrial holding with high crop yields, a strong livestock

²⁸ See Reinert and Kattel (2004) for a critical appraisal of the negative consequences of the EU enlargement that took place in that same year. Reinert and Kattel (2007) elaborate on the same point.

division, a food industry unit that capitalizes on the produce obtained, and a chain of 34 stores all across the region (see www.caicurtici.ro). Most of the owners of the land are employed in agriculture and they benefit from each year's profits. Therefore, what had seemed a utopia at a micro scale in the early 1990s has become reality under the conditions of participative and adaptive management.

This is the modern version of a strategy that had been planned in Walachia about 180 years before (1835–1836): the Scăeni Phalanstery (Berindei 1991). Known as the second ever attempt, anywhere in the world, to implement Charles Fourier's utopian ideas, it came to an end before it could become functional. By contrast, today the island of prosperity in Curtici, generated by the implementation of development grounded in trust, social fairness and a combination of private and collective initiative, demonstrates the conditions under which Romanian agriculture could have avoided the collapse from which it has yet to recover.

The agricultural village was the major loser of the economic transformations in Central and Eastern Europe. Its only chance for survival was in agriculture, and here technological retrogression in agriculture is extremely visible across the landscape and measurable, by means of the decline of agricultural output at national level (especially industrial crops), the shrinking numbers of livestock (Table 1) and the breakdown of the domestic food and textile industries.

Table 1. Decreasing livestock in Romania between 1990 and 2012

| | 1990 | 2012 | Dynamics rate (2012/1990) % |
|---------|-------------|-------------|------------------------------------|
| Cattle | 5 381 | 2 003 | 37.2 |
| Pigs | 12 000 | 5 227 | 43.6 |
| Sheep | 14 061 | 8 822 | 62.7 |
| Poultry | 121 379 | 80 119 | 66.0 |

Source: Authors, processed data, using the Romanian statistical yearbooks 1991 and 2013.

The collapse of the Soviet Union would almost qualify as a dystopia in itself. We could call it 'the dystopia of too victorious warfare'. As warned by Keynes after World War I (Keynes 1919) the harsh conditions under which Germany had to live after the war could lead to a new war within a generation. The massive destruction of Russia's productive capacity following the 'shock therapy' advised by the West may have a similar effect today. In the aftermath of WWI the problems arose with ethnic

Germans in neighboring countries. The parallel with the present problem of ethnic Russians outside Russia is striking.

The dystopia of economics as ‘bad science’

Ricardo, and still more those who popularised him, may stand as an example for all time of the extreme danger which may arise from the unscientific use of hypothesis and social speculations, from the failure to appreciate the limited application to actual affairs of highly artificial and arbitrary analysis. (Herbert Foxwell, Cambridge economist; Foxwell 1899, p. xli)

A gang of Aleutian Islanders slashing about in the wrack and surf with rakes and magical incantations for the capture of shell-fish are held, in point of taxonomic reality, to be engaged in a feat of hedonistic equilibration in rent, wages, and interest. (Thorstein Veblen, US economist; Veblen 1919, 193)

From the two quotations above we can appreciate different ways of addressing an economic theory whose level of abstraction has brought economics to a point of irrelevance. Unfortunately the theory fitted the vested interests of some groups, in particular the financial sector, over and above those of the productive sector; and the wealthy nations over and above the poor. Both quotations above are from the last time Ricardian economics was declared dead, a process which started with the economic crises of 1848, peaking early in the twentieth century. Herbert Foxwell sincerely tried to point out the extreme dangers of such theories; while Thorstein Veblen, attempting to do the same thing, used a heavy dose of irony in order to get the point across.

Today we are again facing the same problem, a rebirth of mainstream economics at an excessively high level of abstraction. ‘Irrelevance as methodology’, as Wolfgang Drechsler once quipped. One starting point for the return of irrelevance may be said to have been Milton Friedman’s assertion that: ‘Truly important and significant hypotheses will be found to have “assumptions” that are wildly inaccurate descriptive representations of reality, and, in general, the more significant the theory, the more unrealistic the assumptions (in this sense)’ (Friedman 1953, 14).

Asserting this adverse relationship between realism and scientific merit – ‘the more scientific the theory, the more unrealistic the assumptions’ – was not met with a logical question by economists of the past; and surely Thorsten Veblen (1857–1929) would have posed: ‘In whose vested interests is this theoretical development?’ English economist

Josiah Tucker (1713–1799) was also in the habit of asking ‘*Cui bono?*’ – who will profit from this? (Tucker 1782). An economic theory no longer distinguishing between the financial sector and the real economy would, in the old understanding, benefit the financial sector. A Ricardian economic theory modelling international trade as the barter of qualitatively identical labour hours – equating the labour hours in Silicon Valley with those of a hunting and gathering tribe in the Amazon – will not see that ‘free trade’ may benefit some types of economic activities and some nations more than others.

If economics is indeed a science, albeit a science whose state of health offers reasons for concern, and if science itself experiences a moment of crisis, as we are about to discuss, what are we to make of the joint occurrence of these problems?

One conference entitled ‘What’s Wrong with the Economy – and with Economics?’;²⁹ another conference on ‘Research Integrity’;³⁰ Queen Elizabeth II questioning the predictive capacity of British economists at the London School of Economics (Pierce 2008); the cover of the weekly magazine *The Economist* (2013) devoted to ‘Bad Science’; these are all convenient icons to illustrate the elementary consideration that both economics as a discipline, and science in its totality, including natural and social sciences, are in crisis.

These twin crises have so far been the subject of separate strands of reflections, both in the academic literature and in investigative journalism. We are interested in the following questions:

1. Are these two crises one?
2. If this is the case, is there something which economics can learn from the diagnoses and solutions advanced from the craft of science and technology studies (STS)?

Is the Crisis One?

It has been written in a rich literature, which has in Philip Mirowski its latest champion, that economics is a recurring victim of its physics envy (Mirowski 1991). There is at present an interesting debate on ‘mathiness’, a new term coined by economist Paul Romer (2015) to lead a courageous debate against ‘freshwater economists’ or ‘sympathizers’ for

²⁹ <http://www.nybooks.com/blogs/gallery/2015/mar/29/whats-wrong-with-the-economy/>.

³⁰ <http://www.wcri2015.org/>.

their use of mathematics as “Latin”, in the sense that mathiness is used to scare off debate and veil ideological stances. In a later blog Romer bases his plea to fellow economists for the importance of intellectual honesty on a famous speech by Richard Feynman, perhaps the most loved US physicist ever. The speech, entitled ‘Cargo cult science’, famously argued for a distinctive feature of science: that of being falsifiable; and for the moral commitment of scientists to go out of their way to try to falsify their own work. Hence in the moment in which economics performs its ethical self-examination it again turns to physics.

The moment of truth for economics has coincided with the debacle of mathematical modelling – in the form of dynamic stochastic general equilibrium (DSGE) models – to forewarn of the oncoming crisis, with the ensuing inquiries involving the US Senate as well as the British Crown (Mirowski 2013, 275–286). The use of mathematics to obfuscate rather than illuminate corresponds to the ‘Latin’ of decaying science for Harold Innis; see Reinert (2012a) and Saltelli et al. (2013).

While economics goes through a needed moment of reflexivity, sciences in general – including natural sciences – are in the midst of their own unprecedented existential crisis. This crisis is so deep that even the media have taken note. As mentioned, *The Economist* devoted its cover to ‘Bad Science’ in 2013. Journals such as *Nature* (2015) and the *Lancet* (2015) have run concerned editorials, and four international conferences have already been held on science integrity between 2007 and 2015 (*Lancet* 2015). The issue is debated in academia and think tanks (Horton 2015). In social science a recent important experiment run on 100 major studies could replicate only 35 per cent of the total, and the size of the effects was systematically smaller in the replicate than in the original (OSC 2015).

The crisis had long been anticipated by Derek de Solla Price (1963), for whom science would reach saturation (and in the worst case, senility) under its own weight, victim of its rapid exponential growth (pp. 1–32). For Jerome R. Ravetz (1971) industrialized science would have systematic and serious problems with its quality control mechanism due to its mutated ethos and to mutated scientists’ norms.

How does this crisis of science impact on science’s use to inform policy, and what has this to do with economics? As is known, economics is presently a master discipline as far as policy advice is concerned. Almost by definition, cost–benefit analyses, contended by engineers and economists (Porter 1995), are the tool of choice to adjudicate the feasibility of policy options. In the academic world, economists command the highest

salaries (Fourcade et al. 2014), decide upon the desirability of austerity policies – even when based on flawed spreadsheet software modeling (Cassidy 2013) – and tend to extend their reach to adjudicate upon disputes such as on climate change (Stern 2015).

Scholars of the field of science and technology studies (STS) as well as some fathers of the ecologist movement (Lewis Mumford, Langdon Winner) have long argued that the enrolment of science in support of policy – in the form of risk or cost–benefit analysis – but also in the dream of innovation as a source of never-ending growth, has brought about as many new problems as those which were solved. A vivid example is the present debate between techno-optimists (Rifkin 2014) and pessimists (Brynjolfsson and McAfee 2014; see also Pope Francis’s 2015 encyclical letter *Laudato Si*) on the effect of automatization on the labour market. Regarding the role of economics, Ravetz (1994) advances the provocative hypothesis that economics has remained after all a folk science, meaning by this a science that never quite mastered the production of stable ‘facts’.

Can Something be Learned from Science and Technology Studies (STS)?

A prophetic book on the wonders of science, Bacon’s *Novum Organum*, was published in 1620 (Bacon 1994 [1620]). In the centuries that followed, both Descartes and later Condorcet enriched this vision, but at the same time lost Bacon’s solid empirical roots. For some scholars the last four centuries have then been those of scientific hubris, or rationality becoming a substitute for reason; to use the words of a famous book of Stephen Toulmin, of a ‘Cartesian dream’ (Guimarães Pereira and Funtowicz 2015). Could it be that economists have their own version of the dream? Would it be far-fetched to call it the Ricardian dream? These dreams have a common origin, and mathematics and reductionism are the inner thread.

If the two dreams have a common root, is it possible that some of the recipes advocated by STS scholars for sciences in general may have a bearing on economics as such? One recipe has already been identified as crucial by both communities: this is the need for something to be unlearned before progress can be achieved. Paul Romer (2015), the authors of this paper, and STS scholars would probably agree that one should abandon the belief that nothing can go wrong when there are quantitative data and mathematical techniques (Ravetz and Saltelli 2015). Next comes the Cartesian hubris to understand and control systems involving complexity and consciousness, such as the economy, with reductionist reliance on the precision of models and indicators.

A second lesson would possibly derive from the remark that the most critical voices in science – and the most perceptive of the oncoming crisis – were from the field of history or philosophy of science, or STS. Likewise the most critical voices in the criticism of economics also come from historians of economic thought (e.g., Mirowski 1991). The second lesson would, hence, be to listen to the voices from these disciplines.

Another recipe coming from STS which could perhaps be considered in economics is for the strengthening of quality control mechanisms and tools. This would involve a better method to reintroduce craft skills in handling numbers. Education would play an important role in this, as well as better strategies for the screening of mathematical evidence. These include tools such as NUSAP (Funtowicz and Ravetz 1990; van der Sluijs et al. 2005), sensitivity auditing (Saltelli et al. 2013), and quantitative storytelling (Saltelli and Giampietro 2016).

Daniel Sarewitz (2015), a long-term advocate against science's 'excess of objectivity', has demonstrated the importance of citizens' participation if the applications of science to policy are to work. Even if citizens become more like scientists, this would again be the old ineffective 'deficit model' whereby progress is hampered by citizens' lack of scientific (or economic, in this case) numeracy. Change has to come from within the professions as well. There are already precedents, in the activist campaigns such as those organized by Sir Timothy Gowers against Elsevier, or the action of individual economists such as Paul Romer, already mentioned.

Along these lines one might think of a utopia where the movement known as 'citizen science' develops and extends into the arts and professions, to create aware citizen-scientists and citizen-economists. The profession has the intellectual ammunition to achieve this: just listen at the talks given at the conference 'What's Wrong with the Economy – and with Economics?' mentioned at the beginning of this section. We live by the choices we make. We may become the artifices of our own misery if we keep living in the shadows of Keynes's famous 'defunct economists' or if we restrict arbitrarily the number of economists by whose dreams we choose in order to understand the world around us.

A failed understanding of utopia resulting from the lack of context: fergusson's (2011b) 'killer apps', and acemoglu and robinson (2012)

Harvard economic historian David Landes (1924–2013) made a rough but insightful taxonomy of explanations of economic development. Starting out his Richard Ely Lecture³¹ entitled 'Why are We so Rich and They so Poor?', Landes says:

I shall argue that most answers to the question posed by my title fall into one of two lines of explanation. One says that we are so rich and they so poor because we are so good and they so bad; that is, we are hardworking, knowledgeable, educated, well-governed, efficacious, and productive, and they are the reverse. The other says that we are so rich and they so poor because we are so bad and they so good: we are greedy, ruthless, exploitative, aggressive, while they are weak, innocent, virtuous, abused, and vulnerable. It is not clear to me that one line of argument necessarily precludes the other, although most observers and commentators have a strong preference in the matter (Landes 1990)

What Niall Ferguson's (2011b) bestseller *Civilization: The Six Ways the West Beat the Rest* with its historical 'killer applications' to wealth has in common with Acemoglu and Robinson's (2012) *Why Nations Fail* is that their bias makes them fall too heavily into Landes's first category; a bias that refuses to acknowledge that, to a large extent, the dynamics that leads to economic development (what we have called the Marshall Plan mechanisms) has been the result of a certain type of economic-political structure that was prohibited under colonialism. We shall argue that the urban bias³² that created the *ben commune* (Brunetto Latini, 1220–1294), freeing Europe from the extractive modes of feudal society, could not have happened without a large division of labour in handicraft and manufacturing. Here lie the origins of inclusive political institutions. 'City air makes free', runs an old German proverb, reflecting the legal practice that after a period of a little more than a year in a city, serfs were no longer the property of the landowners.³³ If, in the absence of manufacturing, colonial peasants and colonial societies were not able to produce the economic structures upon which Acemoglu and Robinson's 'inclusive institutions'

³¹ Named after Harvard economist Richard Ely (1854–1943), a founder and the first Secretary of the American Economic Association, often referred to as a 'Christian Socialist'.

³² For a discussion of the role of the cities, in addition to the work of Jane Jacobs (1984), see Sir Peter Hall's massive tome *Cities in Civilization* (1998). On the appearance of the town and city economies in the larger picture of the development of human societies, see Reinert (2000).

³³ 'Stadtluft macht frei'; see Grimm and Grimm (1991 [1919]). See also Hühns and Hühns (1963, 123).

rest, these authors' approach could be seen as a variation, although more sophisticated, of Landes's 'we are so good and they so bad'.

In a sense both works represent a lack of understanding of the qualitative historical dynamics, how things evolve into what they are: the static point of departure for modern regression analyses. Alfred Marshall, the founder of neoclassical economics, respectful of the important roots of economics in German economic tradition, puts it this way: 'in other words that from what is we have to learn what is *becoming*; from *das Sein* we have to learn *das Werden*' (Marshall 1897, 10).

Acemoglu and Robinson fail to explore the *werden* (the 'becoming') of the inclusive economic institutions upon which they put so much emphasis. If we allow US economic historian Richard Goldthwaite, an expert on the early Italian capitalist city-states, to be our guide to the history of capitalism, this history starts with the conscious shift of comparative advantage in the Italian city-states. What is generally seen as Europe's 'commercial revolution', Goldthwaite argues, was in fact a process of import substitution: from the twelfth century onwards manufactured goods, which had previously been imported from the Levant, started to be produced in Europe (Goldthwaite 2009, 6–8). As Sombart and Schumpeter would argue, economic strategies tend to produce outcomes that were in no way intended; for example, the intention of early English industrialists was probably to join the landed oligarchy, but the forces set in motion broke down the very structure they planned to join. The intention of the then relatively backward European continent was not to construct capitalism and inclusive institutions; yet, in the end, that was the outcome of those strategies.

Part of the problem with modern literature on economic development is the crucial issue of the arrows of causality between economic activities and the institutions with which they co-evolve.³⁴ Inhibiting certain kinds of economic activities will also impede the development of institutions with which they co-evolve. In a brief moment of counterfactual history we can imagine how the United States would have looked – with slavery, free trade and no pro-industrialization policies – if the South had won the Civil War. Such a society would hardly have displayed the desired 'inclusive institutions'. Acemoglu and Robinson as well as Fergusson leave out of their analysis the wisdom of centuries, starting, in the English-speaking literature, with Francis Bacon's (1994 [1620]) *Novum Organum*: 'There is a startling difference between the life of men in the most civilized province of Europe, and in the wildest and most barbarous districts of New

³⁴ For a more thorough discussion see Reinert (2006b).

India. This difference comes not from the soil, not from climate, not from race, but from the arts.’

We find this understanding of how the arrows of causality run – from the occupations of man to his institutions, not the other way round – in the Arab-speaking world with Ibn-Khaldun (1332–1406): ‘The differences between different peoples arise out of the differences in their occupations’ (Ibn Khaldun quoted in Issawi 1987, p. 17). The direction of the arrow of causality in development still remains that described by Johann Jacob Meyen in 1770: ‘It is known that primitive nations do not improve their customs and habits, later to find useful industries, but the other way around’ (quoted in Reinert 2007, 101). The change of mentality occurs with the change of mode of production. Waiting for a hunting and gathering society to acquire the institutions of industrial societies, and then to industrialize, is absurd.³⁵ Even when societies are much closer in terms of development this institutional reversal of the arrow of causality may prove elusive, as was the attempt to impose the US-style rule of law on occupied Iraq (Carothers 2009).

In his bestseller, *Civilization: The Six Ways the West Beat the Rest*, economic historian Niall Fergusson (2011b) introduced a set of six ‘killer apps’: six ways in which Western civilization had beaten the rest of the world. It is not difficult to agree with most of Fergusson’s ideas, but we challenge them in this paper with an antagonist list of recipes, one proposed by Erik Reinert³⁶ which tries to identify deeper reasons and factors behind Fergusson’s own list of ‘killer apps’.

We start with Fergusson’s ‘killer applications’:

1. Competition. Fergusson compares China to Europe in 1500. He argues that the Chinese Empire remained under an isolationist regime, leading to little competition among polities. Europe, long fragmented, encouraged competition and this led to increased travel to seek meaningful opportunities abroad.
2. Scientific revolution. Fergusson claims that breakthroughs in science are mostly attributed to European innovations, particularly in weaponry which allowed military predominance.
3. Property rights. Fergusson believes that a firm grounding in respect for democracy and property ownership led to successful economic growth with a government mindful of these ideals.

³⁵ This is also discussed in Reinert (2007, 221–223).

³⁶ Fergusson’s entry in Wikipedia https://en.wikipedia.org/wiki/Niall_Ferguson (accessed November 2015) shows the controversies surrounding Fergusson’s revisionist view of colonialism.

4. Modern medicine. The West found vaccinations for smallpox and yellow fever and doubled life expectancy. Many of these vaccinations were disseminated in the colonies, and were seen as important matters of public health.
5. Consumer society. In the eighteenth and nineteenth centuries, Britain was a keen example of an all-encompassing spending society, whose ideas spread to the colonies, engendering a sweeping popularity of Western clothing.
6. Work ethic. Fergusson directly attributes hard work to the rise of Protestantism, which stressed hard work, saving and reading.

Renaissance and enlightenment: an alternative set of the 'killer apps' of the west

'Institutions' has been the shield behind which the economic historians siding with neoclassical economics found a temporary safe haven. By focusing on institutions per se, rather than on the contexts and conditions that brought about these institutions, it has been possible to disregard the most blatant fallacy of neoclassical economics, David Ricardo's trade theory, and the myth that free trade has ever brought a nation out of poverty.

If we take the time and effort to dig behind the institutional shield, we find that civilization, from Ancient China to the Arab civilization in Bagdad around the year 800, has been based on what we could call 'knowledge for the sake of knowledge'. Thorstein Veblen referred to this not-for-profit quest for knowledge as 'idle curiosity'.³⁷ From the Renaissance³⁸ on, Christendom³⁹ came with a 'duty to invent' (see Reinert and Daastøl 1997); we could call it the 'da Vinci gene'. These factors would place the root of success of the West in its history and philosophy, in its attitude to new knowledge, from the Eleatic school introducing abstract thought to the long tradition of preserving classic traditions in manuscripts and books in the monasteries of Christianity. The change in the meaning and connotations of innovation from when Roger Bacon (c.1214–c.1292) was arrested in Oxford for 'suspicious innovations' (that is, seeking

³⁷ For discussions of Veblen's terms used here see Reinert and Viano (2012).

³⁸ A modern introduction to the Renaissance by Harvard historian Stephen Greenblatt is *The Swerve: How the Renaissance Began*, London: Bodley Head, 2011

³⁹ We are not claiming that this is a monopoly of Christendom; during the Dark Ages of European civilization Islam (in particular in Bagdad around the year 800) and the Jewish religion were important keepers of Greek wisdom.

⁴⁰ See Reinert and Daastøl (1997) for a further discussion.

knowledge outside the Bible and Aristotle) to when Francis Bacon (1561–1626) published *An Essay on Innovations*, where innovation drives progress, testifies to the mind shift on which Western civilization was built.⁴⁰ This leads us to the following list of root causes – of ‘killer apps’ – of progress:

1. *Knowledge for the sake of knowledge*. Reinert and Daastøl (1997) argues that the Renaissance – and with it Western economic take-off – was founded on a religiously based *duty to invent*, which we could call the *da Vinci gene*. In Thorstein Veblen’s terminology this corresponds to *idle curiosity*. i.e. not-for-profit-curiosity (see Reinert and Viano 2012).
2. *‘Magna facere’ and emulation*. That production did not stop when the family’s needs were met is a key element distinguishing capitalism from other economic systems (Werner Sombart). Upon this necessary building block came the taming of warfare into more peaceful rivalry. One early example of this is the curious competition between Bologna families of the twelfth century onwards in building towers – deemed fairly useless for other purposes than conspicuous consumption – rather than competing in plain war (Roversi 1989). The duty of Magnificent Princes (from *magna facere*, to make great things) was to sponsor great art and architecture. Albert Hirschman’s (1977) *The Passions and the Interests* presents capitalism as a remedy against the passions of wars in favour of the ‘harmless’ interests of commercial life. Trade has to be understood as war by other means in a game of emulation between states (also in war and luxury).⁴¹ This became another key Western feature.
3. *Virtue and instinct of workmanship*. Capitalism required three fictitious commodities: ownership of land, labour as a commodity, and money (Karl Polanyi, 1886–1964). Civilizing this system required ‘virtue’, a specific ethos, where the values of Greek philosophy merge with the values of the New Testament (in partial contrast to the Old Testament). This virtue created the *ben commune*, the common weal, in urban life, and made development a phenomenon that could not exist independent of cities. This *ben commune* was paramount in the Italian Renaissance, with Florence’s poet and politician Brunetto Latini (c.1210–1294), and continuing with Leon Battista Alberti (1404–1472) and beyond. This ethos was later popularized by Benjamin

⁴¹ Building on Fergusson’s point on the role of war can be added a work by Werner Sombart (1913a), *Krieg und Kapitalismus* (War and capitalism). In the same year, however, Sombart identified another main driver for Western capitalism, in *Luxus und Kapitalismus* (1913b). The first volume has never been translated into English, the second was translated as *Luxury and Capitalism*.

⁴² <http://waytowealth.org/>.

Franklin, whose influence in the West can be measured by the fact that his *Way to Wealth* is the economics work that has reached the largest number of editions of all.⁴² The 'taming of predatory instincts' – lining up the vested interests of individuals with the vested interest of society at large – was an eighteenth-century exercise set in motion based on the provocation of Bernard Mandeville's (1723) *Fable of the Bees*. Taming what in Thorstein Veblen's terminology are called 'predatory instincts' can be seen as the victory of cooperative over extractive political institutions.⁴³ Thus a necessary foundation for capitalism and the rule of law was the aligning of the vested interests of the individual with the interests of society at large. Double-entry bookkeeping was a product of the Italian Renaissance and was a precondition for capitalism: for capitalists to quantify their net worth, to manage their capital, but also for society to make fair taxation possible. Modern banking saw Genova, Siena, Florence and Venice as leaders, while double-entry bookkeeping (*partita doppia*) was formalized by Luca Pacioli (1445–1517), who had been under the early influence of Leon Battista Alberti (see above).⁴⁴

4. *Individualism balanced with an understanding of a 'ben comune'* (Veblen's 'parental bent'). In contrast to feudalism, where money was made by clinging to inherited property rights, the Renaissance and the Enlightenment created a Schumpeterian dynamic where the only way to continue to make money was to innovate. This dynamic was well captured by the Red Queen's line, 'Now, here, you see, it takes all the running you can do, to keep in the same place', in Lewis Carroll's (1991 [1871]) *Through the Looking Glass*. That frequent financial crises killed idle capital – *mammon* – and poorly invested capital was probably an important ingredient in the system. Schumpeter was a lone voice in arguing that financial crises are a necessary 'cold shower' that cleanses the capitalist system, but he was probably right. By saving the financial sector we seem today to have killed the powers of creative destruction on the real economy in favour of negative-sum games – or even destructive creation – based on innovations in the financial sector.
5. *Huge diversity of states and approaches*, balance of countervailing powers, and freedom from arbitrary power. This feature is common to ancient and modern thinkers alike, from Montesquieu to John Kenneth Galbraith. To take an example, in Florence the composition of *la signoria* was conceived as to never have more than one banker; see John Najemy's discussion of the anti-

⁴³ Thorstein Veblen, who would have added to their perspective, is not mentioned in Acemoglu and Robinson.

⁴⁴ Recent works on bookkeeping include Gleeson-White (2012) and Soll (2014).

magnate legislation in Florence (Najemy 2006). At the same time the elected rulers – the *signoria* – had terms as short as three months. Likewise Venice’s institutions to prevent encroachment of power elites included anti-corruption policies, the ‘circulation of elites’ and of public offices – the normal tenure was only six months – and the person elected *Doge* was one not seeking power. Rather, the *Doge* was often a successful businessman who had to give up his business during his term, and remain virtually a prisoner in the city.

6. *Anti-feudal and pro-manufacturing policies* in the past gave rise to increasing returns and a large division of labour which made the growth of cities and generalized welfare possible. Giovanni Botero was an important early theorist here. The rise of capitalism represents the victory of individual freedom, coupled with an intense urge for a *ben commune* which is present in urban societies but not in feudal ones. These urban values represented anti-speculation, anti-hoarding and anti-feudalism. Democracy in Florence was for centuries under threat from surrounding feudal landowners, and speculation was kept at bay by prohibiting the transport of food out of the city. Spain’s 1520–1521 ‘War of the Comuneros’ may be seen as an example of the urban, anti-feudal, political factions losing this type of conflict (Seaver 1866 [1928]; Gutiérrez Nieto 1973).

A main contrast, then, between Fergusson’s and Acemoglu and Robinson’s theses – which we here group together – and Reinert’s thesis is that the former tend to disregard the context in which institutions develop. Inclusive economic institutions grew out of the freedom from arbitrary power that dominated feudal societies, and the way out required ‘a cult of manufacturing’.⁴⁵ The most evident benefit springing from this freedom was the handicraft and manufacturing industries from which the cities could pay their food bills to the largely feudally controlled countryside. In Switzerland – together with Iceland and Norway, the only countries in Europe that were never controlled by feudalism.⁴⁶ – the Constitution to this day holds the absence of arbitrariness, of *Willkür*, as one of its most important principles (Uhlmann 2005). The state – never the individuals – may make ‘arbitrary’ decisions, but strictly if needed for the common good (*salus rei publicae*).

⁴⁵ That this ‘cult of manufacturing’ in term had a very positive impact on agriculture was already emphasized by David Hume when discussing the reign of Henry VII (who started promoting manufacturing in England in 1485): ‘Promoting husbandry ... is never more effectually encouraged than by the encrease [sic] of manufactures’ (Hume 1767, 65).

⁴⁶ Norwegian historian Kaare Lunden has made the point that the three countries where feudalism never penetrated are also the countries that chose not to join the European Union.

We would argue that historically the preconditions for the 'good governance', creating the 'inclusive economic institutions' which are seen as so central to Acemoglu and Robinson, are specific to those countries that historically have been through the anti-feudal, anti-arbitrary process of industrialization. Poor countries have rarely been able to distribute the windfall profits from large findings of oil and gas. Norway managed this fairly successfully because the necessary inclusive institutions were already in place through industrialization and through a gradual political consensus.

The outlines of a solution: from the renaissance to keynes (1933)

It often happens that the universal beliefs of one age of mankind – a belief from which no one was, nor without an extraordinary effort of genius and courage could at the time be free – becomes to a subsequent age so palpable an absurdity, that the only difficulty then is to imagine how such a thing can ever have appeared credible ... It looks like one of the crude fancies of childhood, instantly corrected by a word from any grown person. (John Stuart Mill, *Principles of Economics*, 1929 [1848], 3)

Gestalt-Switch Moments: Learning from 1848 and 1989.

From natural to social sciences, from fashions to zeitgeists, paradigm shifts of unexpected magnitude can take place over the shortest of times, as from the above quote of philosopher John Stuart Mill (1806–1873).

One of the more perverse ideological fabrications over the last decades has been the vilification of John Maynard Keynes (1883–1946) as a leftist monster opposing Friedrich Hayek (1899–1992) as our new 'saviour'.⁴⁷ The extremes to which the libertarian propaganda machine goes in demonizing Keynes – correctly seen by his biographer as 'the economist as saviour' (Skidelsky 1995) – is well represented by Libertopolis in Guatemala, which features a poster reading, 'After the cult of Ché [Guevara] the cult of Keynes is the most harmful: That for ALL populists the GOD of economists is Keynes IS NO COINCIDENCE!',⁴⁸ thus putting Keynes on the ideological level of Ché Guevara.

Keynes is again important today because he understood both the basic underconsumption problem that is latent in capitalism, and the role of

⁴⁷ A google search of 'Keynes vs. Hayek' gives 250 000 hits (November 2015)

⁴⁸ Source: Libertopolis, Guatemala, available at <https://www.facebook.com/libertopoliscom/photos/a.157988340883664.40196.122086647807167/1132999443382544/>.

industry. Today's problems call for a new zeitgeist – a gestalt-switch – and we can think of few better introductions to what ought to be the new zeitgeist for the West than Keynes's seminal article, 'National self-sufficiency', written in 1933 (Keynes 1982 [1933]). Like today, 1933 was a time of rude awakening, and the situation requires a zeitgeist recognizing the need for de-globalization: that goods to a larger extent must be 'home-spun' and that finance also ought to have a more national character. This of course does not literally mean autarky or self-sufficiency, but it means returning to the extremely successful world model of development that ruled from 1945 until the mid-1970s: the vision that world prosperity requires that manufacturing industries and advanced service sectors are distributed to all nations.

Keynes's 1933 article didactically takes the reader through the necessary change in zeitgeist which was embarked upon in 1933, and upon which the world now again needs to embark. Keynes first takes us through the reasoning necessary to free the mind from a belief in free trade as a matter of 'moral law':

I was brought up, like most Englishmen, to respect free trade not only as an economic doctrine which a rational and instructed person could not doubt, but almost as a part of the moral law. I regarded ordinary departures from it as being at the same time an imbecility and an outrage. I thought England's unshakable free trade convictions, maintained for nearly a hundred years, to be both the explanation before man and the justification before Heaven of her economic supremacy. As lately as 1923 I was writing that free trade was based on fundamental 'truths' which, stated with their due qualifications, no one can dispute who is capable of understanding the meaning of the words.

Keynes gives us compelling arguments for de-globalization, why globalization had gone too far: ideas ought to travel freely but goods, to a larger degree than hitherto, need to be homespun, and finance should be primarily national:

But experience is accumulating that remoteness between ownership and operation is an evil in the relations among men, likely or certain in the long run to set up strains and enmities which will bring to nought the financial calculation.

I sympathize, therefore, with those who would minimize, rather than with those who would maximize, economic entanglement among nations. Ideas, knowledge, science, hospitality, travel – these are the things which should of their nature be international.

But let goods be homespun whenever it is reasonably and conveniently possible, and, above all, let finance be primarily national. Yet, at the same time, those who seek to disembarrass a country of its entanglements should be very slow and wary. It should not be a matter of tearing up roots but of slowly training a plant to grow in a different direction.

For these strong reasons, therefore, I am inclined to the belief that, after the transition is accomplished, a greater measure of national self-sufficiency and economic isolation among countries than existed in 1914 may tend to serve the cause of peace, rather than otherwise. At any rate, the age of economic internationalism was not particularly successful in avoiding war; and if its friends retort, that the imperfection of its success never gave it a fair chance, it is reasonable to point out that a greater success is scarcely probable in the coming years.

Global free trade did not deliver on its promise of global peace, although this was once a key argument for free trade. Obviously today's context is different than that of 1933, but our argument is that since the very same type of economic forces are at work today – although in a different context – the solution to the problem lies in the same recommendations that Keynes had. We suggest that this is the direction in which we need to move, but the recommendations should not be taken literally. We must keep in mind that the policies here outlined by Keynes – and not a religious belief in free trade – were the true foundations for the policies that produced unprecedentedly high economic growth in the world until the mid-1970s. European economic growth over the centuries has always been based on the principle of emulation rather than on that of free trade, suggesting that the history of economic thought in this aspect needs to be rewritten (S. Reinert 2011).

Keynes then turns to what we today would call environmental issues:

The same rule of self-destructive financial calculation governs every walk of life. We destroy the beauty of the countryside because the unappropriated splendors of nature have no economic value. We are capable of shutting off the sun and the stars because they do not pay a dividend. London is one of the richest cities in the history of civilization, but it cannot 'afford' the highest standards of achievement of which its own living citizens are capable, because they do not 'pay.'

The decadent international but individualistic capitalism, in the hands of which we found ourselves after the war, is not a success. It is not intelligent, it is not beautiful, it is not just, it is not virtuous – and it doesn't deliver the goods. In short, we dislike it,

and we are beginning to despise it. But when we wonder what to put in its place, we are extremely perplexed ...We are – all of us, I expect – about to make many mistakes. No one can tell which of the new systems will prove itself best.

The road ahead is better defined now than in 1933, when a planned economy was one of the possibilities open to the world. However, as a starting point we still have to get rid of what Keynes called the 'bundle of obsolete habiliments one's mind drags round'. A key obsolete notion is that all economic activities should be seen as being qualitatively alike, as is implicit in Ricardian trade theory. Since economic activities in reality differ so widely in terms of their ability to create welfare – which this book attempts to explain – a strategy to maximize world real income and welfare requires very different policies than the present economic strategy that instead maximizes international trade.

A new course could therefore also be beneficial to the nations which at first glance may appear on the verge of abandoning their Colbertian economic order. Our thoughts go to China. It may initially sound illogical, but as wages and employment rates in many European countries and in the United States fall, it may in fact be in China's long-term interest to tolerate some protectionism in these countries. Protecting parts of the industrial system of the United States and Europe can be seen as safeguarding the future size of overseas markets, of future demand for Chinese goods. In terms of underconsumption we are all in the same boat.

The devastating effects of the present crises are a direct result of the loss of a whole theoretical tradition based on qualitative understanding of the economy; of economics as an *Erfahrungswissenschaft*, a science of experience, based on an understanding of history rather than on mathematics. In this continental European tradition, from Karl Marx on the left to Joseph Schumpeter on the right, financial crises are a normal feature of capitalism. Because this type of theory also carries with it an understanding of the role of technology, this continental European type of theory also explains uneven economic development. It is our hope that this kind of experience-based economic theory – in the tradition of which this paper is written – will again become influential in Europe. It is our turn not to criticize, but to emulate China's investments in new technology and infrastructure.

We face a quintuple challenge: a financial crisis, an energy crisis, an environmental crisis, a crisis of unemployment, and the crisis caused by the migration of surplus population from nations which de-industrialized and/or were caught in wars produced partly by the externalizations of West-

ern anguishes. There is also a serious crisis of unbalance between the core and peripheral countries of the European Union. Either the uncompetitive peripheral countries become at the receiving end of Colbertian economic policies – including a break-up of the euro – or a large number of the inhabitants of these countries will physically move to the core countries.

Capital must be channelled from financial speculation into the employment of underutilized human resources, to solve the energy and environmental crises. Polluting oil is just as unlikely to be mankind's last source of energy as horses were, but as the age of complete dependence on oil is approaching its end we face similar uncertainties as when the age of horse-drawn carriages was coming to an end. The 1890s saw prototypes of both steam cars and electrical cars, but the solution came from an outsider, from Karl Friedrich Benz and the gasoline-powered car. Today we are facing similar technological uncertainties and therefore need to throw resources at many possible solutions. If inflation is a necessary part of quelling the dominance of the financial sector, so be it. The financial crisis of the 1970s, normally called the oil crisis, was also solved partly through inflation. But being in the hands of a financial sector which prefers deflation to inflation will block the solution from the 1970s.

Today's economic theory has lost key features of what built Western civilization, of both the Renaissance and the Enlightenment. The core of what we call the 'Other Canon' of economics lies in qualitative features of Renaissance societies that are not compatible with (not possible to include in) the excessively formal structures of today's mainstream economics.

The core of the Renaissance was über-Schumpeterian: the *magna facere* that created great innovations in art and in the production of everything from weaponry to irrigation canals was a way of thinking big that went far beyond profit-making. Having lost the societal dimension through a cult of methodological individualism is one of the main problems of mainstream economics.

Renaissance Florence also understood the need to prevent speculation. Transporting food out of the city was prohibited; this could feed speculation. Renaissance cities also managed to create what John Kenneth Galbraith dubbed a balance of countervailing power. The Florentine government – the *signoria* – consisted of nine members, representing different professions, and only one of them represented the financial sector. Renaissance cities also frequently rotated their elected administrators to prevent corruption, and Florence specifically cultivated its urban culture

– of manufacturing and trading – by keeping the producers of raw materials, the big landowners, away from any political power. In the world of today we still see how the absence of a manufacturing sector is part of a pattern of undemocratic governments. A common element of failed states is the almost complete absence of a manufacturing sector (Reinert, Kattel and Amaizo 2011).

Two key features of the Enlightenment are also lost in today's economics: the ability to build classification systems, as Linnaeus did, and to understand the limits that need to be set for private greed. As we have argued throughout this volume, a key feature of mainstream economics is its inability to qualitatively distinguish between economic activities. The apparent accuracy of neoclassical economics is a direct result of its failure to make qualitative distinctions. We all understand that if all medical doctors of Paris are put in one country and all the people who wash the floors of Parisian hospitals in another, we get one rich country of medical doctors and one poor country of cleaning ladies. This commonsense proposition is unfathomable in Ricardian trade theory, because world trade is modelled as the bartering of labour hours, all assumed to be of the same quality. This was the English way of trying to convince the colonies to stay with their comparative advantage in being poor and ignorant. Now this same theory is boomeranging and making the West poorer, also by bringing in migration from colonies we failed to industrialize and countries we violently tried to jump-start to democracy. The chickens are coming home to roost.

With the coming of neoliberalism, the key Enlightenment debate on the limits of self-interest – a debate which lasted virtually through the whole of the eighteenth century – was lost. The conclusion of the Enlightenment debate was boiled down to one sentence by Milanese economist Pietro Verri in 1771: 'the private interest of each individual, when it coincides with the public interests, is always the safest guarantor of public happiness' (Verri 1771, 3). In other words, greed is good as long as the end effect contributes to making the economic pie larger. With neoclassical economics the public interest – society – ceased to exist as a unit of analysis. This opened up for today's view – inspired by Gordon Gekko – that all greed is good, even the present greed of the financial sector which creates huge private wealth while shrinking the real economy to the detriment of the public interest.

At its nucleus, mainstream economics describes Adam Smith's savage who has learned to barter, not Schumpeter's savage who has learned to innovate. Like new medicines which fail to get government approval, situated and context-dependent economic theories that may approach

reality generally fail to reach policy level. Although more realistic theories exist, the world is mostly ruled by the crudest of economic models.

Now is the time to rediscover the eighteenth-century science of economic decline (Reinert 2015), which came into being when formerly immensely rich city-states – such as Florence, Venice and the Dutch Republic – were losing wealth and power to increasingly successful nation-states such as England and France. The present choice of the West is between declining like Venice, turning into a museum, or declining like the Dutch Republic, no longer the wealthiest, but being still wealthy. In order to achieve the latter goal, we must selectively de-globalize, bring back the principles of the Renaissance and the Enlightenment, and with it an economic understanding that entails all the key principles that made Europe unique in the first place: emulation of the most successful nations, and only then free trade. After all, free trade has ruled the world only in two very brief periods of human history: the late 1800s, and the late 1900s and early 2000s. In both periods the cult of free trade came to an end for the same reasons: not only did free trade as a goal rather than a tool create intolerable poverty in the world periphery, but it also started an economic decline at the very core of capitalism.

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