
Editorial

Tommaso Pardi

CNRS-DHE and Gerpisa,
École Normale Supérieure de Cachan,
61, Avenue du Président Wilson, 94235 Cachan Cedex, France
Email: tpardi@ens-paris-saclay.fr

Giuseppe Giulio Calabrese*

CNR-Ircres,
Via Real Collegio, 30, 10024 Moncalieri, Italy
Email: giuseppe.giulio.calabrese@ircres.cnr.it
*Corresponding author

Biographical notes: Tommaso Pardi is a Senior Researcher at the CNRS (IDHES), France, and the Director of the Gerpisa Network of Research on the car industry. He is teaching economic sociology at the ENS Paris-Saclay. His main areas of research are economic sociology, sociology of markets, organisational studies and sociology of work with a particular focus on the automotive industry. His current projects concern Industry 4.0, the EV revolution and the reorganisation and internationalisation of automotive R&D.

Giuseppe Giulio Calabrese is a Senior Researcher at the CNR-Ircres (Research Institute on Sustainable Economic Growth of the National Research Council, former CNR-Ceris) of Moncalieri (Italy) which he joined in 1988. He taught as a Visiting Professor in Managerial Economics at University of Turin and Polytechnic of Turin. He is the Editor-in-Chief of the *International Journal of Automotive Technology and Management* and member of the International Steering Committee of Gerpisa. His main areas of research are focused on industrial organisation, SMEs, technological innovation, industrial policy, balance sheets analysis and automotive industry.

We are approaching the conclusion of our current international program of research of Gerpisa on the new frontiers of the automotive sector. During the last three years (Pardi and Calabrese, 2018), we have explored how these new frontiers intended, literally, as new emerging markets and industries, but also as new technologies, innovation fields, applications and regulations, have been transforming the global automotive industry and its eco-system. In the previous special number of *IJATM*, we have asked whether these transformations were disruptive or evolutionary as far as their nature and pace were concerned (Covarrubias, 2018). The consensus was that while disruptive changes might still lie ahead, evolutionary dynamics appeared to be in place (Li, 2018). This year in our international colloquium in Sao Paulo, we have continued the debate by focusing this time on the players who are involved in these transformations and their respective capacity to shape different types of futures and to drive the direction of change.

Our general understanding is that the complexity of the automotive sector has grown dramatically in the last years (Bungsche, 2018). Two worlds are literally colliding: on the one hand, the traditional world of carmakers, OEMs and car-related distribution and services, which is dealing with the electrification and digitalisation of cars, the digitalisation of production and value chains, the transformations of mobility systems and more constraining environmental and transport regulations; on the other hand, the world of ICT, which is entering the automotive sector in many different ways (Tesla, Uber, Google, Amazon, Cisco, Huawei, etc.) and could change its structure and the very nature of its business. In addition, due to the electrification of cars, battery producers, as well as other companies in the battery and electric engine value chain, are becoming very significant players in the automotive sector (Donada, 2018).

Between them, local, regional, national and supranational governments are rapidly reshaping mobility systems, innovation systems, environmental and industrial policies in ways that could affect all these players. Nevertheless, the direction of change is also shaped by the roadmaps and technology expectations that shape the actions of many of these actors (Klebaner, 2018). Such visions are embodied in artefacts – consultants' reports and analyses, industry advisory reports, technology roadmaps, patents pools, research papers and books, public policies and reports – that are produced by different types of actors who also require our attention (Morris et al., 2018).

What are the strategies and business models that these players deploy in order to transform or disrupt the automotive sector? How do they interact with each other through competition, but also through alliances, consortiums, mergers and acquisitions, lobbying and political work and action? Who is driving the change in these fields of innovation: global or local players? Mature or emerging countries? Automotive or ICT companies? Products and technologies or policies and regulations?

The papers in this special number explore these questions and provide some important answers to characterise the fundamental dynamics at play. From a rather large and general perspective Serfati and Sauviat analyse the place of OEMs in the global supply chains by developing an intriguing comparison with the aeronautic industry. They show that in both cases, despite an increasing fragmentation and geographical dispersion of the production, OEMs have preserved their dominance over their supply chains. A key dimension highlighted in the article is the growing importance of intangible assets – patents, brands, software, competences and skills – in both sectors. Not only intangible assets have been increasingly participating to the stock value of these companies (up to 80% of the total value), but they also represent key strategic resources for controlling the markets and the supply chains.

From a more specific perspective, de Matos, Dias and Bagno, confirm this general view, by showing how the access to IA in R&D has become a key resource for international subsidiaries of OEMs, in particular in emerging markets, in order to climb the value chain. Their case study focuses on the Brazilian subsidiary of a main European OEM. It explores the capacity of the subsidiary to develop ambidexterity, which is the ability of simultaneously exploiting existing skills to improve efficiency in operations, and exploring new opportunities for major and/or disruptive innovations. As exploration activities tend to be centralised and controlled by OEMs, engineers in the subsidiary crucially depend on the recognition and the resources provided by the headquarters to be able to promote their innovations projects and acquire as a result new technological mandates. In order to do so, they have to rely on informal arrangements (contextual ambidexterity) for building their concepts and have a chance to receive formal positive

attention from the headquarters. This process can eventually lead to technological and functional upgrading, but it also implies that the control of the new technologies, even when developed in local subsidiaries, will remain in the hands of the 'global north' headquarters.

While Alochet and Midler shift the focus away from R&D activities as they pay attention to the neglected role of manufacturing strategies in the transition towards EVs (see also Muniz and Belzowski, 2017; Fujimoto, 2017), they fundamentally endorse a similar view concerning the dominance of OEMs over their value chains and markets. Their article shows that with very few exceptions OEMs have been approaching the electrification of their line-up by relying on existing assets and manufacturing capabilities: EVs are generally produced in the same lines and with the same standards and parts of conventional cars. While this approach has drawbacks, as it does not allow to optimise battery electric vehicles' (BEV) design to increase their overall performances, the advantages in terms of scale, much lower investments, costs and risks, and faster time to market are significant. If the future is still open, as many new EV models and concepts are coming to the market, the path taken so far by OEMs, but also by new entrants such as Tesla, whose EVs are not very much different in terms of design and performances from those supplied by traditional players, suggests that the dominance of OEMs over the automotive sector has not been contested yet, even in the new field of EVs.

Muniz, Belzowski and Zhu explore one of the main drivers that might change these dynamics: the key role of public policies in shaping EVs markets. Their article analyses, in particular, the deployment of the new energy vehicles (NEV) policy in China from 2009 to 2018. It stresses how these policies moved from the goal of creating a mass market for NEV to the goal of shaping R&D investments and strategies towards more optimised plug-in vehicles, in particular amongst independent Chinese manufacturers. This re-orientation, however, has made easier for dominant OEMs and their joint-ventures to meet the targets for corporate average fuel consumption by using NEV sales, slowing down rather than accelerating the decarbonisation of Chinese car sales. Furthermore, the long-term sustainability of all policy is questioned: after having crowded the supply of NEV by subsidising the entry of dozens of new players and forced all the existing producers to electrify their range, what will happen when NEV subsidies for consumers will phase out in 2021?

This question highlights the fundamental chicken-egg problem of the transition towards self-sustaining mass markets for EVs and the key role of consumers' preferences in this process. The article of Svennevik, the 2018 winner of the Gerpisa Young Author Prize, takes an original angle on this issue by looking at how the practice of car sharing modifies consumers' behaviours and preferences towards sustainable (shared and electric) mobility. The study employs data from interviews with 39 households in Oslo using three different types of car sharing (one P2P, and the other two B2C) and explores different scenarios where car sharing is complementary, competing, co-existing or combined with the current stable regime of privately owned cars. While the article recognises some potential for disruption, car sharing per se appears rather as complementary and co-existing with the current regime. More disruptive scenarios could occur if other policies would target the ownership and the use of cars, and in particular of conventional cars, but without these extra incentives and constraints, the provision of car-sharing services is, in fact, contributing in stabilising, rather than destabilising, the current regime.

To summarise the main messages of this special number, we can say that the transition towards a new paradigm of electro-connected-mobility is definitely taking place, but it is much slower than disruptive narrative has tended so far to imply. And if the transition is slow then the incumbent players, which have more resources and control key intangible assets in R&D and marketing, will have the upper hand in shaping the cars and the mobility of tomorrow. While public policies and new mobility services can accelerate the pace of change and create opportunities of disruption for digital players and/or newcomers, pieces of evidence suggest that so far they have not been very successful in changing consumers' behaviour and preferences, which are still very much anchored to the current regime.

Yet, this slow transition creates a tension between the expectations of rapid changes displayed by policymakers, environmental ONG, Silicon Valley's visions of the future, and the willingness of automotive OEMs to keep as much as possible of the current regime in the new paradigm. It is precisely this tension that we would like to explore in our next international colloquium – Paradigm Shift? The Global Automotive Industry in Transition – that will take place between the 12th and 14th of June 2019 in Paris (<http://gerpisa.org>). It will give us the opportunity to discuss both theoretically and empirically the longer term interplay between paradigms, regimes and phases of technological change in the light of the current transformation of markets, products and regulations.

References

- Bungsche, H. (2018) 'Regional economic integration and the automobile industry: automobile policies, division of labour, production network formation and market development in the EU and ASEAN', *International Journal of Automotive Technology and Management*, Vol. 18, No. 4, pp.345–370.
- Covarrubias, A. (2018) 'When disruptors converge: the last automobile revolution', *International Journal of Automotive Technology and Management*, Vol. 18, No. 2, pp.81–104.
- Donada, C. (2018) 'Leadership in the electromobility ecosystem: integrators and coordinators', *International Journal of Automotive Technology and Management*, Vol. 18, No. 3, pp.229–246.
- Fujimoto, T. (2017) 'An architectural analysis of green vehicles – possibilities of technological, architectural and firm diversity', *International Journal of Automotive Technology and Management*, Vol. 17, No. 2, pp.123–150.
- Klebaner, S. (2018) 'Isolated car manufacturers? The political positions of the automotive industry on the real driving emissions regulation', *International Journal of Automotive Technology and Management*, Vol. 18, No. 2, pp.119–141.
- Li, Z. (2018) 'Defining mega-platform strategies: the potential impacts of dynamic competition in China', *International Journal of Automotive Technology and Management*, Vol. 18, No. 2, pp.142–159.
- Morris, D., Madzudzo, G. and Garcia-Perez, A. (2018) 'Cybersecurity and the auto industry: the growing challenges presented by connected cars', *International Journal of Automotive Technology and Management*, Vol. 18, No. 2, pp.105–118.
- Muniz, S.T.G. and Belzowski, B.M. (2017) 'Platforms to enhance electric vehicles' competitiveness', *International Journal of Automotive Technology and Management*, Vol. 17, No. 2, pp.151–168.
- Pardi, T. and Calabrese, G. (2018) 'Editorial', *International Journal of Automotive Technology and Management*, Vol. 18, No. 2, pp.75–80.