

Call for Papers Technovation Elsevier - From Science Management to Innovation Management: New forms of science-industry relations and knowledge transfer

The study of the relations between science and industry and associated opportunities and challenges relating to knowledge transfer, have long been discussed in the innovation management literature (e.g., Shepard, 1956, Nelson, 1962; Mansfield, 1980; Link, 1981; Gilbert & Cordey-Hayes, 1996). However, in recent years, the landscape of science-industry relations and associated knowledge transfer practices have been subjected to profound changes (e.g., Arora et al., 2018; Zahra et al., 2018) requiring a renewed examination of long-standing concepts.

Paper Submission Deadline: 1 October 2023

Guest editors:

Anna Yström, Linköping University (co-corresponding GE), Sweden (anna.ystrom@liu.se)

Quentin Plantec, TBS Education (co-corresponding GE), France (q.plantec@tbs-education.fr)

Kristel Miller, Ulster University, UK, (k.miller@ulster.ac.uk)

David Sarpong, Brunel University London, UK (david.sarpong@brunel.ac.uk)

Michael Rennings, Ruhr-University Bochum, Germany (michael.rennings@ruhr-uni-bochum.de)

Michel Ferrary, University of Geneva / SKEMA, Switzerland / France (michel.ferray@unege.ch)

Douglas Robinson, CNRS / LISIS - UCL London, UK / France (douglas.kr.robinson@gmail.com)

Motivations for the special issue:

The study of the relations between science and industry and associated opportunities and challenges relating to knowledge transfer, have long been discussed in the innovation management literature (e.g., Shepard, 1956, Nelson, 1962 ; Mansfield, 1980 ; Link, 1981 ; Gilbert & Cordey-Hayes, 1996). However, in recent years, the landscape of science-industry relations and associated knowledge transfer practices have been subjected to profound changes (e.g., Arora et al., 2018 ; Zahra et al., 2018) requiring a renewed examination of long-standing concepts.

First, academic engagement with industry—referring to scientists involvement notably in collaborative research, contract research, consulting, research commercialization and informal relationships for university-industry knowledge transfer—is now practiced by more scholars than ever before (Perkmann & al., 2021), is more varied in the types of activities which it involves (e.g., Miller et al. 2018; Castillo Holley and Watson, 2017) and types of partners engaged (e.g., SMEs, see Johnston & Huggins, 2018; Albats et al. 2020). This has seen the rise in a diversified range of academics (e.g., Industrial Ph.Ds. and professors of practice).

Furthermore, many universities now view academic engagement as an essential part of the academic role (Perkmann et al. 2021; Shao et al. 2020) and research funders are increasingly demanding science-industry relations and co-creation for scientific advancement. Second, new practices in managing science and innovation in corporate laboratories have arisen (Sheer, 2022), notably with a greater emphasis on basic science and open contributions in certain sectors (Hartmann & Henkel, 2020). More companies are seeking (and struggling) to create more synergies between their internal research outcomes and their innovation processes (Zahra et al., 2018), notably through new forms of alliances with universities (Slalova & Jong, 2021) or third parties in their innovation ecosystems (Granstrand et al., 2020). Third, new and original research organizations or actors have gained importance throughout the traditional science-industry relationship. This includes hybrid public-research organizations (Bozeman & Boardman, 2003; Perkmann et al., 2019), with dedicated missions to foster both science and innovation (Godstein & Narayanamurti, 2018) such as the recent debate over the establishment of new Advanced Research Projects Agencies^[1] (ARPA) in the US or Advanced Research and Invention Agency^[2] (ARIA) in the UK. It also encompasses non-profit organizations, new forms of brokers such as science-based open-labs (Paskaleva & Cooper, 2021), hospitals and clinics (Anckaert & al., 2020), or big science centers (see Technovation Special Issue on Big Science Organizations, 2022). Fourth, effective science and industry collaborations are needed to contribute to Grand Challenges (Jutting, 2022). Consequently, policymakers are more engaged in proposing mission-oriented projects (Sarpong et al., 2022; Robinson & Mazzucato, 2019), seeking quadruple-helix perspectives and solutions (Miller et al., 2018). This requires fresh perspectives on how academics and universities execute the open-innovation paradigm to face those challenges (e.g., Beck et al., 2022), with, for example, a greater centralization based on new forms of large collaborations and Big Science centers (e.g., ITER case, see Dahlander et al., 2022).

These changes to the science-industry landscape will change the dynamics between different actors and institutions and affect various dimensions and levels of knowledge transfer during science-industry relations (e.g., at the individual actor level, organisational/interorganisational level, network level, intermediary level, or regional/national level).

Scope of this special issue and potential research questions:

The aim of this Special Issue is to collate high quality research which revitalizes our understanding of the topic of science-industry relations and knowledge transfer within the current innovation management landscape. We welcome conceptual and empirical papers which span all types of methodologies (e.g., qualitative, mix-method, quantitative) and provide novel insights into new organizational forms, practices, policies, and their consequences for science and innovation. We also encourage research which seeks to not only refine and extend existing theory, but which builds new theory, through drawing on other disciplines and/or combining theoretical lenses to advance our understanding of the latter phenomenon.

Possible topics should fall within the spectrum of four key thematic areas of inquiry, which underpin the aim of this special issue. Each of these are outlined and indicative potential research questions are provided.

1) New forms, spaces, and practices of academic engagement with industry: Academic engagement with industry has been demonstrated to have a positive effect on research productivity—both at an individual (e.g., Bikard et al., 2019) and an organizational level (e.g.,

Zhang & al., 2019)—and to be more often practiced by successful scientists in applied research (e.g., Bekkers and Bodas Freitas, 2008). Due to the increasing magnitude of this phenomenon (Hughes et al., 2016), encouraged by universities, notably through Technology Transfer Offices (TTOs) that adopt various business models (Baglieri & al., 2018), it opens novel challenges and research questions. The development of academic entrepreneurship (e.g., Siegel & Wright, 2015) also opens new research questions regarding its effects on research and how it complements or substitutes academic engagement with industry activities. This might include: What are the effects of academic engagement with industry for junior academics and Ph.D. students? In which spaces and places do engaged academics interact with corporate scientists? What are the effects of university or governmental policies that encourage those practices? How can academic engagement with industry favor more basic research? What are the novel ways universities can use to foster, organize, and measure academic engagement with industry (notably beyond patenting)? How can TTOs foster more basic science for academic engagement with industry or academic entrepreneurship? How can academic engagement with SMEs can leverage research productivity and quality? How can academic entrepreneurship complement and/or substitutes academic engagement with industry?

2) *New perspectives on industrial research & corporate laboratories*: Companies recently deal with science in novel ways (e.g., Arora & al., 2018), notably through the tentative (and difficulties) to create synergies between both internal fundamental discoveries and inventions (Narayanamurti & Odumosu, 2016 ; Zahra et al., 2018). In some sectors, they also counter-intuitively extensively contribute to open-science (Hartmann & Henkel, 2018). New organizational settings are also envisioned (Sheer, 2022), with new roles for managers and corporate scientists interacting with their knowledge ecosystems (Ollila & Yström, 2016). Examples of research questions may refer to: What are the mechanisms and organizations to create synergies between internal fundamental discoveries and inventions? What business models are used by companies when they rely on open-science strategies? What are the specificities of basic science contributions of companies? What are the new roles of experts and corporate scientists? How do corporate scientists interact with universities and academics in novel ways? How do companies integrate academics in new ways in their overall open-innovation practices?

3) *New actors and forms of organizations for science-industry relations*: Fellow researchers recently documented the emergence of a wide range of new forms of organizations and actors that participate in knowledge transfer and science-industry relations (e.g., Giannopoulou et al., 2019 ; Perkmann et al., 2019). We need to better understand the roles and functions of non-university-like research institutions to foster knowledge transfer and science-industry relations (e.g., Agogué et al., 2013), including: hybrid PRO, Non-Governmental Organisations (NGOs), Hospitals, new forms Research & Technological Organizations (RTO), joint company-university laboratories, big science institutions, or crowd, as well as new places for research such as Open Labs (Fritschze et al., 2020). We also note that new organizations and forms of science-industry relations emerged, or acted differently, in more developing economies. Recent studies pointed out the specificities of the Chinese Academy of Sciences (Chen et al., 2022), or documented new forms of interfaces between advanced and developed economies (e.g., Cai, 2022, Dosso et al., 2023). Examples of questions are: What differentiates engagement with NGOs, hospitals, or the crowds rather than with industry for science and innovation? What practices can be used to manage the co-pursuit of science and innovation in RTOs? What are the difficulties and stakes when creating new RTOs? How can Open Labs contribute to the development of basic research and innovation? What is

differentiating emerging intermediaries for science-industry relations in advanced and developed economies?

4) Science-Industry relations and knowledge transfer for Grand Challenges: New scientific research practices have emerged to address innovation for Grand Challenges (Block et al., 2021). New perspectives on the assessment of the rigor/relevance of science in this context are needed, as well as further exploration of the role of science in the R&D process to tackle Grand Challenges (Sarpong et al., 2022). Examples of questions may refer to: What incentives and policies can universities and government promote to favor science and innovation for Grand Challenges? What are the effects of science-industry collaborations dedicated to addressing Grand Challenges? How the Triple-Helix and Quadruple-Helix perspectives can be renewed by the need to address Grand Challenges? How can industry influence corporate scientists to interact and contribute to research and innovation in relation with Grand Challenges? What are the possible roles of the industry in the open-science paradigm or for big science projects development?

Manuscript submission information:

Only original manuscripts can be submitted, according to the 'Guide for Authors' published on the Technovation journal website.

Please mention the name of the Special Issue in your cover letter, and make sure that your paper is designated for this special issue in the Editorial Manager system. All manuscripts will be peer-reviewed following the established policies and procedures of the journal. The final papers will be selected for publication depending on the results of the peer-review process and the reviews of the Guest Editors.

Proposed timeline:

- Submissions System opens: 1 June 2023
- **Paper Submission Deadline: 1 October 2023**
- First round review decision to authors: 15 February 2024
- PDW (TBS Education, Toulouse, France*): 01 March 2024
- Revised manuscript due: 15 May 2024
- Second round review decision to authors: 30 September 2024
- Final revised manuscript due: 15 January 2025
- Final author notification of acceptance: 28 February 2025

*Authors of promising manuscripts will be invited to participate in a workshop, to be held in March 2024, Toulouse. Participation in this workshop is not mandatory for authors, although it is highly recommended.

If you have any questions concerning this special issue or if you would like to discuss the fit of your paper or research idea with the special issue, please send an email to the corresponding guest editors Anna Yström (anna.ystrom@liu.se) and Quentin Plantec (q.plantec@tbs-education.fr).

Guest Editors short bios and SI experience:

Anna Yström is Senior associate professor at Linköping University, Sweden. Her research explores, from an organizational behavior perspective, the human side of engaging in inter-organizational collaboration for innovation. To that end, she has studied issues such as managerial practices and roles, organizing principles, boundary-spanning, knowledge ecosystems, processes and practices of knowledge creation and capture, knowledge dissemination and integration, organizational creativity, and design methods supporting collaboration. In addition, she has extensive experience in conducting research projects in close collaboration with practitioners. She also publishes her research in journals such as *R&D Management*, *Creativity and Innovation Management*, *Journal of Applied Behavioral Science* and *International Journal of Innovation Management*.

Quentin Plantec is Assistant Professor at TBS Education, Toulouse, France. He holds a Ph.D. from the Center for Management Science (CGS) at MINES ParisTech – PSL University, Chair of Design Theory and Methods for Innovation, as well as an MS from Ecole Polytechnique and from Ecole Normale Supérieure in Economics & Business. His research focuses on innovation, science–industry links, and patent analytics. He has been published in *Technological Forecasting & Social Change* and *La Revue Française de Gestion*, as well as in conference proceedings of Academy of Management (AoM), *R&D Management*, European Academy of Management (EURAM).

David Sarpong is Professor of Strategic Management and Head of the Strategy, Entrepreneurship, and International Business (SEIB) Research Group at Brunel University London, Great Britain. His research interests primarily focus on the intersection of strategic management, international management, and innovation. David has notably conducted research on Russia's Basic Research Program at the National Research University in Moscow. He is Associate Editor for the *Journal of Strategy and Management*. David has authored 140+ articles in refereed academic journals, international conference proceedings, and book chapters, and notably *Technological Forecasting and Social Change*, *R&D Management*, *Technovation*, *Journal of Technology Transfer*.

Douglas K. R. Robinson is Senior Research Scientist at the French National Centre for Scientific Research (CNRS), Co-Director of the Laboratory for Interdisciplinary studies of Science, Innovation and Society at Gustave Eiffel University, France, as well as an Honorary Senior Research Associate at UCL London, Great Britain. His research focuses notably on mission-oriented policies for the research and innovation system, and how missions can be implemented by both targeted policy, by researchers, and through co-creation activities with firms and citizens. Douglas has published work. Douglas has notably published articles in *Research Policy*, *Technological Forecasting and Social Change*, and *Scientometrics*.

Michael Rennings (*né Wustmans*) is an Academic Council at the Ruhr-University Bochum, Germany. There, he is working at the Professorship for Entrepreneurship and innovative Business Models within the Center for Entrepreneurship, Innovation and Transformation (CEIT). His research focuses on technology dynamics driven by economic transitions, the impact of technology-driven innovations on actors' strategic renewal behavior and technology transfer from science to business. He obtained his PhD at the University of Bremen, Germany, and he has published his work in journals such as *Technological Forecasting and Social Change*, *R&D Management*, *IEEE Transactions on Engineering Management*, *World Patent Information*, *Journal of Cleaner Production*.

Kristel Miller is a Reader in Innovation and Strategy at Ulster University, Northern Ireland. Her research focuses on the areas of innovation management, technology commercialization, science-industry engagement, business models, and competitiveness. She is the co-editor in chief of the Irish Journal of Management and sits on the editorial board of the International Small Business Journal. She has published in journals such as the British Journal of Management, Journal of Technology Transfer, Journal of Business Research, Technovation, Technological Forecasting and Social Change and R&D Management. Kristel is also a member of Innovation Caucus, an expert reviewer for the European Commission.

Michel Ferrary is a Professor of Management at Geneva University, Switzerland, and a Research Associate at SKEMA Business School, France. He is a graduate of IEP Paris, University of Paris VII-René Diderot, and EHESS-Polytechnique-University of Paris X-Nanterre. He holds a PhD in management from HEC Paris and is accredited to direct research. His studies stakeholder theory, social network, innovation, and high-tech cluster. He publishes his research in journals such as California Management Review, Entrepreneurship Theory and Practice, Journal of Business Ethics, European Management Journal.

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