

Brexit though the Lenses of Complexity Science

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Abstract

The UK decision to leave European Union cannot be properly assessed without considering it within the context of ever-increasing complexity of the social, political and economic environment in which we live and work. As we enter the transition between industrial society, characterised by the trading in goods, and information society, which creates wealth by trading in knowledge, we must value freedom to decide how to ensure that we prosper in the new brave world over the benefits of belonging to European Union. The report lists UK strengths in comparison with competition and suggests a strategy for digital future.

This report was written immediately after the Brexit referendum. However, we have found necessary to update the report in January 2021. This is the updated version.

Introduction

To fully appreciate the business opportunities that Brexit will offer to the UK, and to make an informed judgement whether the UK is capable of taking advantage of these opportunities, it is necessary to realise that we live and work in the exceedingly **complex** social, political, economic and technological landscape and therefore we can expect to gain new insights if we review Brexit through the lenses of **complexity science**.

What is Complexity?

A situation, or a system, is complex if it consists of a large number of diverse, interconnected components, called agents, engaged in intensive interaction, without being centrally controlled [1].

The word “complex” derives meaning from the word **plex** (interwoven or interconnected) and should not be confused with words like “complicated” (as a jet engine), “cumbersome” (as bureaucracy), “unwieldy” (as an aged empire), “chaotic” (as a disorderly administration) or “difficult to understand” (as a verbose document).

The most important examples of complex systems are natural ecosystems. It is well understood that natural ecosystems are not centrally controlled; they self-organise to adapt to disruptive events such as climate change or a hit by a meteor, and perpetually coevolve with their environment.

It is less well known that social, economic and technological environments in which we live and work are also complex and they, indeed, continuously change through the mechanisms of self-organisation and coevolution. The current rate of change is very high.

This is in complete contrast to rigidly structured systems, such as bureaucracies and command-and-control corporations, which are centrally controlled and are not capable of selforganising or evolving and are therefore a poor match to the currently prevailing complex economic environment.

As a consequence of fast evolutionary changes, the global economy at the time of Brexit is quite different from the economy, which was dominant in the last century, the latter being quite firmly lodged in our conscience.

How different?

The Internet-Based Global Economy at the time of Brexit

Driven by the unprecedented advances in *digital technology*, the West is currently in transition from an *industrial society*, dominated by trade in physical goods, to an *information society*, characterised by widespread trading in knowledge-based services. Knowledge is replacing capital as the main business resource. The UK is a good example; whilst after the Second World War manufacturing generated around 50% of the UK GDP, its current contribution is below 15%. At present, the prime wealth generating engine is the service sector, which contributes nearly 80% to the UK GDP (Wikipedia).

The US is leading the West into a brave new world of knowledge economy, as is evidenced by the new business elite - Apple, Google, Amazon, Facebook, YouTube and Twitter, which have pushed the car and oil giants (remnants from the industrial era) onto the B list and have propelled digital pioneers, like Bill Gates and Jeff Bezos, to the top of the rich list.

EU is trailing behind. There is no Apple in Europe, only subsidised apples.

Today, we are somewhere in the middle of this transition and the most significant changes are yet to come.

The world is currently engaged in building a giant *global digital network*, which is profoundly affecting employment opportunities and will change social structures. Four main subnets of the new global digital network can be identified as (1) the Internet of Documents, (2) the Internet of People, (3) the Internet of Things and (4) the Internet of Value.

The Internet of Documents is the oldest and well understood. It contains practically all the documents, newspapers, magazines, journals, images, photos, videos, films, TV shows and works of art, which have been digitised and are available to everyone through powerful search engines such as Google.

The Internet of People is now almost completed, having experienced the exponential growth in the 21st century. During the last 20 years, the number of Internet users has increased from 361 million to 4.6 billion. Over 40% of the world population can potentially connect with each other to share personal or professional news and experiences through social websites such as Facebook, YouTube, LinkedIn and Twitter; to purchase books, clothes or technology online through Amazon and to access their current accounts, investments or savings, at any time and from any place. Practically all businesses have their own websites which serve as shop-windows but also as a means of trading and processing business transactions with unprecedented speed.

The Internet of Things (IoT) is at an early stage of development. The idea is to connect 50 billion physical objects to the global network to enable them to compete and/or co-operate with each other without involving their users. For example, IoT will enable driverless cars to negotiate with each other road priority, machine-tools in a factory to agree with conveyers how to improve production schedules, etc.

The Internet of Value is a new global project aimed at enabling rapid electronic transfer of value among users, bypassing banks and therefore reducing cost of the transactions. The plan is to store international digital currencies on secure servers, enabling owners to access their assets online and engage in rapid processing of investments and loans.

The global digital network, outlined above, connects individual citizen, ethnic and religious groups, nations and unions of nations into a vast and complex Global Village.

The second important trend is related to the recent advances in Artificial Intelligence (AI). We are now capable of extracting knowledge from Big Data and building digital ecosystems which, just like natural ecosystems, selforganise and coevolve with their environment and therefore are perfectly suited to operate in the current complex economic environment.

Advances in AI will lead to a steep increase in the number of autonomous robots and driverless vehicles, undertaking tasks currently performed by human operators and intelligent software, performing clerical, professional and managerial tasks more effectively than humans.

The co-evolution of society and technology is unstoppable. New technologies create new employment opportunities and they in turn change social, economic and political power structures, with new technology leaders and those who manage to jump on the bandwagon, moving to the top.

Sceptics should be reminded of fundamental social structural changes, which followed the first industrial revolution caused by the invention of mass-production technology in the 19th century.

What are the consequences?

- 1. The Internet makes geographical distances less important;*** every global villager is a potential customer, supplier or a political partner for other global villagers.
- 2. Information economy provides abundant new business opportunities in knowledge-based products and services, which do not depend on international trade agreements or common markets,*** as exemplified by

the worldwide success of products and services developed by the leading new technology companies such as Apple, Amazon, Google, Microsoft and Samsung.

3. **Employment opportunities are changing drastically; a large market is being created for developers of the Internet of Things, the Internet of Values, Big Data and Digital Ecosystems**, a market which is open to all who are sufficiently well-informed to notice it.
4. **New types of highly skilled knowledge workers are in demand**, occasionally with unusual names, like, knowledge engineer, drone photographer, gaming shoutcaster, social media manager, YouTube influencer, data analyst or machine learning developer, to mention just a few.
5. **The geopolitical system is becoming a highly volatile network of religious groups, nations, unions of nations, military alliances and exceptional individuals competing or cooperating with each other and sometime changing sides** and it is not surprising that under such complex conditions every military intervention initiated during this period **failed** to achieve its political objectives and managed only to create prolonged misery and distraction.
6. **Under conditions of market complexity, it is not important to be big; it is important to be adaptive and resilient and open to new ideas.** The richest nations in Europe are small nations: Luxemburg, Ireland, Norway, Switzerland, San Marino, Netherlands, Island and Sweden. The richest nation in Asia is Singapore.

Is UK Capable of Taking Advantage of Opportunities Offered by the new Knowledge Economy and Brexit?

As outlined above, the transition from industrial to information economy offers a variety of opportunities, some of which would be difficult to realise if the UK stayed in the EU. **European Union is moving, against the global trend, towards an increasingly rigid, centralised political structure at the time when complex global market favours distribution of decision making and flexibility.**

The UK has an appropriate mix of strengths for succeeding in the new world of complexity.

What are UK strengths?

English language — English people are the masters of the world-favourite means of communication. They can deliver knowledge-based services to international clients in their mother tongue; UK universities, private schools and tutors are preferred precisely because they teach in English.

Knowledge and creativity — UK universities are highly ranked for research; UK scientists are among the best in advanced digital technology, genetic engineering, bioengineering, nanotechnology; British designers design German cars and American computers; BBC is the best known creative media brand around the globe; UK architects design spectacular buildings world-wide; British music industry outputs are in huge demand.

Knowledge-based services — UK sells knowledge as a service in many forms: as education, training, advice, management services, design services, media outputs and as advanced engineering products, such as Rolls Royce aircraft engines, in which knowledge created by research and innovation is wrapped in physical matter; similarly, in software services knowledge is wrapped in code; UK has skills in automation and protection from cyberattacks, which is another knowledge-based service in high demand.

Entrepreneurial culture — UK has many small to medium information technology companies collectively representing quite a formidable knowledge-based services sector. Start-ups and freelance entrepreneurs are everywhere; networks of small enterprises are new economic giants; London is one of the world leading centres of advanced IT startups.

Flexible employment law — UK has a growing, modern flexible gig economy and widespread zero contracts, which are essential ingredients of the information economy.

Minimal red tape — It took me 15 minutes and £20 to open and register a company in the UK; and it required several months to accomplish the same task in Germany, which also involved lawyers at a

considerable expense.

Connectivity — UK is among the 10 the most “connected” economies in the world, just behind, US, Singapore, Sweden and Switzerland, with Germany and France trailing.

City of London is one of the most important global financial centres.

What are UK weaknesses?

Investment culture – In comparison with the USA, who are undisputed leaders of Digital Revolution, the UK investors seem to look for an early profit taking. This appears to be one of the main reasons for the dirt of the valuable digital businesses in this country. We certainly don’t have digital giants comparable to Apple.

The mind-set of business decision-makers and public opinion creators, particularly economists and the press, who still see the world as it was during the last two centuries - the world of superpowers and big corporations where stability was maintained by political, military and trading alliances and treaties, privileges acquired by lobbying and political power was securely held by political parties and professional politicians.

Remnants of this world order are, of course, everywhere, but not for long. Adapting to the new order as soon as possible can bring considerable advantages.

Brexit and Sovereignty

Sovereignty is freedom to make decisions that affect the nation. As Bertrand Russell pointed out in his brilliant book Freedom and Organization [2], if you join any organization your freedom will be limited by constraints imposed by the membership. It is therefore a question of choice – are privileges offered by membership more valuable than the decision-making freedom?

Our research shows clearly that the freedom of choosing how to navigate the ever-increasing complexity of our social, political and economic environment, has far higher value than the benefits of the EU membership.

The success of British coronavirus vaccination project after leaving EU, clearly proved the point.

A Strategy for Brexit

To convert its assets into money at the time of Brexit, UK needs to

1. **Foster all aspects of its strengths**, as described above, and stop trying desperately to retain old industrial working conditions and practices.
2. **Promote, at home and abroad, English language and culture, creativity, innovation, knowledge-based services, adaptability, flexibility, diversity and connectivity.**
3. **Support businesses developing high-quality knowledge-based services - future UK Apples** - remembering that the American Apple did not need any custom union to conquer the world. For the foreseeable future, high-quality knowledge-based products and services will be in great demand.
4. **Attract knowledge-based businesses to Britain**, possibly by competitive corporate tax and favourable investment opportunities.
5. **Attract skilled knowledge workers and students to Britain**; UK needs talents from diverse backgrounds; and of course, those who receive education in Britain, or enjoy working in UK, will be the best UK ambassadors and promoters.
6. **Convert enemies into trading partners** — there is a room on this planet for every political dogma and every religion. New trading partners will help to earn money much needed to improve quality of life at home and, most importantly, strong trading links reduce probability of wars.
7. **Help individuals that cannot keep pace with the harsh transition to knowledge economy.**

References

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2. Russell, Bertrand, "Freedom and Organisation", Routledge, 2009. ISBN 9780415487399.