



QUEEN'S  
UNIVERSITY  
BELFAST

# INFORMATION REVOLUTIONS

## ROUNDTABLE

QUEEN'S UNIVERSITY CENTRE FOR ECONOMIC HISTORY  
EXPLAINING THE PAST TO UNDERSTAND THE PRESENT

[WWW.QUCEH.ORG.UK](http://WWW.QUCEH.ORG.UK) @QUCEHBELFAST

The following article is a summary of the Information Revolutions Roundtable held at Queen's Management School, Belfast on 24 May 2018. The event was hosted by the university's Centre for Economic History, and supported by the Chief Executive's Club at Queen's.



Technological advancements have enabled global information networks and created a powerful engine for a “Fourth Industrial or Information Revolution” based on an information-intensive, knowledge-based economy and society. There is the risk of huge disruptions, which may also present huge economic and social opportunities. Policymakers and corporate executives face challenges of extraordinary complexity. The benefits of innovation on economic growth and firm performance need to be balanced against concerns around social dislocation, unemployment, corporate concentration, and security

Yet, these processes have long historical roots, and the effects of previous information revolutions have been witnessed before.

As Dr Michael Aldous, organizer of the event, noted: “examining these historical roots provides rich context, and understanding of patterns and trends. It is important to connect historians, policymakers and corporate executives, to facilitate evidence-led discussion on long-run trends to help make sense of critical contemporary challenges.” Facilitating that discussion was the object of the Roundtable.

**The group considered two main questions:**

1. How do information revolutions of the past relate to the information revolution we are living through today?
2. What are the long-run effects of information revolutions on the a) Nature of Firms, b) Markets and Competition, and; the c) Role of Government?

The speakers were:

**Dr Nicola Millard**

BT's Head of Customer Insight and Futures;

**Professor John Turner**

Director of the Centre for Economic History;

**William A. Downe**

former CEO of BMO Financial Group;

**Dr Judy Stephenson**

Research Fellow in Economic History, University of Oxford;

**Dr Graham Brownlow**

Lecturer in Economics, Queen's University;

**Dr John Gent**

former CEO JP Morgan International Bank;

**Dr Michael Aldous**

Lecturer in Management, Queen's University;

**Jacob Hipps**

Director of Last Mile Strategy and Operations at Walmart.com;

**John Campbell**

Economics and Business Editor, BBC NI;

**Dr Laurence B. Mussio**

CEO of SIERC and Historian; and

**Sir Jon Day**

former Chair of the UK Government's Joint Intelligence Committee.

The programme began with a stimulating, future-scoping keynote address by Dr Nicola Millard, BT's Head of Customer Insight and Futures, who reflected on business in the digital age and the changing nature of work. She raised several important issues and questions that businesses in the present and in the future will have to address:

- Businesses don't need a digital strategy. They simply need a better strategy enabled by digital.
- What people value about jobs today is the flexibility that work can offer, a shift in choice of how, when and where we work. The days of 9-5 tethered to one desk are disappearing.
- Collaboration doesn't happen by magic. It requires leadership. How do leaders go from command and control to connection? This is a major challenge for businesses of the future.
- New tools have eliminated distance, but how do we connect with people we can't see? And how to we ensure security with the spread of communication tools like WhatsApp in the workplace?
- Innovation needs diversity in age, gender, culture, and personality. How do leaders promote diversity?
- Some tasks are easy to automate and some are not. Robots are good at analysing data, but what about conversation, caring, creativity, which are all uniquely human? How do we bring people and machines together to enhance the strengths of both?

This focus on the future of work naturally led into the first roundtable discussion of the day, which addressed how information revolutions have affected the nature of the firm over time.

## DISCUSSION 1: THE NATURE OF THE FIRM

**Chair:** Professor John Turner

**Speakers:** William A. Downe, Dr Judy Stephenson and Dr Graham Brownlow.

This discussion addressed four key questions for firms. First, how do firms react to information revolutions? Second, how do information revolutions affect the relationship between labour and capital? Third, can capitalism survive another revolution? Fourth, how does information flow within organisations?

The discussion began by considering the impact of technological revolutions on firms, globalisation and capitalism. The main takeaway points were fivefold. First, change is continuous, but its pace seems uncomfortably swift during periods when big issues remain unresolved. Second, history really does matter when making business decisions. Third, globalisation has lowered costs to the industry, but it has also lowered price to consumers. However, it may be that in the developed world the benefits of globalisation have reached a plateau for the average worker. Fourth, the rise of populism may be a sign that democratic capitalism has run out of runway. Populism is based upon a perception that elites are benefitting disproportionately or unfairly. The private sector will have to respond to this complex environment, and expand their vision of their core objectives. Businesses, for example, should not be run for the exclusive benefit of the shareholders. Fifth, we face fundamental questions about the promise of technology. They include how the benefits of technology are going to be shared between labour and capital, and whether the divide between skilled and unskilled labour will result in accentuated class divisions and social unrest.

The importance of information revolutions on the relationship between labour and capital was examined historically. The study of labour markets from the medieval period onward reveals that information has always affected the capital-labour relationship. Despite the huge innovations in financial institutions since the 1970s, there have been no recent innovations in labour bargaining. Unionisation has been halved and deregulated labour markets are a global trend. We are experiencing the biggest information revolution since the Industrial Revolution and workers have no tools with which to bargain effectively. If we can learn anything from history, it is that employment bargaining is hugely costly. In the long run, unless you have the right institutions, economies will not benefit from efficient outcomes.

Finally the discussion turned the spotlight on poor information flows within organisations – information not flowing from top to bottom or from within the firm to the outside. This results in firms characterised by inertia and ignorance. The history of corporate failures such as De Lorean and Toys R Us were used to illustrate the deleterious effects of poor information flows. This raises questions about leadership and productivity. Could it be that low productivity and secular stagnation are due to poor information flows within organisations?

The takeaways for firms from this session were that businesses need to think much more about the environment they operate in. Firms need to think less about their shareholders and more about their responsibility to their employees and society in general. Indeed, unless firms do so, rising populism may undermine democratic capitalism and globalisation.

## DISCUSSION 2: MARKETS AND COMPETITION

**Chair:** Dr John Gent

**Speakers:** Dr Michael Aldous, Jacob Hipps

The conversation shifted to consider what factors stimulate Information Revolutions? Two main questions were discussed, how do these processes affect markets? How does competition change? Who wins and who loses?

The discussion started by exploring globalization in the nineteenth century, and the link between revolutions in information supply and the evolution of markets and firms. An intersection between supply-side factors, in the form of new technologies such as the telegraph, and demand-side factors, caused by the industrialization and internationalization of business, sparked an information revolution.

The telegraphic revolution significantly disrupted the organisation of markets in two ways: first, creating markets for information, second, enabling new markets that leveraged the technological developments, such as futures markets. Coordinating and regulating these markets created challenges and opportunities. These developments enabled new participants to enter markets, and allowed new ways to compete and for value to be created.

A notable trend was that new participants created value through innovative and specialized use of

the new technology. This often took the form of intermediary functions between existing participants. Over time, firms found ways to create value through integrating and centralizing these functions to achieve efficiency and scale.

The focus turned to current marketplace dynamics and new technologies. Blockchain has the potential for an information revolution. As a ledger that is replicated across thousands of computers, it can efficiently solve problems of trust and uncertainty. This offers the potential to remove intermediaries who overcome these problems in many markets (finance in particular). As technology advances, the questions may not be how firms and markets use blockchain, but rather, how will blockchain compete with firms and markets?

Blockchain in particular raised many questions around the table regarding moral, ethical and regulatory consequences. Could it mean the end of financial privacy? What are the implications for government confidentiality? How vulnerable is blockchain? Does the information revolution create a new class of people who communicate only with themselves? Blockchain will decentralize markets but should we trust blockchain networks any more than we trust current intermediaries?

The conditions for information revolutions requires an intersection between supply and demand side conditions. Blockchain potentially fulfils the supply-side conditions for a new revolution, however its wide adoption is dependent on the emergence of demand-side conditions. Revolutions disrupt markets, solving and creating problems, which enables new ways for value to be created. A first phase favors innovation and specialization. However, a second phase tends to favor value creation through centralization and efficiency. Will Blockchain disrupt markets, and, if so, what forms of value creation will it favour?

### DISCUSSION 3: THE ROLE OF GOVERNMENT

The final discussion turned to the questions of regulation and the role of government. How can government be best prepared to deal with rapid technological change and unprecedented information flows? How can they best mediate the trade-off between harnessing the benefits of innovation and assertion of the public good?

**Chair:** John Campbell

**Speakers:** Dr Laurence B. Mussio, Sir Jon Day

The discussion began by summarizing the public policy challenges of the modern information revolution: we are on the threshold of Industrial Revolution 4.0 with the tools, and often the perspectives, of Government 2.0.

Past transformations in transportation and communications – in railways, telegraphy and telephony – provided incisive examples from the world of political economy wherein many of the challenges technology poses the contemporary world were posed then – about how to regulate, whether to break up monopolies, and how to foster an environment of continuous innovation. The historical analogues draw a direct line to the anxieties and possibilities over Facebook and Google.

The key role of public policy is to strike a balance between the developmental capacity of capital and innovation (consumer choice, competitiveness, wealth creation) and the imposition of a set of public ideals (tackling inequality, rebuilding trust). The choices and incentives which public policy deploys can promote or destroy innovation ecosystems. Governments need to govern; they need to demonstrate leadership in creating actionable consensus on realistic approaches to the industrial organisation of the information and communications

sector at a national and supranational level. In order to do so policymakers need to be properly prepared. They must have the resources and capabilities in intellectual and human capital to act nimbly and have a clear understanding of precedents and protocols – how to balance innovative engines of prosperity with civic imperatives.

The effects of information revolutions on the role and capacity of the Civil Service were examined further. The task of the modern civil servant would be to not only understand Blockchain, but to also advise on the implications of its implementation. The challenges faced by civil servants in achieving these capabilities were explored through the example of the security services. In essence, that world has become more complex operating environment in which to work and for the interests and security of the state to be asserted. Mass amounts of open source material are accessible to policymakers from public sources – often, delivered as quickly as formal military or civilian intelligence agencies can produce them. Technological innovation has also generated constraints on acquiring and keeping intelligence secret and up to date. The accelerated pace of multiple events and crises have posed additional strains on the ability of the state apparatus to respond credibly and usefully.

The role of entities such as the Joint Intelligence Committee is to press for the most robust analysis and judgements and to expose different views. It was suggested that financial bodies could have similar mechanisms, if they do not already have them – and they could produce more informed decisions and more effective outcomes.

A final point was made about the possibility for the establishment of multi-lateral bodies to deal broadly with the information revolution. One such analogue maybe postwar arms control agencies

and coordinating bodies. Those entities brought together different approaches and interests within a single discussion to promote compromise and collaboration, where possible.

Questions round the table returned to the subject of Google and Amazon. Could they become public utilities? Would any government have the authority and the capacity to enforce that without killing innovation entirely?

There was discussion on the ability of the state to make major changes, over which there was general agreement, but divergent opinions as to whether governments were currently prepared to make meaningful and targeted changes. In particular, the capacity to implement policies that would strike the proper balance between the developmental capacity of innovation and private initiative on the one hand, and the necessity of the public power to act in the public interest. An additional caveat was the susceptibility of the civil service to political interference or undue influence.

## **FINAL POINTS**

**1** – Industrial revolutions and information revolutions are called revolutions for a reason – because of their impact on firms, workers, governments and civil servants. Decision makers need to understand the full nature of their impact.

**2** – Information revolutions always mean a change for capitalism. Markets and firms are disrupted as new ways of creating value, either through specialization or concentration, are discovered.

**3** – Information revolutions always create pressure from below. There are always losers in revolutions and there is a role for firms and governments to think about how to look after those who lose out so as to encourage societal buy-in and cohesion.

