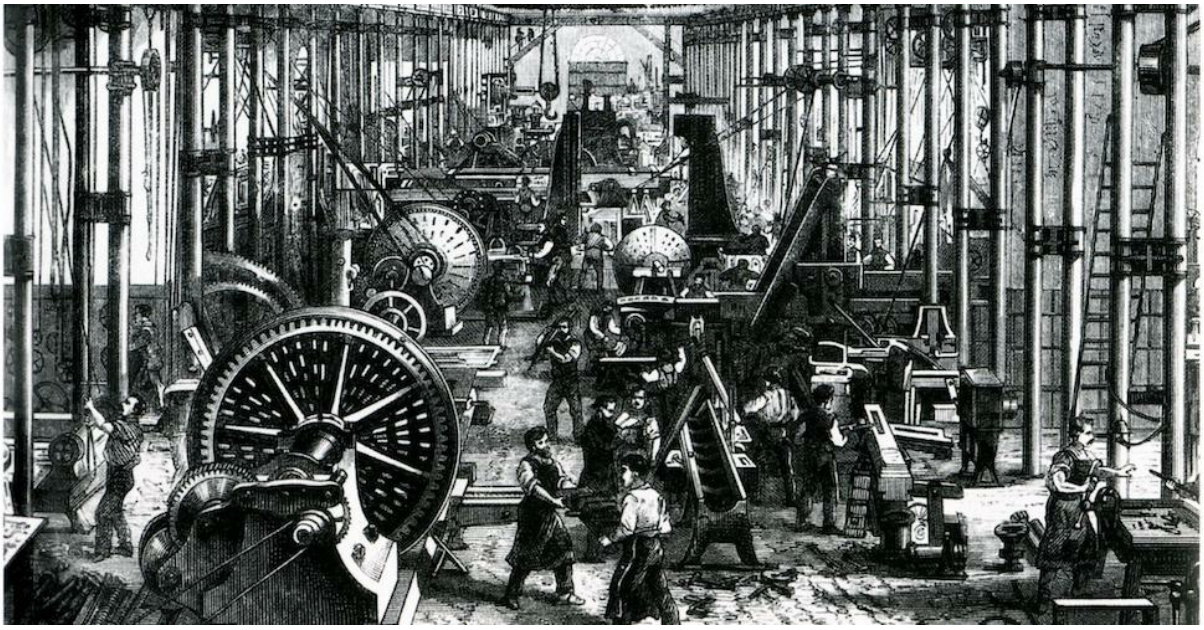
A long view of globalisation in short: Part 1 of 5

Richard Baldwin 23 November 2018



This blog, and the four that will follow it, draw on Part 1 of my 2016 book, The Great Convergence.

In 1957, my father published a book called *Economic Development: Theory, History, Policy*. His opening lines:

“Since we are all too much affected by the times in which we live and are prone to generalise from transitory circumstances, we are not likely to gain a clear understanding … if we simply start with existing conditions and attempt to disentangle the major factors currently at work.”

I’d like to borrow his thought and modify it to "a clear understanding of *globalisation*".

Today’s discussions on globalisation are “all too much affected by the times in which we live". Globalisation’s impact on the world economy was fairly steady for 175 years, and this

led many to think that it would never change. But, as millions of people now realise, that's wrong.

Globalisation isn't like gravity or the speed of light – something that has always existed, exists now, and always will exist. Globalisation has changed radically in the past, and I think it'll change radically in the future. In short, there's nothing radical about radical changes in globalisation. To understand why this is so, it's necessary to go way back. Not just back to WW2. Not just back to the Industrial Revolution. Not just back to the Age of Discovery.

Let's go back to the beginning – the emergence of *Homo sapiens* in Africa, 200,000 or 300,000 years ago. When we do this, we discover that the magnitude of globalisation's recent changes aren't out of line with their historical (or prehistorical) equivalents.

Five blog posts on the long history of globalisation – the organising principle

To keep things intellectually bite-sized, I've spread the history out over five blog posts. Even so, a narrative covering hundreds of thousands of years will have to skip some of the less important details. To justify the omissions, we need to be clear about what 'important' means in this story. To do that, I'll employ the classic definition of trade as an organising principle. Let me explain.

Trade is what happens when production and consumption are separated geographically. That means:

> Really big changes in globalisation will involve changes in the physical co-location of production and consumption.

So what is *important* is how and when the production-consumption spatial relationship changes.

Starting point and drivers

The first humans were hunter-gatherers. For them, production and consumption took place in the same space. They moved their consumption to the production (production for them meant a naturally occurring food source) because, for people living with stone age technology, it made more sense. Moving consumption to production was easier than moving production to consumption. As technology evolved, this spatial bundling of production and consumption relaxed.

And hence, the second important point:

> Exogenous 'shocks' have always been the key driver of the radical changes in the nature of globalisation.

In modern phases of globalisation, man-made barriers start to play a big role, but for most of globalisation's history, technology or climate were the binding constraint. Specifically, production and consumption were bundled due to the high cost of moving goods, ideas,

and people. The cost of moving these all three of these eventually fell, but not quickly, and not all at once. The order in which they fell – as we shall see – shaped history.

Four phases of globalisation

In the view I develop at length in my 2016 book, The Great Convergence, there have been four phases of globalisation in human history; here is a brief summary (the follow-on blog posts flesh these out). Climate change launched Phase 1.

Phase 1: Humanising the globe (300,000 BCE–10,000 BCE)

Climate change allowed (or forced, it doesn't matter in this context) people out of Africa, and these people followed their food, fanning out across the globe. Consumption and production were bundled, but not in fixed locales.

The (Neolithic) agricultural revolution transformed Phase 1 into Phase 2.

Phase 2: Localising the global economy (10,000 BCE–1820 CE)

For the first time, agriculture brought the food to the people who wanted to eat it. If you will, production was coming to consumption instead of the other way around. This phase saw the rise of seven ancient civilisations in what are known today as Iraq, Iran, Turkey, Egypt, China, India/Pakistan, and Greece/Italy. For the first time production and consumption were bundled in particular locations, so it could be called the 'first bundling'.

The steam revolution shifted Phase 2 to Phase 3.

Phase 3: Globalising local economies (1820–1990)

The steam revolution and Industrial Revolution meant goods could be sent efficiently over long distances by land and sea. Steam thus unleashed spectacular transportation capabilities that made it economical to consume things that were made in far-away places.

This was the 'first unbundling' of production and consumption. It was caused by a steep drop in the cost of moving goods. But, even as production dispersed globally, it concentrated locally at the level of factories and industrial districts. For example, most of Britain deindustrialised during the Industrial Revolution. Cottage industries disappeared, and all the industrialisation took place in a handful of tightly circumscribed regions.

This combination big markets and hype-concentration of production would create what Kenneth Pomeranz called *The Great Divergence* in his 2001 book. In other words, this is when (and why) today's rich nations got rich, while the rest world did not.

The Information and Communication Technology (ICT) Revolution shifted Phase 3 to Phase 4.

Phase 4: Globalising factories (1990–present)

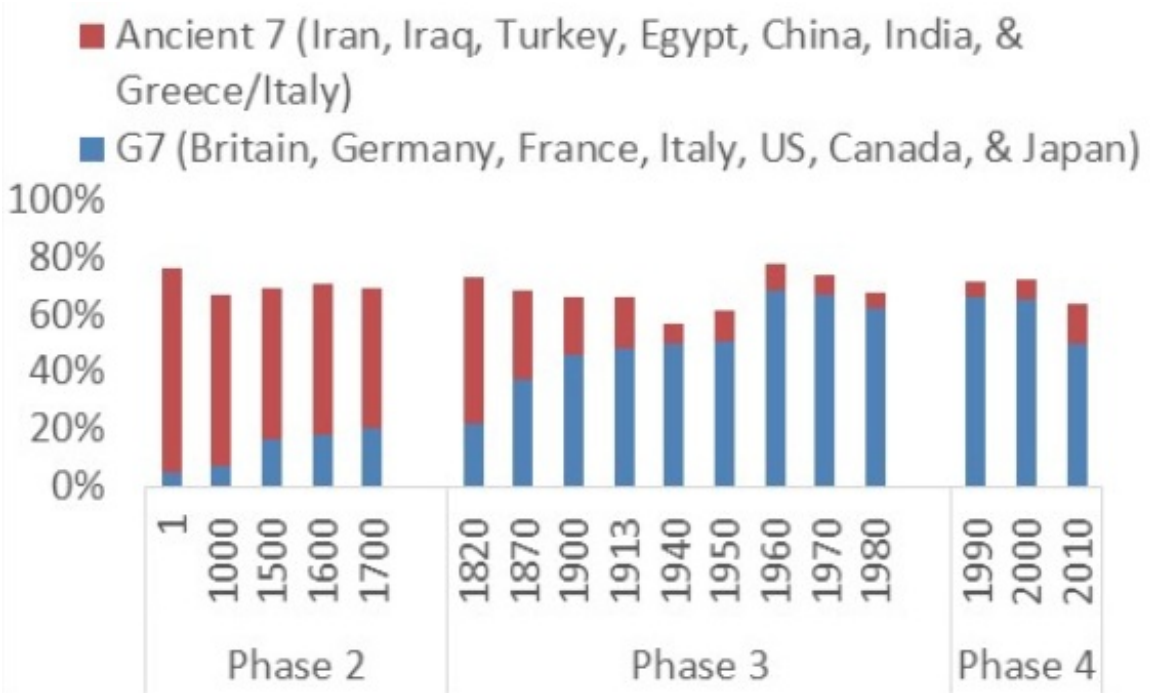
In the fourth stage, the ICT Revolution radically lowered the cost of moving ideas as well as goods over long distances. Therefore, it lowered the cost of coordinating complex

activities at distances, which changed – and continues to change – the nature of globalisation. In particular, for the first time, it became organisationally feasible to separate stages of manufacturing production over long distances. Bombardier could make the tails of business jets in Mexico knowing that they'd fit on to fuselages made in Quebec. Factories could be unbundled geographically; I called this the 'Second Unbundling' in my 2006 paper, "Globalisation: The Great Unbundling(s)", that introduced the broader perspective on globalisation that forms the intellectual backbone of my 2016 book.

Once this production unbundling was feasible, the vast divergence in wages that had appeared during the Phase 3 made the separation profitable. Rich-nation firms offshored labour-intensive stages to nearby low-wage nations. As I argued in my 2016 book, this is a critical part of a 'Great Convergence' that is occurring now. It is what some others have called the emergence of emerging economies, or the 'rise of the rest'. It has brought the share of global GDP attributed to the G7 today back down to where it was in 1900.

Figure 1 illustrates what I like to call the 'shocking share shift'. It shows how the first unbundling (from 1820), and the second unbundling (from 1990) have altered the planet's economic geography.

Figure 1 Shares of global GDP



Source: World Databank (GDP in US dollars) and Maddison data pre-1960, with author's calculations.

So, now we have looked at the big picture, in subsequent posts I'll examine Phases 1 through 4

References

Baldwin, R (2006), "Globalisation: The Great Unbundling(s)", Economic Council of Finland 20(3): 5-47.

Baldwin, R (2016), *The Great Convergence: Information technology and the New Globalisation*, Harvard University Press.

Meier, G M and Robert E Baldwin (1957), *Economic Development: Theory, History, Policy*, John Wiley and Sons.

Pomeranz, K (2000), *The Great Divergence: China, Europe, and the Making of the Modern World Economy*, Princeton University Press.

A long view of globalisation in short: The humanisation of the globe, part 2 of 5

Richard Baldwin 27 November 2018

Related

The "Out of Africa" hypothesis: Human genetic diversity and comparative economic development
Quamrul Ashraf, Oded Galor

This blog post looks at the first of four phases of globalisation in more detail – the phase I call 'humanisation of the globe'. The human race began in one geographical area, Africa, where it stayed for over a hundred thousand years before starting to spread outward. However, the expansion of humans around the globe didn't happen suddenly – it took millennia.

Homo sapiens emerged roughly 200,000 years ago (or maybe 300,000). Early humans were foragers, not producing much of anything, eating what nature afforded, where they could

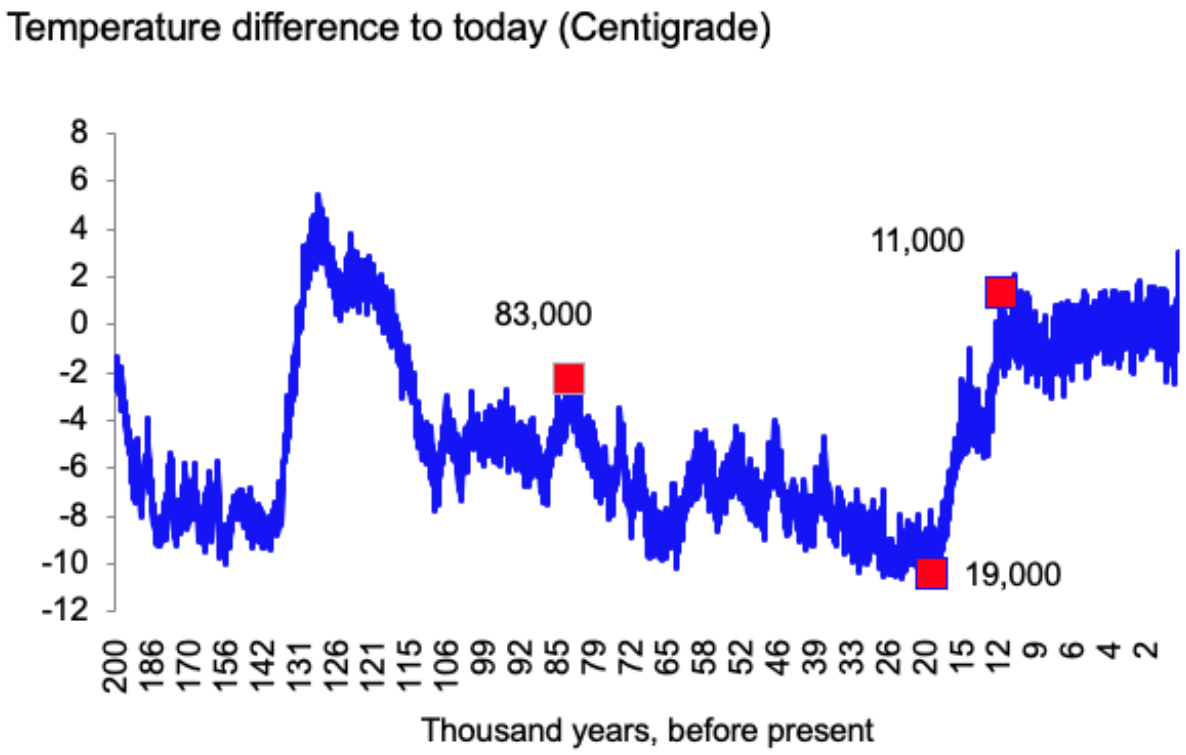
find it. That suggests migration. And it wasn't long before mankind began to chase resources around the world.

Four major waves of migration took the human race outside Africa. Researchers led by a teamfrom the University of Hawaii at Manoa identified four spurts of migration, that took place:

- 106,000–94,000 years ago,
- 89,000–73,000 years ago,
- 59,000–47,000 years ago, and
- 45,000–29,000 years ago.

Migration was fitful because it was interrupted by intervals of extreme climate changethat created, alternately, sheets of ice and impassable deserts, both of which kept people where they were (Figure 1).

Figure 1 Climate change since the first Homo sapiens



Source: Author's elaboration of data from Jouze et al. (2007); based on Arctic Dome C ice cores.

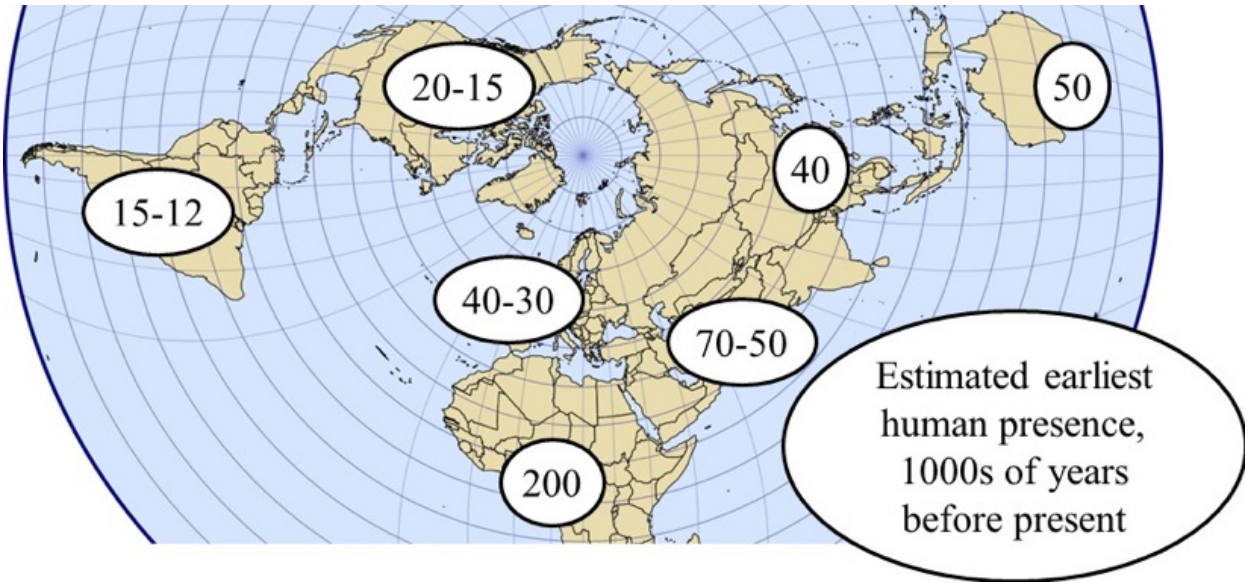
Archaeological evidence shows the first migration left Africa by crossing what is now Egypt and entered the Fertile Crescent, but DNA evidence tells us that they did not survive. The next two migrations didn't do any better. (Note: If you like this stuff, you'll love *Who We Are and How We Got Here*, a new book by David Reich; he leads a team of molecular biologists, computer scientists, mathematicians, archaeologists, and geneticists at Harvard University that is discovering all sorts of unexpected facts about ancient human migrations.)

Only the last migration succeeded. Leaving Africa by the Red Sea route, a few thousand humans spread out across the Arabian Peninsula and the Levant – and then spread out to everywhere else too. As Reich writes: "The take-home message is that modern human

people today outside of Africa are descended from a single founding population almost completely."

As shown in the map below, the humanisation of the globe happened over tens of thousands of years. By about 12,000 years ago, all the habitable bits of land were inhabited. (And all other humanoids, like Homo erectusand Neanderthal, were extinct.)

Figure 2 Globalisation of the human race



Source: Dates of earliest continuous settlement based on contemporary DNA (author's elaboration from mitomap.org).

Populations went to places with climates that provided plenty of vegetation and other needs. Production meant altering plants and animal products to make tools that allowed us to get enough nourishment to survive long enough to reproduce. Most humans moved to a food source, exhausted it, and then moved on to another. Trade in food, or really anything, was rare, because transporting it was primitive and slow.

There are always exceptions, though. We dohave evidence of trade in … rocks. Specifically, obsidian – a form of volcanic glass that made cutting edges – was traded among nomads in the area of the Middle East known as the fertile crescent.

In the next post, we'll see the effects of the agricultural revolution on globalisation.

References

Reich, D (2018), *Who We Are and How We Got Here: Ancient DNA and the New Science of the Human Past,* Pantheon

A long view of globalisation in short: The agricultural revolution, Part 3 of 5

Richard Baldwin 29 November 2018

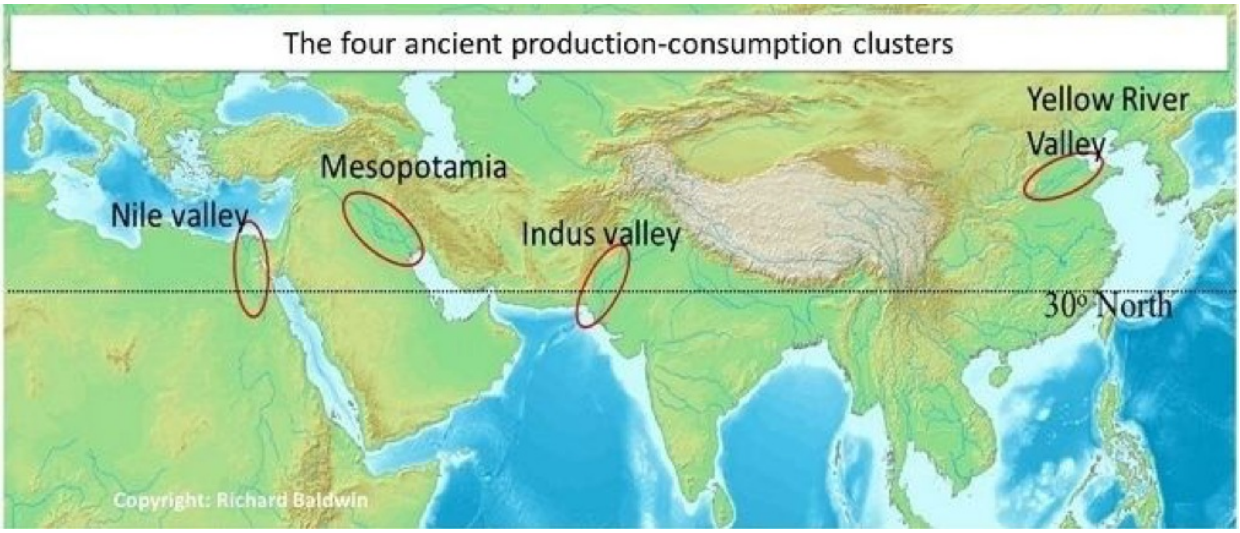
Climate scientists don't know why, but, starting 20 millennia ago, the earth's climate began to warm. There is nothing exceptional about naturally occurring climate change. What is perhaps more odd is the fact that, 12,000 years ago, the climate stabilised. All of human civilisation arose, cities and civilisations, industry and long-distance travel, and all of what we call history occurred – and was written down – during this time.

Human population density was limited by food, and food was limited by climate. When climate warming triggered a transformation of human society, it indirectly triggered globalisation. Population density rose in places with long growing seasons and reliable water sources. With lots of people clustered together who needed to be fed, humans gradually learned how to move food production to people more efficiently. This was the

agricultural revolution which happened around 12,000 years ago, or 10,000 BCE. Although it is hard to precisely date its development, it is clear that it developed separately, at about the same time, in many regions. Most historians, however, believe that it first started in the Fertile Crescent, the region that today is Iraq, Iran, and the eastern part of Turkey. But, soon after, there is evidence of agriculture in Mesopotamia, the Yellow River valley, and the Nile valley.

Agriculture's earliest shoots sprung up in four river valleys: the Nile delta, Mesopotamia, the Indus River valley, and Yellow River valley. All are at a latitude of around 30 degrees north. This is a sweet spot for agriculture, not too hot and not too cold (Figure 1)

Figure 1 The four clusters of civilisation, 10,000 BCE



Source: Background map from Wikicommons with routes added by author based on various sources.

Why river valleys? Annual flooding solved a critical problem facing ancient farming, which had kept early farmers on the move. Without fertiliser, farmland loses much of its ability to grow crops in just a few years, but annual floods prevented soil exhaustion.

The agricultural revolution was a process that took centuries – it wasn't an overnight change. But it was revolutionary in terms of its impact on how humans lived. For the first time, people could stay in the same place for centuries. This stability, together with the superior caloric value of farming, allowed things to accumulate – things like buildings and irrigation canals, but also culture and knowledge. People built cities and societies. These, in turn, led to the development of almost every basic element of human civilisation we know today – everything from writing and religion, to laws and metalwork. The world economy was, in other words, 'localised' in the sense that production and consumption occurred in fixed locations.

Foundations of civilisation

If the modern world were a house, this phase would be its foundations. All the trappings of civilisation took their modern forms at this time – everything from writing and worship to governments and gunboats.

Phase 2 covers thousands of years, and there are many ways to slice up the centuries. I find it easiest to understand, teach, and remember Phase 2 by dividing it up into three stages: the rise of Asia, the integration of the Eurasian landmass, and the rise of Europe.

The rise of Asia (10,000 BCE to 200 BCE)

We have seen that the ancient Eurasian civilisations – Egypt, Mesopotamia, India/Pakistan, and China – arose around river valleys. Some trade happened among the three western-most clusters (Egypt, Mesopotamia and India/Pakistan), but transport technology was primitive, so it was limited to obtaining raw materials that were unavailable locally and to supplying the elite with trinkets.

China was not involved in this trade due physical barriers (the Tibetan plateau, the jungles of southeast Asia, and the long ocean route to get around them). This is one possible reason that Chinese culture is still so different to 'western' culture, which, up to recent centuries, was located around the eastern Mediterranean and connected for millennia to Northern India and Pakistan.

Eurasian integration (200 BCE to 1350 CE).

In the second stage of Phase 2, the Silk Road united the Eurasian continent (Figure 2).

Figure 2 The Silk Road by land and sea around the Year 1

Source: Background map from Wikicommons with routes added by author based on various sources; the map uses modern city names where possible.

The Silk Road opened around 200 BCE and formed the first sustained connection between the economic clusters at the East and West ends of Asia. Trade flowed by land and by sea, reaching its zenith around 1300. It is commonly said to have been shut down in 1453 when Constantinople fell to Islamic armies, but its closure was reinforced by the Ming Dynasty's decision, a couple decades later, to turn its back on sea-borne trade.

That decision is often underappreciated in the West. China had been an important trader for centuries. One of the most spectacular events in China's early globalisation was the voyages of Admiral Zheng He from 1405 to 1433. According to contemporary sources, the first expedition involved more than 27,000 men, 62 treasure ships and 190 smaller

ships. One of Zheng He's treasure ship was more than 120 meters long. In comparison the Santa Maria, the ship commanded by Christopher Columbus when he discovered the New World, was about 30 metres long.

This second stage of Phase 2 lasted a long time. For fifteen centuries, the four original clusters were connected by land and sea. Trade was regular, but scarce. To give an example, it took the famous traveller Marco Polo three years to travel overland from Venice to China in the 1200s. He returned by sea, a voyage that took another two years.

The rise of Europe (1350 to 1820)

A major shock to the world's economic geography came with the Black Death (bubonic plague). This defines the beginning of the third stage of Phase 2.

Moving from east to west along the Silk Road, the plague reached Europe in the 1340s. The disease killed up to half of all Europeans in just three years. It had a similarly terrible impact on the Islamic world, which dominated three of the four ancient civilisations in the 'golden age' of Islam (Europe at that time wasn't a comparable centre of civilisation). The plague seems to have had much less effect in south and east Asia.

For reasons that historians argue about, this shock shifted Europe onto a positive-growth path, but did the opposite for the Islamic world (see *In the Wake of the Plague* by Norman Cantor, or *Power and Plenty* by Ronald Findlay and Kevin O'Rourke). The rise of Europe was also facilitated by China's decision to turn inward, thus removing a major block to global domination by north Atlantic countries.

Compared to the advanced civilisations in Asia, western Europe had been a primitive backwater during the centuries before the Black Death – that is why they are known as the Dark Ages in Europe. Southern Europe was the exception during a few glorious centuries when the Greek and Roman Empires flourished. Starting from the 1500s, the world order was turned on its head. The periphery became the core and the core became the periphery. Europe transformed itself into an economic entity that would soon tower over the world economically, militarily, and culturally.

The key features of this reversal of fortunes were new thinking (the Renaissance and Enlightenment), new lands (the Age of Discovery brought the Americas into the Eurasian world system), and new foods (for example, potatoes and maize) that allowed Europe's population density to rise. Also important was the Industrial Revolution. This was a small British bushfire at the end of Phase 2, but it became a global firestorm in Phase 3.

References

Baldwin, R (2016), *The Great Convergence: Information technology and the New Globalisation*, Harvard University Press(chapter 2).

Cantor, N (2002), *In the Wake of the Plague*, Harper Perennial

Findlay, R and K O'Rourke (2009), *Power and Plenty*, Princeton University Press.

A long view of globalisation in short: The Great Divergence, part 4 of 5

Richard Baldwin 03 December 2018

The steam revolution gave humans the ability to concentrate and control previously inconceivable amounts of energy. Over 100 years, the steam revolution and the Industrial Revolution performed an intricate waltz that completely transformed our relationship with the environment in general, and distance in particular. This launched Phase 3, the stage most people would think of as globalisation.

For most of human existence, people could consume only goods that were produced within walking distance. All human societies were governed by this 'dictatorship of distance'. Phase 3 started when the distance dictatorship was overthrown. Steam power made the

coup possible. Using the correlation of traded goods prices, economists Kevin O'Rourke and Jeff Williamson date the start of globalisation to 1820. (There is a lively discussion of this date among academics, as summarised by this excellent piece in *The Economist*).

Phase 3 really was a big deal. If Phase 2 can be thought of as laying the foundations of human civilisation, then Phase 3 can be thought of as building the edifice that we now call the 'modern world'. A key aspect of this was the Great Divergence, as Kenneth Pomeranz argued in his book of the same name. Incomes across the world had been broadly similar at the beginning of Phase 3 but by the end of Phase 3, a few nations became very rich, but most stayed quite poor.

Globalisation was a key part of this narrative. Radical improvements in transportation technology produced today's global economy. It underpinned the shifting of national production patterns. International trade rocketed as nations started to do what they did best, and trade for the rest.

Europe industrialises and modern growth starts

Europe industrialised, ending millenniums of stagnating incomes. By providing much larger markets, globalisation fuelled the cycle of industrialisation, agglomeration, and innovation. Industrialisation spread, but only to a handful of nations including the US, Canada, Australia, and Japan.

Other nations outside of this charmed circle did start growing, but their growth was slower took off later. This is what produced the Great Divergence. Unlike today, the normal situation in Phase 3 was for rich countries to grow *faster* than poor countries.

In short, the steam revolution, like the agricultural revolution before it, triggered a phase transition. Steam displaced wind and animal power and then, in turn, steam was displaced or augmented by internal combustion, electric engines, and air cargo. These breakthroughs in transportation technology made it economical to consume goods that had been made far away. For the first time in history, consumption and production did not have to happen in close proximity, they could be unbundled (which is why I called this globalisation's 'first unbundling' in my 2006 paper, "Globalisation: The Great Unbundling(s))".

Mastery of distance created three interconnected phenomena – trade, agglomeration, and innovation – which eventually turned the world economic order on its head.

The core becomes the periphery, and the periphery the core

Phase 3 created most dramatic reversal of fortune that history has ever seen. The global 'South', the core of ancient civilisations in Asia and the Middle East, especially India and China – which had dominated the world economy since the emergence of agriculture – became the periphery. The Atlantic economies and Japan (the global 'North'), previously the periphery, became the core.

In detail, there were four outcomes:

1. International trade costs fell and trade boomed.

2. The North industrialised while the South deindustrialised.
3. Urbanisation accelerated, especially in the North.
4. Growth took off everywhere, but sooner and faster in the North than in the South.

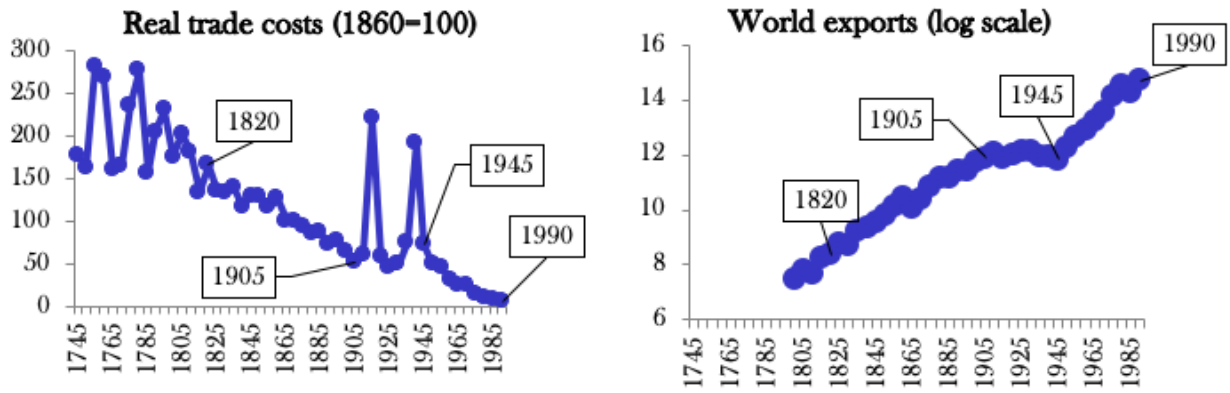
There was a very uneven distribution of productive know-how. The innovations developed in the North stayed in the North, and drove Northern wages and living standards far beyond those of the South.

1. International trade costs fall and trade booms

Trade costs (Figure 1, left panel), and trade volumes (right panel), both suggest Phase 3 falls into three sub-phases:

- Trade rose rapidly until WW1, spurred by the extraordinary reductions in barriers to trade that stemmed from the steam revolution and *Pax Britannica*, the period of relative peace following the Napoleonic Wars. Income growth was also a powerful stimulus to trade, so the Industrial Revolution in Europe, Japan, and the European offshoots like the US, Canada and Australia increased this trade bonanza.
- Trade stagnated between the world wars.
- Trade volumes continued their ascent after 1950.

Figure 1 International trade costs fell and trade boomed



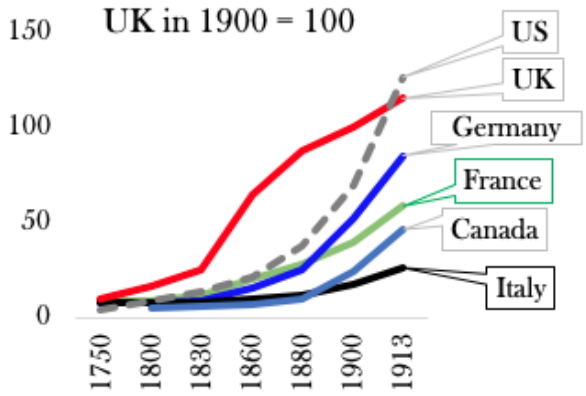
2. The North industrialises, China and India de-industrialise

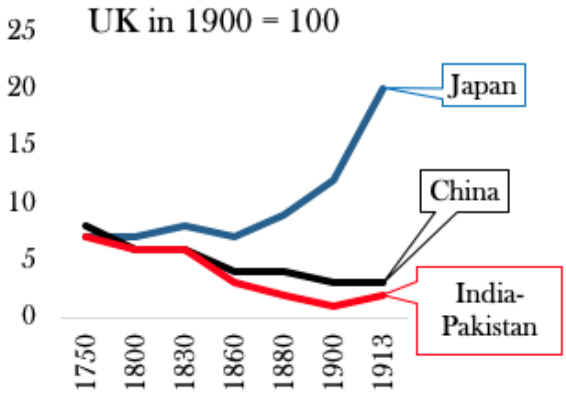
The Industrial Revolution started in the UK, and it spread to other North Atlantic economies. The result was a self-fuelling cycle of exporting, clustering and improved efficiency that boosted manufacturing in today's rich nations (we can use today's shorthand and call them the G7: the US, Japan, Germany, France, Italy, Britain and Canada).

Figure 2 The cycle of exports, agglomeration, and industrial comparative advantage

Previously advanced nations in and around Egypt, Mesopotamia, India, and China found that their industry was undermined by the G7's increased efficiency.

Figure 3 The G7 industrialises, China and India de-industrialise





3. Urbanisation accelerates

The first million-person city was, depending on who you believe, either Alexandria in Egypt or Baghdad in Iraq. Beijing and Nanjing followed. But this changed during Phase 3. At the end of Phase 3 there were around 16 cities with more than 1 million inhabitants. More than half of them were in the global North, in Europe and the US.

What is the connection between globalisation and urbanisation? There is today, and always has been, a strong correlation between urbanisation and rising incomes. This is due to a local self-reinforcing cycle in which workers (who are also consumers) move to cities to be near jobs, and the firms offering the jobs move to cities to be near consumers. As Harvard professor Ed Glaeser puts it in his book, *Triumph of the City*, smart people gather in cities and make each other smarter. We can detect these forces driving urbanisation in almost every large city in the world today.

4. Great divergence

The most profound change to the global economy was the great divergence. Rapid industrialisation in today's rich nations sparked modern growth with a virtuous cycle of clustering, innovation and rising incomes. Growth in today's poor nations took off later, and they grew more slowly than advanced nations for the next two centuries.

The result was that a historically unprecedented difference appeared between per-person incomes in the global North and South.

Globalisation as a three-act drama

The historical narrative for globalisation can, like Phase 2, be usefully broken up into three 'acts' (that line up with the three sub-phases of trade growth mentioned). Think of the Phase 3 as *Globalisation: The movie*.

- **Act 1: Set-up**. We meet our hero (Trade) and the other main characters (Industrialisation, Urbanisation and Growth). Things are going well. Lower costs! Railroads and steam ships! Act 1 lasts from 1820 to 1913.
- **Act 2: Confrontation**. The hero is tested. Daunting setbacks span two world wars and the Great Depression. Audiences gasp as events (Protectionism! Conflict!) force a re-bundling of production and consumption. Is our hero doomed? Act 2 lasts from 1914 to 1945.

- **Act 3: Resolution**. A happy ending is essential to a Hollywood movie and this movie was no exception. After WW2, costs are reduced by liberalisation and innovations in transport technology. Our hero (Trade) recovers strength and triumphs over Protectionism. Containers! Air cargo! Lower tariffs in rich nations! Act 3 takes us from 1950 to 1990.

Or, we can rewrite this movie (perhaps less snappily) as *Long-run Reversal of Fortune: Global GDP*.

- **Act 1.** GDP shares suddenly shift away from China, India, Iraq, Iran, Turkey, Egypt and Mexico (call them the A7) and towards the G7.
- **Act 2.** Stagnation.
- **Act 3.** This trend restarts.

Note that throughout this story, the sum of A7 plus G7 is approximately 80% of global GDP.

But note also that our movie ends in 1990. There is a sequel. The final part of this series looks at the New Globalisation – the one that's been causing such great pains in the Global North, and such great gains in the Global South. As is often the case, the Hollywood sequel to this movie starts with disaster for the hero. In 2018, we do not yet know whether the sequel has a happy ending, or will turn out to be some French film noir.

References

Findlay, R and O'Rourke, K (2009) *Power and Plenty*, Princeton University Press.

Pomeranz, K (2000), *The Great Divergence: China, Europe, and the Making of the Modern World Economy*, Princeton University Press.

A long view of globalisation in short: The New Globalisation, Part 5 of 5

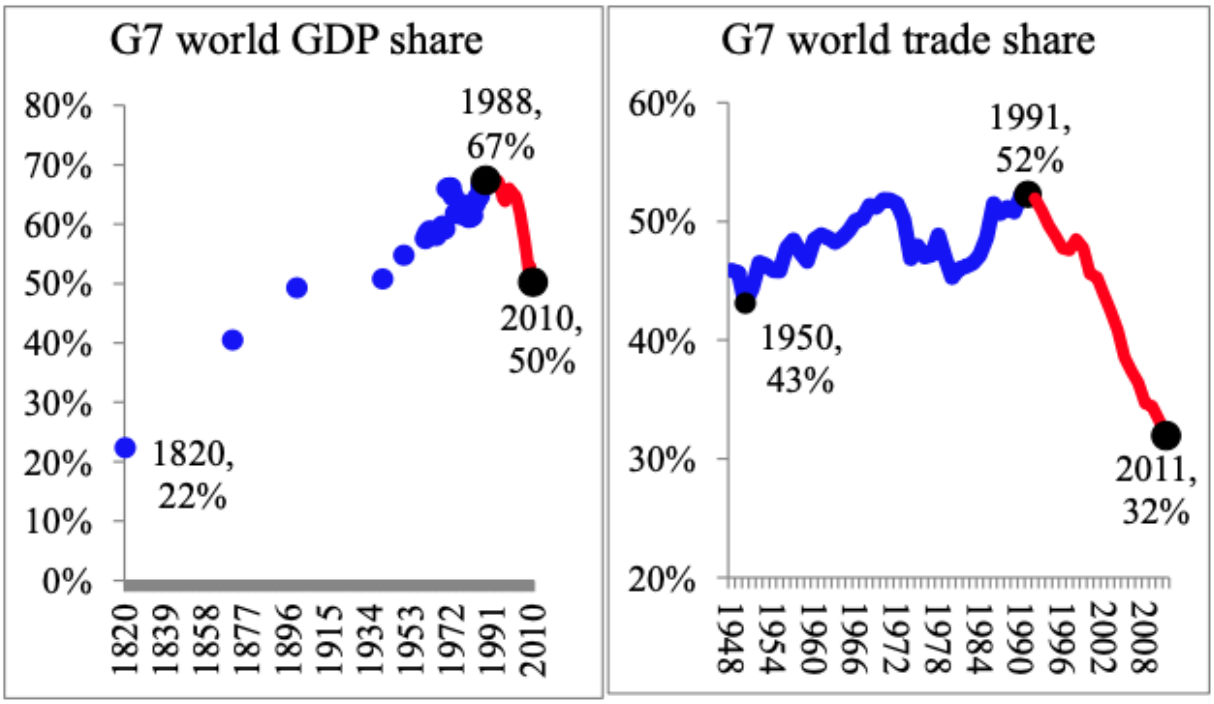
Richard Baldwin 05 December 2018

We typically think about globalisation as a process driven by the gradual lowering of natural and man-made trade costs. This is a serious mistake. Modern globalisation is two processes, not one. I like to call them 'old' and 'new' globalisations (even though the old globalisation is still very much part of the present), or globalisation's 'first unbundling' and 'second unbundling'.

As we saw in my previous blog post, globalisation leaped forward in the late 19th century when steam power slashed the costs of moving goods internationally. Globalisation made a second leap in the late 20th century when ICT radically lowered the cost of moving ideasinternationally as well.

The two leaps had dramatically different effects (Figure 1).

Figure 1 Globalisation: One paradigm or two?



- **The first leap (1820–1990)**. This might be called Old Globalisation, Phase 3, or the first unbundling. It created economic agglomeration in large industrialised nations. The G7 nations saw their share of world GDP soar from a fifth in 1820 to two-thirds in 1988. The share of world trade that the G7 commanded also rose steadily.
- **The second leap (1990–present).** We can call this New Globalisation, Phase 4, or the second unbundling. It sharply reversed the two-century-long trend in global shares. In just two decades the G7's shares of world GDP and trade have plummeted to 50% and 32% respectively.

It started to reverse, if you will, the reversal of fortune that dominated the 18th and 19th centuries. This distinction, which I first wrote about in 2006 in a paper for the Finnish Prime Minister's Office, and then developed at length in my 2016 book, requires some background.

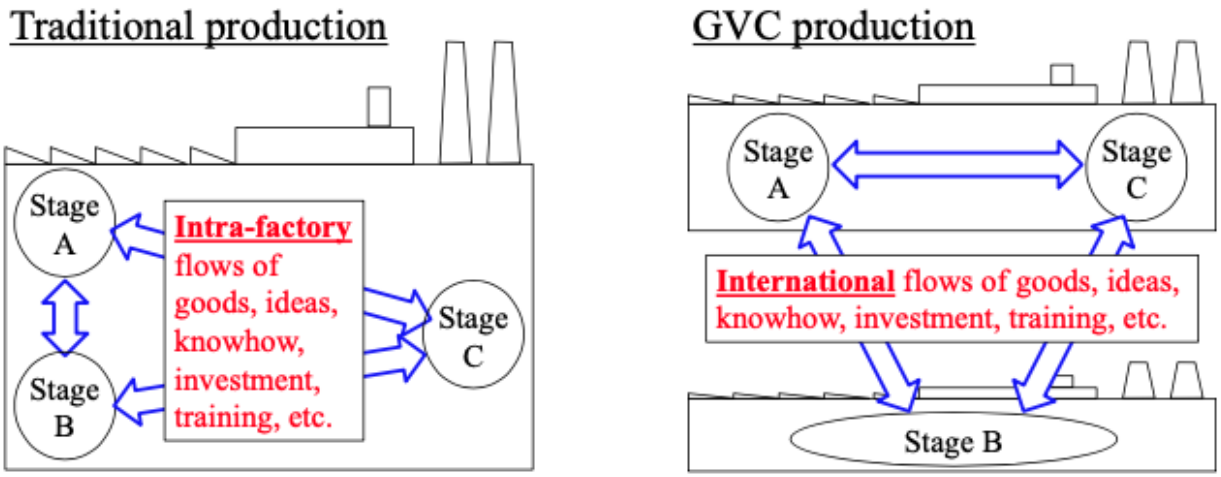
Phase 4, or the second unbundling

The first unbundling created a paradox. Because distance didn't die when transport costs fell, production dispersed internationally, but at the same time it clustered locally. Specifically, it clustered into factories and industrial districts. This paradox can be explained by the simple facts that cheap transport favoured large-scale production, such production tends to be very complex, and close proximity lowered the cost of coordinating complexity.

Think of a stylised factory with several production stages. Coordinating the whole process demands continuous, two-way flows of goods, ideas and people. Productivity-enhancing changes keep the process in flux, so the flows never stop. Stages are bundled together in a

factory to save on the cost of coordination, not the cost of transportation. Two additional points: some of the coordination costs are actually communication costs, and different stages of production use skills and technology in very different proportions.

Figure 2 Global value chains turn intra-factory flows into international commerce

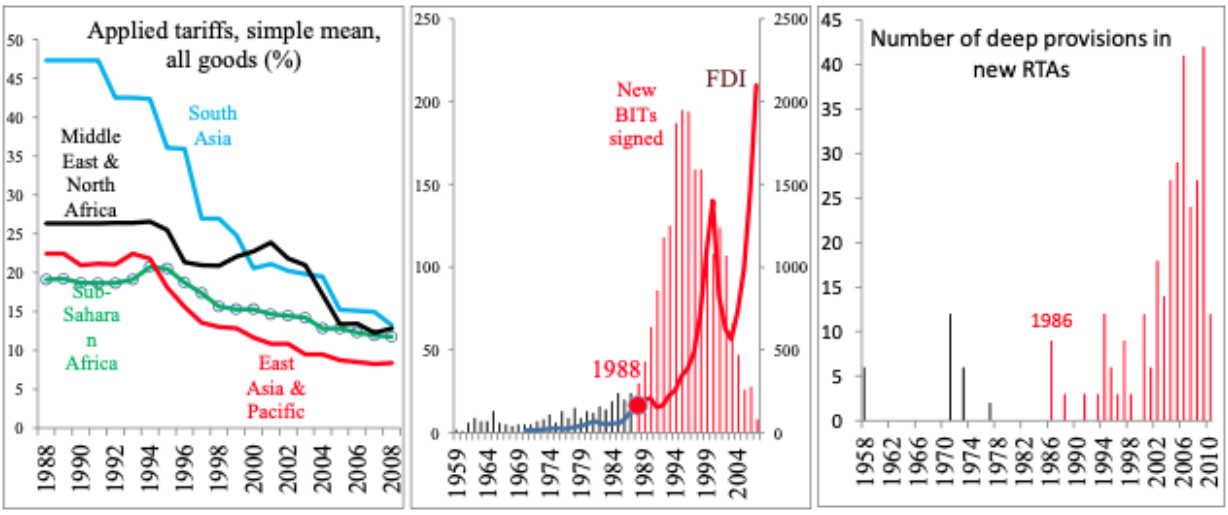


This new dictatorship of distance – one based on the high cost of communicating and coordinating geographically dispersed activities – was overthrown not by steam power, but by internet power. From the mid-1980s, telecom advances, strides in computing power, transmission capacities, and software created the ICT revolution. This new technology made it economical to geographically separate these manufacturing stages – in effect, to unbundle the factories. And once the unbundling of factories (the second unbundling) was feasible, vast international wage differences made it profitable. Some stages of production dispersed internationally. In this sense, the ICT revolution was to globalisation's second unbundling what the steam revolution had been to globalisation's first unbundling.

At an abstract level, lower trade costs relaxed the 'transportation constraint' that had bound together production and consumption spatially. Relaxing the transport constraint meant that the 'coordination constraint' became binding, and the result was vast agglomeration of manufacturing in a handful of countries. The ICT revolution relaxed the coordination constraint and the result was an unbundling of manufacturing facilities. The resulting internationalisation of production is also known as offshoring or the rise of global value chains.

This New Globalisation also fundamentally changed the nature of trade agreements that were necessary to allow globalisation to thrive. Many pro-jobs, pro-growth reforms require national action only. Some of the policies are designed to make international supply chains work better and make it easier to do business internationally. While some nations can get away with just changing their domestic laws, many developing nations found that their reforms were more convincing to G7 firms thinking about offshoring when they were baked into international agreements. The resulting trade agreements took the form of deep regional trade agreements (RTAs) and bilateral investment treaties (BITs).

Figure 3 The rise of 21st-century regionalism



The resulting set of disciplines is what I called '21st century regionalism' in a 2011 paper. It involves North-South BITs and RTAs that included 'deep provisions', as well as developing-nation reforms such as unilateral tariff cuts (see Figure 3).

The New Globalisation was new in another way.

How second-unbundling globalisation is different

The New Globalisation impacts the economy with a finer resolution. The basic 'finer resolution' point can be illustrated with an example. During the Old Globalisation, international competition showed up in the form of a product – say, a Japanese automobile. The result was that international competition happened at the level of sectors, such as the auto sector. The US car industry was clobbered by Japanese competition in the 1980s, but the US wheat sector flourished. The fortunes of sectors tended to be shared with the productive factors used most intensively in the sectors, so labour skill-groups were also a useful aggregate for analytic purposes (not shown in diagram).

The New Globalisation allows international competitive pressures to operate at the level of stages of production within a sector – say, assembly of the bumpers, or wiring of the dashboard. The New Globalisation, in other words, reaches right into the factory to help or harm one particular production stage, or even one particular department or job.

The second unbundling's impact is also more sudden. Reduced communication and coordination costs are difficult to control or slow down. Governments cannot choose to phase in ICT slowly, as they did with tariff cuts. Or more precisely, governments that try to slow down the impact of ICT risk losing even more jobs to nations that embrace it.

Finally, the second unbundling's impact is also be more unpredictable. While most traded goods were affected proportionally by lower trade costs, it is difficult to predict which stages will become footloose as ICT progresses.

The problem is that economists and governments don't really understand the 'glue' that makes it cheaper to bundle various stages of production into the same factor or office. We understand equally little about the connectivity of stages and occupations. And so the offshoring process is difficult to predict. Economic phenomena such as tipping points and threshold effects exaggerate the difficulties for forecasters (Baldwin and Venables 2013).

To summarise, as far as policy and institutions in rich nations are concerned, the main differences are that new-paradigm globalisation is individual, sudden and unpredictable.

Technology, not trade

The radical change in globalisation's impact stems for the change in the things crossing borders. The New Globalisation, in short, is driven by cross-border movements of technology, not just more trade in goods. It is a trap to even think about the second unbundling as a trade phenomenon. But why did the knowhow start flowing from North to South?

When firms from high-technology nations offshore production stages, they naturally offshore managerial, technical and marketing know-how along with the jobs. This is because the off-shored stages have to mesh seamlessly and evolve in tandem with the rest of the production network. This combines one nation's technology with another nation's labour.

The firm-level motive is not – as was the case with the first unbundling – to exploit the nation's comparative advantage by selling more goods abroad. The aim of a rich-nation firm is to make the most of its firm-specific know-how. It does this by combining it with low wages in developing nations. Trade and investment are just the by-products of this process.

Today's policymakers should not think of cross-border technology flows in the same way as the previous generation considered the cross-border flows of goods – at least when it involves offshoring to nations that have significantly worse technology. To illustrate this, consider an analogy. Allowing trade in goods is like allowing opposing football teams in different countries to exchange players – we can assume any voluntary exchange would make both teams better, and so it's in everyone's interest to encourage the trade.

Transferring technology, however, is like letting the better team train its opponents. The better team earns more money by doing it. A game between the two teams would surely be played at a higher level, but it is not clear that the interests of the better team and the national interest are the same.

New-paradigm thinking

Because globalisation's impact is more individual, more sudden, and more unpredictable, wise governments should revise policies that were developed to deal with economic consequences of the first unbundling. It is much harder to identify the sunrise sectors in the New Globalisation. Therefore education, technology and industrial policy should be more nuanced, and nimbler.

- **No jobs for life.** One clear upshot of the New Globalisation is that fewer workers will have lifetime jobs, or spend a lifetime in one sector. This means that making it easier for individual workers to adjust to new tasks will become as important as giving basic education to children – 'educate early and often' should be the new motto for

the educational establishment.

- **Learning to learn.** This may be as important as learning itself. Wise governments can reduce the pains from globalisation by teaching children that they will be engaged in life-long learning and providing the right institutions and incentives for continuing education and skill retraining.
- **New labour market policies.** Europe has two basic 'flavours' of labour market policies. Some nations (Denmark, for example) protect workers; others (including Spain) protect jobs. When globalisation affected economies in a gradual, predictable manner, this distinction was important – but not critical. The individuality, suddenness and unpredictability of new-paradigm globalisation make flexibility far more important. Firms that are locked into a view that particular workers do particular jobs will have an incentive to move much more of their production process abroad. For them, offshoring provides the ultimate labour market flexibility. Nations should shift toward protecting workers, not jobs.

Essential outcomes

Globalisation's second unbundling has changed the world economy:

- **The G7's share of world GDP plummeted.** A handful of developing nations soared. The dramatic changes were historic in size, but extremely concentrated geographically.
- **The G7 deindustrialised.** A handful of developing nations industrialised at a pace that is entirely without historical precedent. In just two decades, China's world share of manufacturing leaped from under 5% to almost 20%.
- **Income growth in the rapid industrialisers soared.** This triggered a boom in commodity exports and prices known as the 'commodity super-cycle'. This follow-on boom allowed a number of commodity-exporting nations – many of them developing nations – to join the growth bonanza of the rapid industrialisers.
- **The nature of trade between the G7 and many developing nations changed dramatically**. North-North trade had long been dominated by back-and-forth trade in parts and components. In the mid- to late-1980s, this spread to the trade between the G7 and rapidly industrialising developing nations.
- **Trade has been set free.** Almost all developing nations have massively liberalised their policies on trade, investment, capital, services and intellectual property.Industrial protectionism became industrial destructionism in the eyes of most developing nations. This was part of their effort to attract those offshored jobs and factories.

Concluding remarks

With these five blog posts I have traced out the long history of globalisation in brief – or well, not so brief. I hope to have made it clear that globalisation has changed radically in the past when big exogenous changes came along. Each time, it was wrong to continue using the mindset that helped understand the previous wave of globalisation. The same is true today.

In future blog posts – and in my forthcoming book, *The Globotics Upheaval: Globalisation, Robotics and the Future of Work* – I'll peer into the crystal ball to see how digital technology (which really is as big a deal as ICT, and almost as big as steam power) will change globalisation.

References

Baldwin, R (2006), "Globalisation: The Great Unbundling(s)", *Economic Council of Finland* 20(3): 5-47.

Baldwin, R (2016), *The Great Convergence: Information technology and the New Globalisation*, Harvard University Press (Chapter 3).

Baldwin, R (2011), "21st Century Regionalism: Filling the gap between 21st century trade and 20th century trade rules", WTO Staff Working Paper ERSD-2011-08.

Baldwin, R and A J Venables (2011), "Spiders and snakes: Offshoring and agglomeration in the global economy", *Journal of International Economics* 90(2): 245-254