In the last decades, the interest in the internationalization of science and technology has increased. Scholars who have devoted analyses to this phenomenon have focused on different dimensions of it. While some have studied the growth of collaboration, materialized in the number of international research teams and co-authored articles, others have concluded that science and technology today can only be understood at a global level. Interconnected networks of institutions, researchers and publications are currently shaping science and technology while transforming the training of scientists, the landscape of journals, and the weight of funding agencies. Most bibliometric and science and technology policy studies that deal with internationalization are found within this literature.

Another approach, less optimistic, has pointed out the different challenges that internationalization brings about. In this case, authors concentrate on the linguistic dimension of technoscientific communication, the uneven distribution of material and symbolic resources worldwide, the construction and destruction of technoscientific imaginaries, the entanglement of science with structural factors (e.g., gender, class, race), and the conflicts between epistemological paradigms and even between divergent ontologies that internationalization has put into a (not always harmonious) dialogue. Within this perspective, scholars tend to suggest that important asymmetries among sites of knowledge production need to be addressed and, to some extent, overcome. Otherwise, what could be considered a celebration of diversity and pluralism might end up being a homogenization process of the Anglo-Saxon model of science and technology.

A third group of researchers has focused on subjectivity and the transformation of scientists’ careers, interests, goals, and strategies to cope with internationalization. They have undertaken multi-disciplinary research on the factors that encourage or hinder internationalization, many of them at the individual level while others at the institutional or country level. There are three reasons for the interest in the scientific self and his/her subjectivity. First, as many studies suggest, the main driving force for internationalization is researchers’ will to unbind their careers from their institutions and create international bonds with their discipline’s colleagues, beyond national boundaries. Second, STS literature has long ago shown that internationalization is not related only with the circulation of some hypotheses or ideas as a neutral, geographical phenomenon with no epistemic implications. On the contrary, moving knowledge requires a set of material and social practices that have to be internalized by scientists throughout their formative years: they must learn how to be a first-rate international scientist. Third, unlike technoscientific practices that are already internationalized, subjectivities tend to be historically, geographically and culturally situated. They reflect, probably better than other factors, how science is made every day, in the minutiae of specific contexts, and in the middle of manifold economic, social and political tensions.
With this cluster, Tapuya wants to bring to the front some of the most relevant and recent challenges that internationalization has introduced in STS. The outstanding analyses of David Hess on anti-dam social movements in Brazil, of David Dumoulin Kervran, Mina Kleiche-Dray and Mathieu Quet on Southern STS and its contribution to global debates, of César Guzmán Tovar on the subjectivities of Latin American scientists who have left their countries of origin willingly or not, and of Henry Chavez and Jacqueline Gaybor on the Ecuadorian city of knowledge, Yachay, are examples of cutting-edge STS scholarship on internationalization. From my perspective, as a cluster, these articles shed light on three urgent issues.

First, it is impossible to understand the internationalization of science and technology in Latin America – and probably beyond this region – without sensitivity towards socio-political concerns. Thus, Tovar’s study illustrates the long-term impact of dictatorships and crises in shaping scholarly careers, while Chavez and Gaybor consider Yachay, the Ecuadorian Silicon Valley, as a political device to (re)produce a scientific elite under the umbrella of so-called progressive policies. In turn, Hess nicely articulates literature on social movements – a hot topic in Latin American social sciences – with STS concerns about infrastructure. He shows that science and social movements can coproduce each other using the tools of STS (e.g., the epistemic dimension of the political opportunity structure and the role of experts in anti-dam coalitions and their framing activities) and of social movements (e.g., taking into account the design of the entire energy system and its governance in addition to the design of dams and related infrastructure). Finally, Dumoulin Kervran et al. bring politics in through a different strategy: they map and list the ways in which Southern STS has dealt with socio-political problems (e.g., colonialism or market-driven neoliberal policies) and what Northern STS can learn from that.

Second, internationalizing science and technology is not a linear process and, consequently, it can hardly be driven by simplistic policies or institutional guidelines. While Tovar acknowledges the role of national higher education policies to shape opportunities for scholars to stay in the country or leave, he also points out that their trajectories are more complex and diversified than expected by such policies. The creation of what he calls “experiential territories” is far away from public policies’ intentions, and yet they end up influencing researchers’ careers decisively. Even clearer is the case of Yachay as the materialization of a public policy to foster science and technology. Subjected to the contradictory trends within Ecuadorian bureaucracy, embedded in global discourses of innovation, influenced by corporations and foreign experts, and dependent on oil prices, the story that Chavez and Gaybor tell us is one of discontinuity, incoherence, and opportunism that, expectedly, seems to lead to nowhere. In Hess’ account of the Brazilian anti-dam movement, the role of public policy is found within the opportunities and challenges introduced, on the one hand, by the government bureaucracy (especially, the Ministry of Mines & Energy and the Ministry of the Environment) and, on the other hand, the reactions to it by corporations, international organizations, social movements, stakeholders, experts, and infrastructure. Once again, the unstable relationship between incumbent and challenger coalitions is the outcome of a web of programs and anti-programs, paraphrasing Latour, that are always competing. Finally, Dumoulin Kervran and colleagues do not deal with public policy directly, but their analysis gives us some clues to think how to rebalance STS at a global level. Two examples illustrate my point here. First, they highlight the role of publications for giving voice to Southern scholars, their research interests and findings. At least in Latin America, where most of science and technology funding comes from the State, the actual possibility of having a landscape of journals with the highest levels of excellence depends, to a large extent, on public policies. Second, what they call the third front on which STS is operating, shows that “official science” has been challenged and “new territories” (e.g., traditional or indigenous knowledge) are now accepted and are influencing mainstream STS. This is also a matter of public policy. Once again, when the State is the
main funder, through its policy on science and technology, then it is also responsible for broadening its understanding of valid knowledge producers and for implementing programs that contribute to increase the dialogue between social actors.

Third, there is still a need to conceptualize or theorize how technoscientific knowledge gets internationalized. With only four cases, the diversity of mechanisms, actors, procedures, interests, epistemic devices, and socio-political articulations is so vast that it seems impossible to group them coherently. For Hess, internationalization is observed through the socio-political coalitions and the resources they move in order to grow and become more influential. For Chavez and Gaybor, it is about failed replication of foreign models that, paradoxically, were themselves a failure. For Guzmán Tovar, internationalization creates new symbolic spaces in which scholars develop not only their academic careers but their entire lives. For Dumoulin Kervran et al., it implies the need to recognize the knowledge produced beyond the metropolitan centers, and to acknowledge internationalization’s capacity to inquire into ontological and epistemological assumptions of mainstream science and technology. Moreover, from a material point of view, contributors translate internationalization into graduate programs, experts’ reports, scholarly publications, knowledge-transfer workshops, public policies, institutional designs, water infrastructure, and gurus’ discourses, to mention just a few. Furthermore, the richness of the analyses in this cluster works against the possibility of providing a comprehensive framework that can help conceptualize internationalization. We expect Tapuya to become a forum for those who not only want to disseminate their empirical research but also to advance theories that may give sense to the qualitative or quantitative data presented in the cases.

Important as these contributions are, my previous claims probably do not do justice to them and to the fantastic work that the authors in this cluster have done. It is true that many questions arise now, as a result of their empirical analyses. It is also true that comparison is not easy, although the reader will not struggle to identify connections and how these essays complement each other. However, what seems to be more important is that these articles open a debate about internationalization of science and technology that is necessary and timely, because the most important institutions in STS are currently facing the challenge of functioning beyond the comfort zone of the Global North. The internationalization of the field, to which this cluster also attempts to contribute, will be a painful, difficult but an extraordinarily rewarding journey.

**Disclosure statement**

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**Notes on contributor**

*Leandro Rodriguez Medina* holds a PhD in Sociology (University of Cambridge) and is Associate Professor in the Department of International Relations and Political Science at Universidad de las Américas Puebla (Mexico). He is a member of the Mexican System of Researchers (Level II) and Editor-in-Chief of Tapuya: Latin American Science, Technology and Society. His research interests are international circulation of knowledge, social studies of science and technology, and the relationship between culture and urban transformation.

Leandro Rodriguez Medina

*Editor-in-Chief*

leandro.rodriguez@udlap.mx