R/EVolutions. New technologies and services in the automotive industry

25th GERPISA's International Colloquium
Paris: 14th of June – 16th of June 2017

Call for papers

Online proposals submission -- http://gerpisa.org/node/3647

Never before has the automotive industry has been involved in so many revolutions at once: the EV revolution, the digital and autonomous car revolution, the new mobility revolution, the industry 4.0 revolution. Forecasts from authoritative agencies announce that in the very near future the car as we have come to know it until the beginning of the XXI century – privately acquired and owned, personally driven, propelled by an internal combustion engine and manufactured by human beings – will cease to exist, replaced by electric, autonomous, connected mobility services produced in highly automated and flexible factories. Carmakers and automotive traditional suppliers do not contest these views: they rather portray themselves as the future providers of these new services and technologies. Several reports suggest that if they don't (or even if they do), other actors, ranging from GAFA (Google, Apple, Facebook, Amazon) to others ICT (Information and Communication Technology) and "social network" firms and start-ups, will take the control of this new digital value chain.

Yet, if one looks at the 91 millions of cars produced worldwide in 2015, an all time record, it is hard to see many traces of these on-going and upcoming revolutions. Indeed, never before in the history of mankind were so many conventional, ICE propelled and privately owned and driven cars produced by the traditional players of the automotive industry.

The problem with disruptive innovations is that they are supposed to start small, before becoming dominant. But how to know in advance if we are dealing with true radical changes or passing fashions? How to properly characterise their dynamics in order to assess what is actually happening rather than what "should" be happening or "will" be happening? More precisely, what are the economic, technological, institutional, political and social conditions that would allow these radical changes to take place and diffuse? Companies like Tesla and Uber do appear as successful disruptive players, pushing forward fully electric cars, new mobility services and autonomous cars, but their impact is still very small and one may question how long they can survive if their losses grow (much) faster

than their revenues? More generally, what are the "business models" that sustain these radical transformations, for instance, not only for EV production and sale, but also for the building of the required charging infrastructure, and the provision of the batteries and the electricity in the amount and at the price required to support a fast and large diffusion?

This Call for Papers asks for submissions that examine if and how these "revolutions" are taking place. The contributions may also question the pertinence and relevance of these disruptive "revolutions" for understanding the actual on-going transformations of the automotive sector in mature and emerging markets. More generally, we welcome papers that explore how electric cars, electric mobility, new services and applications, autonomous vehicles, digital cars, automotive big data and factories of future are promoted, conceived, developed, implemented and diffused, and how they impact and transform the market and production of vehicles, the transport of goods and persons, and the work and employment of people in the automotive and transport sectors.

We are calling for empirical and/or conceptual studies focusing on these as well as other questions raised by the present "disruptive" "revolutions" expected to deeply transform the global automotive industry and, more generally, the field of transportation and mobility. Amongst these, the themes of our previous international programme on the structuring/restructuring of the global automotive industry remain important. In particular, do these, as other transformations in the automotive industry, sustain globalization through regional integration, FDI and further development of the global value chains? Or are we witnessing the beginning of a de-globalization process triggered, for instance, by "disruptive" political changes as *Brexit* and the election of Donald Trump as the president of the US?

Papers developing historical perspectives on all these issues are welcome. They could focus for instance on previous technological and product revolutions in the automotive sector, on the social and political construction and use of forecasts by governments and consultants, on the role of trade integration and/or protectionism for the development of the automotive sector in mature and emerging countries, and on previous more or less successful, aborted or forgotten "revolutions".

This call for papers is organized in five major themes of research that structure our on-going international programme on "The new frontiers of the global automotive industry".

We also draw your attention to the special issue of the international journal IJATM that will be based on a selection of the best papers presented during the colloquium, including the winner of the young author's prize, and to the special sub-theme on the future of work in collaboration with the International Labour Organization.

1. Embedding the automobile in societal contexts: new services, new uses, new integrated mobility systems, new business models (Bruce Belzowski, Bernard Jullien, Bertha Vallejo)

2. New technologies: sustainable mobility or new brave world (Giuseppe Giulio Calabrese, Yveline Lecler)
3. Production models and strategies, new locations and restructuring of value chains: between incremental and disruptive innovation (Lourdes Alvarez, Holger Bungsche, Tommaso Pardi, Hua Wang,Vincent Frigant, Thomas Klier)
4. Employment and labour relations: between segmentation and convergence (Antjie Blöcker, Holger Bungsche, Jorge Carrillo-Viveros, Martin Krzywdzinski, Tommaso Pardi)
5. Public policies – national and regional clusters: between path dependency/inertia and structural change (Boleslaw Domanski, Bruno Jetin, Sigfrido Ramirez)

Guidelines

In order to submit a proposal click under the dedicated link below the chosen theme. Proposals should range between 500 and 1000 words. They should present the outline of the research question (Purpose), the methodology (design), the main results (Findings) and their practical implications.

The procedure to submit final articles will be sent by email following the proposal acceptation. Final articles should range between 5000-7000 words (excluding figures, tables and references) in order to be considered for the IJATM special number. High-quality articles which exceed 7000 words will be also considered.

IJATM special issue

The International Journal of Automotive Technology and Management (IJATM) published by Inderscience publishes each year a special issue based on a selection of the most relevant papers presented during the GERPISA yearly colloquium. One or two papers from young authors will also be published in this special issue. An evaluation committee, composed of members of the GERPISA's international steering committee, will assess the papers during the colloquium (young authors and others).

The criteria of the assessment are based on the relevance of the topic inquired, the presentation and the accuracy of the results, the quality of the methodological work, and the review of the literature. A variety of work in the field of social sciences (history, management, economics, sociology, geography, political science, etc.) dealing with automobile industry is welcome.

After the decision of the GERPISA's steering committee, the selected papers will be refereed through a double-blind process, and then published in a special issue of the International Journal of Automotive Technology and Management. We are looking forward to reading your papers and attending your presentations.

Gerpisa Young Author Price
The Young Author's Prize of GERPISA, consisting of the publication of the winning paper in a special issue of IJATM and a 1500 € reward, aims at

recognizing the work of young researchers on topics related to the automobile industry, encouraging them to develop their enquiries on automobile industry.
Requirements to submit a paper proposal for the young author's prize:
1. Master, Ph.D. students, post-doc, etc. (no full-time associate professor, professor or researcher) needs to be less than 37 years old (papers co-authored with a senior researcher will not be assessed);
2. Paper based on the analysis (whether theoretical, methodological, or empirical) of the automobile industry (topics have to cover one of the five themes of the colloquium);
3. Presentation of the paper during the 24th international colloquium, Puebla, 1st of June – 2rd of June 2016;
4. Submission online (for one of the 5 above-mentioned themes, specifying that the papers are for the prize), and email (name, date of birth, nationality, status, University, topic, abstract) to Giuseppe Calabrese (g.calabrese@ceris.cnr.it), and Tommaso Pardi (tpardi@gerpisa.ens-cachan.fr) before the 1st of March 2017.

1. Embedding the automobile in socio-technical contexts: technological, institutional and political drives and struggles to set up new mobility systems and business models (Bruce Belzowski, Alex Covarrubias)

New mobility systems and business models are in the making. The digital revolution, Industry 4.0, the Internet of Things, smart manufacturing, among others trends and transformations taking place, are making it possible for the emergence of new mobility systems. For now, the most diffused are Uber-like services based on online platforms. Though, they are hardly alone. A growing number of shared and autonomous transportation systems are in progress, and alternative and more efficient ways to match and move people and things are being designed and tested on the road. Simultaneously, the same drives are propelling the deployment of new business frameworks based on focused business strategies and lighter organizational structures, with no or minimum physical assets, with no or minimum employment. Startups and high-tech/powerful brands are arriving in the industry while existing auto corporations react and weigh their opportunities to keep the lead in a more contested and redesigned transportation sector. In the meantime, a hectic number of alliances, takeovers, and shared initiatives are evolving between incumbent and newcomers in the industry.

In most cases, these evolutions take place in the midst of tensions and struggles among many stakeholders. While in some jurisdictions institutions and incumbent firms support the eruption of new mobility systems, players and business, in others there are growing tensions between the status quo and new players and the progress towards a new mobility services transportation sector becomes a highly contested terrain. Take, for example, the case of Uber, which is banned from operating in many countries.

In this track, we look for contributions that assess the extension to which such systems and business models are being developed inside and across jurisdictions

and the technological, socio-political and institutional factors that are driving and hindering them.

2. New technologies: sustainable mobility or new brave world (Giuseppe Giulio Calabrese, Roberto Marx)

New technologies and new forms of mobility are strictly redefining the frontiers in the automotive industry. The previous GERPISA conferences and in particular the 2015 conference in Paris pointed out the interconnection between the technological trajectories and the role of incumbents and newcomers in the industry, the state and private actors in the transport system. But the "new" automotive industry requires many innovations: products (raw materials, architecture definition…), services (car-sharing, connected cars…), new business (battery rental, after-sale activities…), policies (aids, regulations...) and, of course, integrators of all those innovations transforming them into reality.

In the call for papers for the 2016 GERPISA in Puebla we paid attention on the respective role of market, which might be covered by each technology: electric vehicles (full size and micro), full and plug-in hybrid vehicles, fuel cell vehicles, but also LPG, CNG and biofuel vehicles. Major hurdles remain regarding the electric vehicles' limited diffusion to date and the national legal framework and its regulations and laws which may favour or disadvantage the introduction of new mobility services in cities.

We require contributions able to describe and understand the role and impact of public (environmental or transport) politics in supporting the new powertrains and forms of mobility and in shaping the integration with old technology. For example tightening regulations and technology innovations are driving automakers to switch to 48-volt systems, but this solution has implications for the whole automotive industry.

Some topics have only been tangentially addressed in the previous GERPISA conferences:

- Demand approach to the market of new powertrains, vehicles, and new mobility services, including customers/citizens' needs and mobility patterns but also their acceptance to changing their behaviour, and the incentives that cities and/or companies implement to promote new mobility services.

- The issue of charging infrastructure that might be linked to public and private investments (public policies, but also carmakers investments or even commercial facilities investment to attract EVs owners, to generate an eco-image).

- Autonomous and more connected vehicles (cars, trucks and busses) will be launched into the market. One question regards their impact on mobility tendencies but also the real state of the art in terms of cybersecurity.

- New technologies to improve fuel efficiency do not regard only powertrains. The reduction of emissions can be reached also by downsizing and

lightweighting. These involve new component design, new material mix and innovation in manufacturing process.

One area that continues to grow in the auto industry is the use of Big Data. It provides manufacturers daily downloads of data from millions of customers from their in-vehicle connections such as OnStar. It is used by ride sharing services such as Uber and Lyft to customize and improve their service. It offers new entries into the electric vehicle industry the support for downloading software updates to the vehicle. And it is the basis for autonomous vehicle "deep learning and artificial intelligence" as these vehicles share their knowledge across fleets. But the sheer volume of data collected in these enterprises dwarfs previous Big Data such as census records or household and vehicle registration data. Today's automotive Big Data is so voluminous that manufacturers do not have enough server space and download/upload time to keep more than a few days worth of data, and they need to develop new analytical techniques to use the data to their advantage. This year's GERPISA conference is accepting papers about how auto manufacturers and mobility companies use Big Data for marketing, manufacturing, and product development, and how they may use it in the near future. We encourage researchers with case studies on this topic to present the challenges and opportunities they see coming for Big Data in the automotive industry.

Industry 4.0 is the current trend of automation and creates what has been called a "smart factory". It represents a new productive scenario by means of innovating solutions in different parts of the value chain, which translates to higher efficiency. It includes cyber-physical systems, the Internet of things and cloud computing. How has this process been affecting the automotive industry (firms, workers, unions, skills and so on)? What has been achieved so far and what should we aim to achieve? What will be the impact on the industry?

Most of the questions remain to be analysed to reflect upon the notion of "new frontiers" in the global automotive industry. As specified in the call for papers R/evolution can be understood literally also as new technologies, new innovation fields, new applications and regulations. It is fundamental to know who are the actors involved in shaping these new territories of production, consumption and innovation.

3. Production models and strategies, new locations and restructuring of value chains: between incremental and disruptive innovation (Tommaso Pardi, Vincent Frigant, Thomas Klier)

There are several aspects of this year's theme that relate to production models and related topics.

Who produces what? How will the new technologies and services in the automotive industry impact the value chains? Does the arrival of new players systemically alter the balance of power between assemblers and suppliers? How will the r/evolutions in technologies and services impact the production models of existing industry participants?

Where will economic activities take place? To the extent that different players and different technological capabilities will be introduced to the automotive value chain, how will that impact the existing geography of this industry? Will new entrants be drawn to the current locations or will they permanently alter the industry's footprint? In that context we also need to think about recent political events (such as the Brexit vote) and their likely impacts on the globalization of the auto industry. Will there be extensive and/or permanent de-globalization as a result? How would that alter the geography of today's value chains?

Papers addressing these aspects of the arrival of new technologies and services in the auto industry around the world are welcome.

Also, the announcement this year by Volkswagen of the launch of a new platform exclusively dedicated to the production of electric cars, while all the other big players still rely on shared ICE platforms for their green vehicles, shows that carmakers and suppliers are following quite different strategies in dealing with these r/evolutionary changes. Papers addressing these differences, comparing for instance how companies introduce new powertrains and green vehicles (shared platforms versus new dedicated platform), how they develop and sell mobility services, how they generate, manage and exploit "big data", how they upgrade/transform their manufacturing process at home and abroad, and how they organize and re/organize their R&D process, are all very welcome.

4. Employment and labour relations: between segmentation and convergence (Jorge Carrillo-Viveros, Martin Krzywdzinski, Tommaso Pardi)

How will the four "revolutions" of EVs, new mobilities, autonomous and connected cars and factories of the future influence the employment and work in the automotive sector?

For instance, how important will be the restructuring process entailed by the eventual reduction and/or end of internal combustion engines' production? Will it be compensated by the development of electric engines and batteries' production? Where is this production going to take place (how will the geography of the regional and global automotive production be affected)? Will it be less prone to relocations, as some have suggested?

If ICT companies will capture an increasing part of the value produced by the automotive sector how will this trend affect the distribution of this value to workers and which impact will it have on employment? Service jobs are, in general, of a much worse quality than manufacturing jobs: how does this apply to the "servitization" of the automotive industry? For instance, how can we characterize employment and working conditions in new "disruptive" companies such as Tesla, Uber, Blablacar, etc.? Is the trade-off between manufacturing and service jobs positive or negative?

Beyond the products and their transformations, what are the prospects of a fourth industrial revolution in the automotive sector through the diffusion of digital technologies in manufacturing? How are/will/might co-robots, digitalization of the value chains, Internet of Things, additive manufacturing and augmented reality impact automotive manufacturing? Can we anticipate how the diffusion of these new technologies will change employment and work in the automotive sector both in mature and emerging countries? What are the main debates and controversies concerning these expected transformations of work and employment at national and regional level? How will trade unions and government agencies problematize these issues? Are there, notably, alternative paths of development concerning the nature of these transformations (more control vs. more autonomy, more efficiency vs. more flexibility, etc.)? How do these transformations in manufacturing processes interact with the other "revolutions" in product architectures and features?

Papers addressing these, as well other issues concerning the on-going transformations of employment (polarization, segmentation, reduced job security, etc.) and work (intensification, upgrading, digitalization, etc.) in the automotive sector (including R&D and engineering jobs and activities) are welcome.

- The future of work in the automotive sector (Tommaso Pardi, Jorge Carrillo, Martin Krzywdzinski)

Since February 2016, Gerpisa has started a three year project under the umbrella of the International Labour Organization to explore the transformations and future of work in the automotive sector and the conditions that will allow for the progress of social justice in line with the ILO Century Project (http://www.ilo.org/century/lang--en/index.htm).

Under this sub-stream we seek papers that focus on this and related topics, such as the development and preservation of decent jobs in the global automotive value-chain, and how the current transformations of the organization of work and production and of the governance of work affect these outcomes at regional, national and firms' levels. A special focus will be given this year to the issue of "de-globalization" in the automotive sector.

The first ILO sponsored report on "The future of work in the automotive sector. The stakes of (de)globalization" will be presented by Tommaso Pardi during the colloquium; other collective publications of selected papers will be announced soon.

5. Public policies – national and regional clusters: between path dependency/inertia and structural change (Bruno Jetin, Sigfrido Ramirez)

Public policies have always played a crucial role in the development path of the automobile industry. Traditionally, states have used industrial policies, trade policies, fiscal policy, transport policies, safety rules and financial regulation to influence the production and sales of vehicles.

These policies, like all public policies, have been influenced by the general historical context in which they were embedded: Industrial and technological policies to promote national champions were favoured during the Fordist era then fell into disgrace when the neoliberal agenda became dominant in the eighties and gave priority to free trade, competition and financial deregulation. The last international crisis of 2008-2009 heralded a renewal of industrial policies since it was deemed as not only a financial but a structural crisis: the economic, political, social and environmental dimensions interacted and called for an automobile revolution, as the GERPISA said in its previous conferences, or at least that critical decisions would be taken by governments to initiate a radical change.

US President Obama, for instance, at the start of his first term, announced a renewal of public policies intended to accelerate take up of alternative technologies for car engines, subsidies for the sales of electric cars and new regulations to improve the mileage per gallon of gas of the existing vehicle fleet. Similar policies were announced in the European Union and developed at national levels by its member-states. In the BRICS, being China a central case in point, such an acceleration was seen as an opportunity to favour indigenous producers or existing technological champions like in India. Additional regulations have been taken regarding car use to give a legal status to car sharing and new forms of mobility. But it seems that the initial impetus has been lost as the economy was recovering and car sales were booming. Unexpected events such as the recent fall of oil prices added to a general feeling that, after all, there was not such urgency to speed up a paradigmatic shift of the automobile industry. On top of that, political events such as the radical change in the US policies announced by the new President Donald Trump will release pressure on the necessity to develop alternative energy-saving vehicles and use at least in the USA. One could think that this would lead to a return of the automobile "business as usual" and that the necessity to change the automobile paradigm is already gone. However, the repeated pollution peaks choking people in Beijing and to a lesser extent in Paris and many other metropolitan cities are a reminder of the urgency to change the cars we produce and use. The scandal of the cheating of emission test (Dieselgate) is also a clear example of the reluctance of some carmakers and parts producers to really engage in a radical shift of the automobile paradigm but also, at least in the European case, the reluctance of states to actually enforce the law and push for a change in a context of sluggish economic recovery at the world level.

These recent and contradictory events call for a comprehensive and detail analysis of public policies to see if they have hastened or slowed down the change of the automobile paradigm. What is the discourse of public authorities? What is the concrete outcome of the decisions announced and taken in the wake of the international crisis? Were they implemented or abandoned? Did they prove successful or did they fail? What was the reaction and lobbying strategy of the actors of the automobile sector in the broad sense (carmakers, part suppliers, energy producers, wholesale and retail sale companies, banks, consumer organisations…)? Were these actors able to influence significantly new laws and regulations? Were they able to avoid their implementation?

We welcome all contributions that attempt to answer these questions regarding public policies in the field of state aids, technology, car use and mobility and pollution and environmental issues. Public authorities must be understood in the broad sense: Supranational, national, regional and cities can and should be included. Chamber of commerce, lobbies, consumer organisations, NGOs and other social actors should also be covered. Although the focus should be on the Great Recession and its outcome, analysis of previous historical periods of structural change and crisis (1900s, 1930s, 1970s, 1990s) are important to understand the logic of state and politics in the periods of transformation in the architecture(s) of automobile markets.