Special Issue Editorial

Triple Helix Futures

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Successful collaboration between government, industry and academia is an acknowledged source for innovation, for regional, national, and global economic growth as well as for social development (Miller et al., 2016; Perkmann & Walsh, 2007; Urbano & Guerrero, 2013). The Triple Helix Model introduced back in the 1990s (Etzkowitz & Leydesdorff, 1995) provides a framework which not only visually grasps the phenomenon of University-Industry-Government relations but also opens avenues for further research on the phenomenon. Nowadays, celebrating nearly three decades of the Triple Helix model, this special issue looks at where we currently are in studying Triple Helix relations, where the research discourse is moving, and what are the futures for both the phenomenon and the concept.

The Bayh-Dole Act introduced in the USA in 1980 allowed American universities to own and commercialise the results of federally funded research. The Act was followed by similar initiatives in Europe and globally, which further facilitated university-industry-government relations (Mowery & Sampat, 2004; Sampat, 2006). The decade of the 1980s, thus, being kicked-off with strong

policy-making initiative, became a period of intensive formalization of these triadic relations. That was a period when The Triple Helix model started to emerge (Etzkowitz, 1983) before it got fully formalized in the mid 1990s (Etzkowitz & Leydesdorff, 1995). As a model that grasps a lively phenomenon of relations between continuously evolving types of organizations (universities, firms, policy-making bodies), and relations which happen across very diverse cultural, institutional, and economic contexts (Caloghirou et al., 2001; Nelson, 2012), the Triple Helix Model has been going through an intensive evolution process in the past decades.

The recent work by Cai & Etzkowitz (2020) provides a rather comprehensive overview of the Triple Helix Model conceptualizing and evolving through the past years. First, the model has been developing within the scope of three helixes implying triadic relations, which are complex in their dynamics. Intermediary organizations, “hybrid organizations” which are called to address this complexity (Champenois & Etzkowitz, 2018; Perkmann et al., 2019) are often perceived within the scope of the Triple Helix Model as boundary spaces bridging the three helixes. “Taking the role of the other” (Cai & Liu, 2020; Etzkowitz, 2008) within the Triple Helix makes the core actors wear shoes of each other, with universities becoming more entrepreneurial (Etzkowitz, 1998), and firms getting more engaged in educational and research initiatives (Laursen & Salter, 2004; Yi & Jung, 2005). The second stream of the Triple Helix evolution implies a structural growth of the Model towards first, a Quadruple Helix with social context being added as a fourth helix, and then, a Quintuple Helix with a fifth helix representing natural environments (Carayannis & Campbell, 2010; Carayannis & Rakhmatullin, 2014). Cai & Etzkowitz (2020) lately propose to perceive Triple Helix as placed within social and environmental helixes as larger contexts. Thirdly, the scale for approaching Triple Helix relations has also evolved from a local triad perspective to Triple Helix systems (Leydesdorff, 2005), ecosystems (Oliver et al., 2020), (inter)-regional (Kim et al., 2012; Leydesdorff et al., 2014; Rodrigues & Melo, 2013) and global Triple Helix collaborations (Kwon et al., 2011). One of the issues remaining in the field of the Triple Helix research across decades of its development has been the measurement of the Triple Helix relations and systems, which appear very dynamic as well as context-dependent (Albats et al., 2018; Leydesdorff et al., 2019; Rossi & Rosli, 2015).

In parallel with the developments of the Triple Helix model itself, the research efforts in the field allowed for theory developments and supported further linking Triple Helix with other research streams (Cai & Etzkowitz, 2020). One of the ways to overview those developments is to look at them from the viewpoint of each of the actors of the Triple Helix. From a university

perspective, the Triple Helix approach supported the development of research in the fields of academic and student entrepreneurship (Miller et al., 2018; Walter et al., 2013) as well as entrepreneurial university (Etzkowitz, 2013; Guerrero & Urbano, 2012). One of the lenses commonly used to approach companies' relations with universities and regulation of such relations is the open innovation paradigm (Enkel et al., 2009; Laursen & Salter, 2006; Perkmann & Walsh, 2007). The governmental perspective as well as the complexities in managing Triple Helix relations emerging across organizational boundaries and institutional settings are studied with an application of Institutional and Organizational Theories (Cooke et al., 1997; Woolgar, 2007), inter-organizational relations theory (Faems et al., 2005) and stakeholder theory (Abidin et al., 2003; Albats, 2018).

This special issue represents a snap-shot collection of studies on Triple Helix, which build upon prior research as well as look into the contemporary issues in university-industry-government relations and point several directions for Triple Helix futures.

The first paper of this issue by Rantala and co-authors (2021) reflects upon the challenge that has been existing in the Triple Helix research throughout its entire evolution – the challenge of evaluating the performance of university-industry-government relations (Rossi & Rosli, 2015). A common managerial cliché teaches us that “*what gets measured gets managed*”, but what and how should be measured in complex Triple Helix projects which involve so diverse stakeholders as universities, companies and governmental bodies? Drawing on prior studies (Al-Ashaab et al., 2011; Mora-Valentin et al., 2004; Perkmann et al., 2011) and relying on the data from twelve university-industry collaboration projects across several universities in Finland, Rantala et al. highlight first, the importance of a process perspective on evaluating such projects. As any collaboration, Triple Helix interactions represent a lively phenomenon which transforms throughout the collaboration progress. The collaborating parties' needs, values and capabilities may also get transformed. Thus, a static set of performance indicators may become inefficient (Rossi, 2013). Furthermore, Rantala and co-authors point to the problem of a stakeholder bias and the views of e.g. universities representatives differing from the views of governmental bodies (Albats et al., 2018) which fund the collaborations and assess those accordingly. As a result, the authors point to a tendency among collaborative university-industry projects' managers to only commit to the metrics set by the project funders, instead of applying self-reflection metrics, assessing own learnings and outcomes anyhow formally, which is needed for holistic collaboration assessments. A need in a consensus on performance measurements within university-industry-government relations is highlighted, although the

difficulties in grasping all the relevant aspects are also acknowledged. In other words, another managerial cliché teaching us that “*not everything that matters can be measured; not everything that we can measure matters*” appears very relevant to the university-industry-collaboration context. Rantala et al. suggest that further research should aim at developing a holistic approach in evaluating the performance of Triple Helix relations.

Following on the role of government, but not only as a funds provider and evaluation body, the study by Kopczynska and Ferreira (2021) analyses the role of specific policy-making efforts in university-industry collaboration and their effects on economic growth across economies of different development levels. In contrast with the rather established consensus of university-industry collaboration having a positive effect on economic growth (Hou et al., 2021; Parker, 1992), this study does not report any significant direct positive effect and is more sceptical, noting that the lack of impact comes from university-industry collaboration being unutilized to its full potential across levels of economic development. Furthermore, the authors argue for a tailored approach in policymaking noting that simple adoption of the same measures across countries of different economic growth would not work. The authors also suggest that the economic growth rate must be considered when deciding on how frequently the policy should be revised. In terms of specific policy measures, Kopczynska and Ferreira highlight that the quality of research institutions and the share of private R&D investments appear crucial and transversal across different levels of economic development. In turn, staff training shows a particularly important role in less developed economies pointing to the need for public support for adult and vocational education in peripheral regions to support university-industry collaboration for education. The authors call for further research on more specific policy instruments as well as on the effects of national and regional innovation ecosystem structures, cultural differences, and economic capacities on the link between policy measures, university-industry collaborations, and economic growth.

Continuing with a business perspective, Olvera et al. (2021) analyse the choice of commercial companies to co-locate their business in boundary spaces (Campanella et al., 2014; Champenois & Etzkowitz, 2018) – science parks and particularly the university-based science parks. Surveying the companies in Spain and Mexico, the authors highlight several criteria which guide the companies in choosing to co-locate their business at a science park. According to their results, the innovation ecosystem offered by the ‘hosting’ university is the most important criterion across both countries. When it comes to establishing the actual collaboration with the university, the companies seem to mostly care about the long- and short-term objectives fit with the university as well as

about the sector fit – how well the domain knowledge is aligned. When selecting a science park as their home, the studied companies followed such objectives as hiring talent and accessing corporate venturing. Notably, although acquiring and licencing university patents is one of the most widely studied indicator of university-industry collaboration (Siegel et al., 2003), Olvera and co-authors find this objective the least important in companies' decision to co-locate at a science park. For further research, the authors suggest looking at cultural and institutional differences in science parks across countries and regions, as well as bridging the issues of the companies' decision to co-locate at the science park with arguments from fundamental theories as the resource-based view or transaction cost theory.

The closing paper by Lalrindiki and O'Gorman (2021) studies the role of proximity in inter-regional collaborations. Particularly, analysing the project which connects universities, companies, and policy makers from four not-neighbouring regions of Hungary, Ireland, Romania, and Spain, the authors analyse how the proximities other than geographical proximity matter in collaboration. Following the researchers' scepticism on the role of geographical proximity in defining university-industry-government collaborations (Buenstorf & Schacht, 2013; Laursen et al., 2011; Ponds et al., 2007), the authors found three non-spatial forms of proximity being particularly important: cognitive, social and organizational proximity. Cognitive proximity implies an overlap in the actors' knowledge base, perceptions and evaluations; social proximity refers to the strengths of social relations and trust based on family and friendship ties; while organizational proximity implies a degree to which organizations share routines and incentive mechanisms (Boschma, 2005; Ooms & Ebbekink, 2018; Villani et al., 2017). Lalrindiki and O'Gorman further develop a framework for inter-regional collaboration, where they also highlight the existence of institutional gaps – cultural-cognitive, normative, and regulative differences between collaborating actors. The authors, however, show that although it is highly likely that these gaps are inevitable in Triple Helix relations, those could be addressed, as they show in the studied project case. Among further suggestions, the authors advise to widen the scope for a greater number of regions as well as to take a temporal dimension into account as both institutional gaps and non-spatial proximities may evolve over time.

As it can be seen, the Triple Helix model, since its inception (Etzkowit & Leydesdorff, 1995) gave rise to many different streams in studying university-industry-government collaboration. Among those there are research works on performance indicators, underpinnings of Triple Helix relations as well as their effects on economic growth. Future research could take any of these directions or go beyond them to advance our knowledge on Triple Helix relations. Our

world is continuously and rapidly changing along with unexpected crises and disruptions. Such societal transformations demand new inquiries in Triple Helix studies. For instance, some questions for future research, implied by the articles included in the special issue, are as follows. What could be a dynamic framework to grasp the rapid changes in Triple Helix relations? What are the novel forms of organizing in university-industry-government relations? How do intermediary organizations evolve and adapt to the evolution of these relations? If the geographical proximity starts to play a considerably smaller role than non-spatial forms of proximity, does it imply that Triple Helix relations could exist across time, physical and digital spaces? What should be the policy measures to support Triple Helix relations in such a changing environment and in contexts varying considerably in function of institutional, cultural, and economic settings? Finally, what specific implications could the Triple Helix research and university-industry-government collaboration context have in such research fields as organizational science, management studies, social science, entrepreneurship research, ecosystem studies? What additional insights could be developed with the temporal, process, and stakeholder views? We invite the inspired readers to pursue the adventure of studying Triple Helix in the future.

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