Editorial

Pierre-Jean Benghozi

I3-CRG, Ecole polytechnique Paris,
Bat Ensta, 828 Boulevard des Maréchaux,
91762 Palaiseau Cedex France
Email: pierre-jean.benghozi@polytechnique.edu

Thierry Rayna*

Novancia Business School Paris,
3 rue Armand Moisant, 75015 Paris, France
Email: trayna@novancia.fr
*Corresponding author

Elisa Salvador

ESSCA School of Management,
56 quai Alphonse Le Gallo,
92513 Boulogne-Billancourt Cedex, Paris, France
Email: Elisa.SALVADOR@essca.fr

Ludmila Striukova

University College London,
Gower Street, London WC1E 6BT, UK
Email: l.striukova@ucl.ac.uk

Biographical notes: Pierre-Jean Benghozi is a Research Director at the National Centre for Scientific Research (CNRS) and a Professor at the Ecole Polytechnique, Paris. He developed, since the early '80s, a pioneering research group on information technology, telecommunications, media and culture. He is also a board member of scientific committees in highest French institutions, international scientific conferences and academic journals. His competencies made him appointed commissioner and member of the executive board of the French National Regulatory Authority for Electronic Communications (ARCEP).

Thierry Rayna is a Professor of Economics and Innovation at the Novancia Business School in Paris. Previously, he spent ten years in the UK, where he held positions at Imperial College London, the London School of Economics, University College London, and the University of Cambridge. His research investigates the consequences of technological change and digitisation for business models, intellectual property strategies, and innovation ecosystems. He has served as an advisor for national and international organisations, as well as for major companies in the media, telecommunications, and cultural industries. He also mentors start-ups.

Elisa Salvador holds an International PhD in Institutions, Economics and Law from the University of Turin, Italy. She has worked for the Italian National Research Council (CNR) on several projects focused on innovation policies. She won the CNR award Promotion of Research 2005 for her project 'The financing of research spin-offs: an analysis of the Italian case'. She has recently collaborated with the Polytechnic of Turin and with the ESCP-Europe Business School and she has been an Adjunct Professor at Iéseg School of Management, Economics and International Business Economics tracks (2014–2016). She is currently an Assistant Professor at the ESSCA School of Management, Management and Corporate Environment Department, and Associate Researcher at Ecole Polytechnique, Management Research Center.

Ludmila Striukova is a Senior Lecturer in the UCL School of Management at University College London. Her previous experience includes working as a Market Analyst for a statistical agency and as a Researcher at the King's College, University of London. She has published extensively in the area of innovation and technology management, and her research work has been used in numerous EU and national government reports. She also has used her telecommunications engineering background to mentor and advise technology based start-ups and multinational corporations.

Disruptions, and the subsequent need to innovate in order to overcome them, are so prevalent nowadays that a word – uberisation – was even coined to describe this phenomenon. While disruptions can take many forms and affect industries in a radically different manner, they all demonstrate the sharply increased complexity of the economic environment, which has led, as a response, to an extreme variability of business models.

While the creative industries, such as the music industry, were the first affected by these radical changes (Benghozi et al., 2015), offering a preview of the shape of things to come, major disruptions are now shaking up the entire service economy – through the so-called 'sharing economy' (Rayna and Striukova, 2016a), and it is only a matter of time, thanks to technology such as smartphones or 3D printing, before the product industries start facing the same challenges. In all these cases, though, the adequate response is always the same: rethink business models, as business model innovation is arguably the only way to ride disruption, instead of succumbing to it (Rayna and Striukova, 2016b).

Yet, as noted in Baden-Fuller and Haefliger (2013), the role of business models (and, by extension, ecosystems) in enabling a new technology to create a competitive advantage has often been underplayed in the literature. To help fill this gap a joint workshop between École Polytechnique (France) and University College London, two institutions at the forefront of knowledge in engineering and management, was held in London in March 2014 at the Shoreditch ('Tech City') campus of UCL. This very successful event, which saw inspiring contributions from 15 academics in various disciplines (computer science, economics, engineering, law, and management), paved the way for this special issue. The response to the call was significantly large with over 40 papers submitted, which attests the strong interest in the academic community towards the question of the role played by business models and ecosystems in leveraging technological change.

Nine high-quality articles were finally retained for this special issue. Together, they both broaden and deepen our understanding of the question at hand. A first contribution of this special issue is to demonstrate that, far from affecting only the cultural and creative industries, technical change also requires rethinking business models and ecosystems in far more traditional industries. While the cultural and creative industries can indeed be seen as forerunners of changes (and challenges) that will eventually affect the entire economy (Benghozi and Salvador, 2016), it is just as critical to understand the role played by business models and ecosystems in other industries, especially because changes in these industries often remain less visible.

For this reason, many articles in this special issue are devoted to industries that have been generally less investigated, but which are nonetheless particularly worthy of interest, because of their critical importance (health, in Rose et al.), industrial implications (energy, in Ben Mahmoud-Jouini and Charue-Duboc), integrative potential with other technologies (automobile and the internet of things, in Olleros) or because they illustrate change in more traditional industries (pinball machines, in Tellier).

A further insight provided in this special issue is that business models are not just an afterthought that emerges once technology, organisation and output have been defined, but are instead fully embedded within these other dimensions (Rose et al.). Furthermore, there is a clear trend of evolution of business models (Lyubareva et al., 2014), which moves away from the traditional view of firms as autonomous entities towards a model where firms are integral part of an ecosystem and cooperate continuously with stakeholders in the ecosystem who are tightly integrated in production and open innovation processes.

These ecosystems are now at the root of product creation, service creation, but also of innovative activities themselves (Ben Mahmoud-Jouini and Charue-Duboc). Consequently, it becomes critical to understand the determinants of emergence and growth of ecosystems, as well as the mechanisms that can help foster cooperation among stakeholders. Here as well, just as in the case of business models, it is essential to be able to comprehend and reflect upon all the dimensions (technological, economic, organisational, and market) of an ecosystem.

While cooperation may still take place within fairly traditional ecosystems, new kinds of partnerships, such as crowdsourcing, have emerged thanks to digital technologies. In this respect, the range of contributions from the 'crowd' can indeed take many forms, as demonstrated by the Amazon Mechanical Turk case (Dalle et al.), where crowds of individuals perform human intelligence tasks (HITs) for firms. In such a case, the challenges, in terms of management cooperation and incentives to contribute, faced by the crowdsourcing platforms are, in fact, similar to those arising in more traditional ecosystems.

Yet, the importance of the question of cooperation and partnerships does not only occur at the firm level, but also affects regional and national innovation systems (Radziwon et al.). In this respect, value creation mechanisms do not only involve usual partners, but also 'complementors'. Because of that, innovation management and policies need to be rethought to fully encompass the new dimensions of the ecosystems in order to bolster knowledge management, communication, value and risk sharing.

In an ever-changing environment, it is also important to consider mechanisms that tend to stabilise ecosystems, as unstable ones render cooperation and long-term planning difficult. In this respect, Azzam et al. demonstrate the importance of the patent system,

which enables strong relationships between large firms and SMEs, which is particularly critical in aerospace industry where large 'architect' companies interact with smaller and highly specialised ones.

Nevertheless, as emphasised in Tellier, even very successful and long-lasting ecosystems may eventually decline if the company at the heart of the ecosystem does not adapt its business model to the changing environment. In this respect, the example of technological change caused by digital technologies is particularly striking, as entire ecosystems have declined while new entrants that make use of radically different business models, as well as new forms of innovation and entrepreneurship, create their own ecosystem. These entrant firms may in fact be more prone to act entrepreneurially, i.e., more inclined to proactively create or transform markets and build ecosystems, and hereby, by achieving to alter customers' and shareholders' behaviour, tend to achieve a more effective technological transition (Berglund and Sandström). At the same time, new and more advanced forms of new venture creation have emerged – joint-ventures, incubators, business angels, spin-offs (Benghozi and Salvador, 2014) – as well as even entirely new words to describe their new business models (i.e., 'uberisation' or 'unicorns'). On this matter, Muegge and Mezen show that a more intense participation in the ecosystem is associated with higher business model differentiation, sophistication, and extent of change, but also that entrepreneurs who participate more intensely in the ecosystem derive greater benefits from it.

Yet, business model innovation and development of new ecosystems are not always sufficient to succeed. In this regard, the case of electric car detailed in Olleros is particularly illustrative, as the deeply interconnected nature of both the business model and the ecosystem is precisely what led to failure, as not all components of the business models and participants in the ecosystem are at the same stage of evolution, which is often the case for disruptive innovations. In this respect, keeping both the business model and the ecosystem in sync appears critical. In this case as well, timing is everything.

Overall, by considering a wide range of industries, the articles in this special issue do indeed demonstrate the critical importance of business models and ecosystems when it comes to leveraging technological change. While developing innovative business models and ecosystems may not always result in success, it is nonetheless necessary, as if doing it does not guarantee to move forward, not taking an innovative stance on business models and innovations certainly guaranties to move backwards. Thus, as discussed in Benghozi (2015), firms are placed in an ever-changing environment, which puts them in a position that is not unlike Lewis Carroll's Queen of Hearts' in Alice in Wonderland: "My dear, here we must run as fast as we can, just to stay in place. And if you wish to go anywhere you must run twice as fast as that" (Carroll, 1865).

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