

Tomás Koch Ewertz

Striving for worldwide impact

A multi-method study on the internationalization processes of Chilean scholarly communities

*Dissertation submitted in partial fulfilment of
the requirements for the degree of Doctor
(Ph.D.) in Sociology.
Ghent University, Belgium.*

The completion of this research has been supported by the Agencia Nacional de Investigación y
Desarrollo (ANID), Chile.

PFCHA/DOCTORADO BECAS CHILE/2015– 72160036.

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2020

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For Dominga and Manuel.

*Tantas veces me pregunté, qué hago yo en este vergel
tan lleno de lujos, tan falto de piel.
Cuál es la razón, de tener financiada mi masturbación.*

*Hace años junto a Rimbaud me pregunté,
Qué mentira debo sostener, en qué sangre he de marchar?
Hoy me releo y ya estoy seguro de saber, que no se requiere sangre para pisar.*

*La soledad me recordó encontrar,
la muerte, eterna amiga y confidente me enrostró la verdad,
que no es la anuencia sino la diferencia el motor de nuestra (con)ciencia.*

Acknowledgements

First of all, I would like to thank my supervisor, Raf Vanderstraeten, for his invaluable guidance. Without his academic and human support, this dissertation would probably have remained unfinished (or at least its completion would have been much more difficult). I would also like to acknowledge the support of my co-supervisor, Ricardo Ayala, both at the beginning and during this trajectory. Thank you both for commenting on so many unfinished drafts during these years! I'm also grateful to all the professors and the classmates of the courses I followed during my Ph.D. training, to the Doctoral School of Ghent University and the administrative staff of the Faculty, who always tried to make my life easier.

Especial thanks to ANID for funding this research and to Playa Ancha University, especially to the dean of the Social Sciences Faculty, Felip Gascón, for the support of my application. I'm also in debt with all the scholars I met in conferences, seminars, and meetings during these years, especially to those who criticized my work. This research would look very different without their influence.

Friends and colleagues are an important, but often neglected influence of scholarly work. So, I want to say thanks to all who contributed to this research by commenting on early drafts or discussing some of the ideas presented here. I'm especially grateful to Elizabeth Zenteno, Julio Labraña, Marco Seeber, Andrea Pigassi, Gustavo Blanco, Pedro Swinburn, and colleagues from the Center for Social Theory of Ghent University and the Observatorio de Participación Social of Playa Ancha University.

Of course, this work could not have been possible without the generous ways in which the interviewees made time available and the help of the staff from the National Library of Chile. Many thanks to all of them for making this research possible.

Finally, I would like to thank for the permanent emotional support of my parents, Carolina and Fernando, my partner, Elizabeth, and my beloved kids, Dominga and Manuel. In many aspects, this is also their achievement.

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Summary

Based on different research strategies, this work analyses the internationalization trends in scholarly communities in Chile, discusses the different orientations these processes have taken across time, and sheds light on the possibilities and pitfalls of current expectations. Internationalization processes in science have traditionally been understood as the ‘natural’ path for the development of scholarly communities. In spite of nationalist orientations, which notoriously led to the closure of some networks (e.g., in the Nazi Germany or in the URSS during the Cold War), the universalist ambitions of science often support representations that depict a teleological process oriented to the formation of a worldwide community of scholars with shared normative and cognitive orientations. By using a multi-method approach (scientometrics, discourse analysis and interviews), this Ph.D. dissertation questions this seemingly ‘natural’ path in (semi-)peripheral scholarly communities while discussing the ostensibly objective and technical traits of widespread internationalization measures.

Since the mid-twentieth century, sociologists and historians of science have developed different strategies to make sense of science and the communities that support it. These strategies vary remarkably in focus, ranging from emphasizing the reward system of science, the shape of cooperation and/or influence networks, power structures, epistemic practices, and so on. This dissertation aims to contribute to this body of knowledge by analyzing the internationalization processes of Chilean scholarly communities from a communicative standpoint. In doing so, it makes use of insights from different strategies in order to empirically observe the complexity of the internationalization processes of scholarly communication networks. This hybrid approach stresses scholars’ practices and enables the research to observe local and national orientations while keeping an eye on global transformations. Based on inductive reasoning, this research aims to propose a complex understanding of the internationalization phenomena by emphasizing in-between network structures.

Methods-wise, this study uses both quantitative and qualitative tools. Each chapter in which empirical findings are presented is based on a different dataset, collected by different methods. However, a shared interest in the role of international scholarly databases and indexes (especially *Web of Science*) in current internationalization pressures underlies all the methodological strategies used. Chapter Two uses a scientometric analysis of 121,451 papers (co-)authored by scholars based in Chile and included in databases of WoS between 1976 and 2015. Chapter Three is based on a discourse analysis of all the editorial material published (since their first issue) by the 47 Chilean journals included in WoS databases in 2015. Chapter Four draws on qualitative interviews with the editors-in-chief of twelve Chilean journals included in WoS. Finally, Chapter Five analyses, on the one hand, 30 qualitative interviews with sociologists who work or worked in universities in Valparaíso (Chile), and, on the other, 230 publications authored by sociologists working in these universities.

The different methodological strategies strive to produce a more comprehensive view of the internationalization practices in scholarly communities and of the historical transitions experienced in the different ecologies that underpin scholarly communication networks. The main findings of the research are nuanced. While they show the current omnipresence of images of the world of science provided by international databases and indexes, they also highlight the different reactions to the internationalization pressures. These conflicting reactions – ranging from the reinforcement of continental networks to diverging appraisals of scientometric tools – show that internationalization is far from being a shared, ahistorical, and neutral concept, and highlight the (lasting) important role played by local, national, and continental networks within the world of science.

Overall, this dissertation clarifies the consequences of the rise of international databases and indexes to describe and evaluate internationalization processes, discusses the performative effects of the powerful representations of the world of science provided by these instruments, and brings the forms of inequality in the world system to the fore. In the concluding chapter, the pressures which ensue from these internationalization instruments on the scholarly (semi-)periphery is problematized and an argument in favor of scientific diversity is developed. Finally, the dissertation reflects on the relevance of political and scholarly commitments to scientific diversity as a way to both permit the preservation and development of different scholarly traditions, and encourage the emergence of challenging approaches to global mainstream paradigms and research programs. Securing scientific diversity is beneficial for the scholarly communities in the (semi-)periphery, but also for the world of science itself, and it may help to protect important aspects of the so-called ethos of science, such as its communalist and universalist values.

Samenvatting

Deze studie, die verschillende onderzoeksstrategieën integreert, analyseert processen van internationalisering in de wetenschappelijke gemeenschappen (“scientific communities”) in Chili, bespreekt de verschillende richtingen waarin deze processen zich hebben ontwikkeld en analyseert de mogelijkheden en valkuilen van de huidige verwachtingen. Internationaliseringsprocessen in de wetenschap worden traditioneel gezien als het ‘natuurlijke’ traject voor wetenschappelijke gemeenschappen. Ondanks nationalistische oriëntaties, die soms hebben geleid tot de afsluiting van bepaalde netwerken (bijv. in Nazi Duitsland of in de Sovjetunie tijdens de Koude Oorlog), leiden de universalistische ambities van wetenschap traditioneel tot teleologische voorstellingen, waarbij wetenschapsbeoefening gericht is op de vorming van een wereldwijde gemeenschap van wetenschappers met gedeelde normatieve en cognitieve oriëntaties. Door gebruik te maken van een “multi-method” benadering (scientometrie, discoursanalyse en interviews), stelt deze studie dit schijnbaar ‘natuurlijke’ traject in (semi-)perifere wetenschappelijke gemeenschappen in vraag, door de zgn. objectiviteit van de technieken, waarmee thans internationalisering wordt gemeten en geëvalueerd, kritisch tegen het licht te houden.

Sinds het midden van de twintigste eeuw hebben sociologen en wetenschapshistorici verschillende strategieën ontwikkeld om de eigenheid van wetenschap en wetenschappelijke gemeenschappen te begrijpen. De focus van deze benaderingen varieert opmerkelijk, van het benadrukken van de specifieke beloningssystemen in de wetenschap, de vormen van samenwerking en beïnvloeding in netwerken, bestaande machtsstructuren, epistemische praktijken, enz. Dit proefschrift wil bijdragen aan deze kennistraditie door de internationaliseringsprocessen in Chileense wetenschappelijke gemeenschappen vanuit een communicatief oogpunt te analyseren. Het maakt daarbij gebruik van inzichten uit verschillende benaderingen om de complexiteit van de internationaliseringsprocessen van wetenschappelijke communicatienetwerken empirisch te observeren. Deze hybride benadering legt de nadruk op de praktijken van wetenschappers en stelt ons in staat om lokale en nationale oriëntaties tegen de achtergrond van wereldwijde transformaties te observeren. Gebaseerd op een inductieve redenering, wil dit onderzoek de complexiteit van internationaliseringsverschijnselen inzichtelijk maken door de tussenliggende structuren te belichten.

Methodisch worden zowel kwantitatieve als kwalitatieve instrumenten gehanteerd. Elk van de hoofdstukken, waarin de bevindingen van dit onderzoek worden gepresenteerd, is gebaseerd op een andere dataset, die via een andere methode werd samengesteld. Echter, een gedeelde interesse in de rol van internationale wetenschappelijke databases en indexen (met name via *Web of Science*) in de huidige context ligt ten grondslag aan alle gebruikte methodologische invalshoeken. Hoofdstuk twee gebruikt een scientometrische analyse van 121.451 papers, (mede) van de hand van in Chili gevestigde wetenschappers en geïncorporeerd in de databases van WoS tussen 1976 en 2015. Hoofdstuk drie is gebaseerd op een discoursanalyse van alle editoria (vanaf hun eerste nummer) van de 47 Chileense tijdschriften die in 20015 in de WoS-databases waren opgenomen. Hoofdstuk vier is gebaseerd op kwalitatieve interviews met hoofdredacteurs van twaalf Chileense tijdschriften die in WoS zijn opgenomen. Hoofdstuk vijf tenslotte analyseert enerzijds 30 kwalitatieve interviews met sociologen die werken of werkten aan universiteiten in Valparaíso (Chili), en anderzijds 230 publicaties geschreven door sociologen die aan deze universiteiten werkten.

Deze verschillende methodologische strategieën streven naar een gedetailleerde analyse van de internationaliseringspraktijken in wetenschappelijke gemeenschappen en van de historische transformaties die de verschillende wetenschappelijke communicatienetwerken ondergaan. De belangrijkste bevindingen van het onderzoek zijn genuanceerd. Hoewel ze de alomtegenwoordigheid

laten zien van het wetenschapsideaal dat door de internationale databases en indexen geleverd wordt, geeft dit onderzoek ook inzicht in de diversiteit van reacties op de internationaliseringsdruk. Deze tegenstrijdige reacties – variërend van de versterking van continentale netwerken tot disparate beoordelingen van de scientometrische instrumenten – illustreren dat internationalisering verre van een gedeeld, ahistorisch en neutraal concept is, en benadrukken de (blijvend) belangrijke rol van lokale, nationale, en continentale netwerken binnen de wetenschappelijke wereld.

In zijn geheel illustreert dit proefschrift de gevolgen van de opkomst van internationale databases en indexen ter beschrijving én beoordeling van internationaliseringsprocessen; het analyseert aldus de performatieve effecten die de invloedrijke datasets die deze instrumenten genereren, en benadrukt de ongelijke structuur van het wereldsysteem. In de conclusies wordt gewezen op de druk die op de wetenschappelijke (semi-)periferie in de mondiale netwerken uitgeoefend wordt en wordt gepleit voor wetenschappelijke diversiteit. Tenslotte wordt gereflecteerd op de relevantie van politieke en wetenschappelijke steun voor wetenschappelijke diversiteit als een manier om het behoud en de ontwikkeling van verschillende wetenschappelijke tradities mogelijk te maken en de opkomst van uitdagers van mondiale mainstream onderzoeksprogramma's aan te moedigen. Het waarborgen van wetenschappelijke diversiteit is gunstig voor (semi-)perifere wetenschappelijke gemeenschappen én voor de gehele wetenschapswereld zelf, en kan bijdragen tot de bescherming van belangrijke aspecten van het zogenaamde wetenschapsethos, zoals de communalistische en universalistische waarden.

1

Introduction

Change has become a hallmark of our era and a succession of economic, political, scientific, and technological events have transformed everyday life around the world. Far from leveling out, the pace of change seems to have increased over the first few decades of the twenty-first century. Nowadays, change seems to come from all sides and affects every aspect of social life (Beck & Willms, 2004). The increasing differentiation and intricate couplings between social spheres have helped de-center both the sources and effects of change in contemporary societies. The influence of (scientific) knowledge and technology on these social transformations seems self-evident now¹. Less evident, however, is the effect that these transformations have had on knowledge systems themselves.

Perhaps due to the self-reflexivity that allegedly characterizes these spheres, scholarly interest in social aspects of the production of knowledge has grown over the last fifty years or so (see Jasanoff et al., 1995). However, far from leading to a convergence of perspectives, this interest has led to diverse approaches and themes (e.g., lab studies, scientometrics, reception studies, and so on). Moreover, the global expansion of disciplinary systems and the increasing participation of traditionally excluded social groups in science – such as women or scholars from non-central countries – has also led to strong criticism of the actual functioning of this sphere and its alleged ethos (see Harding, 2006). These trends have brought the diversity of the institutions, actors, and practices involved in scholarly knowledge production to the fore, while revealing inequalities in the visibility and assessment of scholars, traditions, and networks. In other words, they have highlighted the contextual traits of knowledge production and its connection to the structures of the world system.

This dissertation focuses on changes within a key aspect of scholarly knowledge: communication networks. Far from reducing all scientific endeavors to this sphere, this research argues that the immanent social orientation of communication processes and their role in the appraisal of knowledge claims provides a good opportunity to analyze relevant aspects of recent transformations in the world of science². Moreover, scholarly papers and journals constitute a kind of repository, which enables the historical and contemporary analysis of networks of scholars, texts and ideas (see Vanderstraeten, 2010). More specifically, this dissertation addresses internationalization processes in these networks. As argued throughout the text, the salience of both structural traits of networks and their couplings with the ecology of institutions and actors that underpin them in internationalization processes highlight these processes fruitfulness for observing scholarly communication.

The empirical focus of this research is Chile. Scholarly communities have existed for a relatively long time in this country and have developed important national and regional networks. This country has

¹ The current Covid19 crisis in 2020 is a good example of this centrality. While the expansion of the virus in less than two months from a Chinese province to every country around the globe has certainly been enhanced by transportation technology, the shared framing of the disease as a modern virus has provided comparable statistics. Moreover, governments worldwide have adopted similar measures to deal with it, despite political, religious, or cultural differences.

² We use the concept of science in its broadest sense, which is much closer to the German word *Wissenschaft* than the restrictive word in English. Therefore, we use it to include a wide arrange of disciplines, from the humanities and social sciences to the natural sciences.

been traditionally depicted as (semi-)peripheral to mainstream global scholarly networks (Delvenne & Kreimer, 2017) and much emphasis has been put on the internationalization of its scholarly communities over the last few years. These characteristics make Chile an insightful case for observing both internationalization processes and the tensions elicited by these processes. Much has been said about unequal patterns of exchange within the world of science over the last fifty years or so (Alatas, 2003). However, very little empirical research has been carried out regarding the specific pressures and opportunities this ensue from these inequalities in scholarly communities in the so-called (semi-)periphery of the world of science. This dissertation aims to shed light on these tensions and transformations by paying particular attention to recent, unprecedented changes in scholarly networks, largely influenced by the rise of international scholarly databases and indexes (e.g., the Web of Science and Scopus).

Each chapter of this dissertation explores these transformations by focusing on different aspects of the internationalization processes. They address different levels of analysis (national and local) and different disciplines while using different timeframes and different methodological approaches (scientometrics, discourse analysis and interviews). Therefore, the research's coherence is not based on a shared unit of analysis, methodological approach or empirical source, but on a shared focus on the actual practices that underpin internationalization, either via authorship roles or via editorship roles. The multi-method approach used has proved useful to illustrate the multi-dimensionality and wide variety of actors and institutions involved in the internationalization processes. This approach could also contribute to a dialogue between different traditions in the study of science's social aspects.

The three different parts of this introduction aim to provide theoretical background to help understand the implications of each of the approaches used in the chapters of this dissertation. While the first section aims at providing a brief overview of the scholarly study of science, the second turns attention to how the world of science is structured. The last part briefly presents the main findings of each chapter and highlights the relation between each chapter and the topic of the dissertation as a whole.

Depicting science throughout history. Diversification and specialization of the approaches

In the nineteenth century, the study of the scientific enterprise was almost exclusively the domain of philosophers. Research on the logical structure of scientific treatises was mainstream, but the few historical approaches that existed seemed mostly oriented towards guaranteeing science's authority (Golinski, 2012). Positivist conceptions of science gained ground at that time, and many historical studies shared the goal of depicting the cumulative progress made by science. Although some scholars – such as Pierre Duhem, Wilhelm Dilthey, and Gaston Bachelard – developed schemes highlighting the social traits of science as opposed to the widespread Cartesian and positivist approaches, the study of science continued to be framed mostly as a philosophical and strictly rationalist endeavor (see Bloor, 2004; Rheinberger, 2010).

It was not until the first decades of the twentieth century that the history of science started to differentiate itself as a specific field of study. Scholars launched the very first specialized journals, including the influential *Isis* in 1913. This journal – founded by Belgian scholar George Sarton – later became the official journal of the History of Science Society (1924) and one of the most widely distributed journals on the emerging discipline. However, it was another flagship periodical founded by Sarton, viz *Osiris*, which, in 1938, published the seminal work of one of Sarton's former students, the North American sociologist Robert K. Merton, who was to become a key figure in the research on the social aspects of science.

In this work, Merton (1938) presented the Weber-inspired hypothesis according to which there was a traceable link between puritanism and science. By this time, certain authors – such as Marx, Manheim and another of Merton’s teachers, Sorokin – had already reflected on the idea that scientific endeavor was related to other social spheres (see Manheim, 1936; Sorokin, 2017). None of them, however, used a systematic empirical approach to observe these relationships like Merton did. He developed a sociological-empirical approach to studying science, based on the quantitative analysis of the British journal *Philosophical Transactions of the Royal Society of London*, as well as certain lists of discoveries and biographies of scholars. Although some of Merton’s sources and analyses might be considered biased towards the contemporary canon, this book was one of the first systematic attempts to study science using empirical sources, with a notable approach very similar to what was to become contemporary bibliometrics.

Over the following decades, Merton’s work evolved from the idea that certain social conditions favored the development of scientific systems³ to the analysis of science as a social institution. He turned his attention to the normative and social structure of the field, as created by its reward system. Merton’s program for the sociology of science stressed institutional analysis and privileged the normative structure as the explanatory principle for both science’s developments and scientists’ behavior (see Merton, 1973). A clear illustration of this approach was the short but highly influential 1942 paper in which Merton identified four normative orientations for science: communism, universalism, disinterestedness, and organized skepticism (CUDOS⁴). This set of norms was highly criticized over the following decades for being incomplete, dependent on context and/or for idealizing the scientific endeavor (see Bourliaguet, 2016). Although this criticism was probably justified, from a communicative standpoint it seems better to interpret Merton’s scheme as a contextual attempt to capture the organization of science as an autonomous sphere. In other words, it can be read as an attempt to depict the functioning of modern-western-capitalist science based on a public system of communication secured through a communist ethos. This system gained autonomy to assess its claims from other social structures (e.g., race or social class) on the basis of its principle of universalism. Similarly, the norm of organized skepticism can be seen to safeguard its independence from other spheres, such as religion or politics, and its disinterested orientation secures its independence from individual interests.

The Mertonian program dominated much of the research on the social aspects of science until the 1970s, when it – just as other functionalist programs – began to be criticized heavily. A revolutionary turn, motivated by new anti-positivist perspectives in the fields of history and philosophy of science (e.g., Lakatos, 1971; Feyerabend, 1973), soon inspired sociological studies of science, especially after the publication of Thomas Kuhn’s influential book *The Structure of the Scientific Revolutions*. Several new approaches focusing on scholarly communities and their shared practices and beliefs have emerged since then. Some of them have expanded significantly and are currently considered a field of their own. For argumentative clarity, I will classify these emerging approaches into four groups –

³ This approach was very much in line with Needham’s famous question (1954) about the exceptionality of the scientific developments in Europe. Merton (1938) focused on the influence of the puritan ethos on the development of science in England. However, he was very careful about not establishing causal relationships between social factors and ‘internal developments.’ Conversely, he stated that both science’s internal functioning, as well as broader social subsystems and values, influence scientific developments. The nature of this relationship, however, remains unclear in his writing.

⁴ Communism (or communalism) stands for the mandatory public dissemination of the knowledge produced; universalism for the impersonal criteria used to evaluate the claims; disinterestedness for the exclusion of personal interests from proper procedures and organized skepticism for allowing and encouraging criticism (Merton, 1973: 270-78).

those that conceive science as a self-organized system; scientometric analyses; those emphasizing struggles for power and the variety of approaches usually grouped under the label of science and technology studies (STS). Next, I will briefly outline these.

Science as a self-organized system

Although not mainstream in science studies, several approaches have stressed the self-organized characteristics of science (see Krohn, Küppers & Nowotny, 1990). These approaches share an interest in analyzing science as an autonomous social system whose functioning is determined internally. In other words, they stress science's capacity to secure continuity by autonomously producing (or selecting) its constitutive elements and establishing connections between them. Niklas Luhmann's systems theory is the most comprehensive of these approaches⁵. His concept of social systems as autopoietic (a system that both produces its own elements and regulates its operations through operational closure and structural openness) seems especially insightful when analyzing scholarly communication and therefore deserves more attention.

For Luhmann, science is a social system and is therefore made up of communication (see Luhmann, 1995). Scholars and their observations are part of the scientific environment and only affect its functioning through their couplings with the system. Luhmann's idea that scholarly publications (or second-order observations) describe scholars' observations and enable connections between these descriptions and publications is highly insightful for the study of the communicative aspects of science. It points to the fact that formal communication systems enable the system's continuity, based on its very operation. In Vanderstraeten's words: 'the authors of articles accept the specialization chosen by the journal, but at the same time they continually modify this specialization by the cumulative effect of their published findings' (2010: 560).

Luhmann (1996) identified science as one of about a dozen functionally differentiated subsystems in society. This means that science does not hold a privileged position to observe the world but merely a different one. In this sense, the distinction that guides the internal operations in the system of science (true/not true) is the result of the application of an institutionalized label, without reference to a 'correspondence theory' or to scientists' consensus (Luhmann, 1996: 205). This constructivist trait is shared by other approaches that focus on disciplinary differentiation (e.g., Stichweh, 1992) or on the couplings between scientists and science (e.g., Krohn & Küppers, 1990; Fuchs, 2004). Despite these approaches' different emphases, all of them rely on the promising distinction that scholarly communication as a system is operatively independent from the actors and institutions that underpin it.

Scientometric analyses

Scientometrics is traditionally defined as a set of quantitative methods to study the development of science as an informational process (see Nalimov & Mulkjenjo, 1971: 2). In other words, it refers to the set of instruments used to study information flows of scholarly knowledge. Despite its institutional success, scientometrics is not often listed as an approach for the social study of science. This field is more often connected with scientific policies, innovation, and higher education studies rather than with the sociology and the history of science, which may explain its exclusion from several overviews of social studies of science (see Leydesdorff & Milojević, 2015). The decision to include it in this review

⁵ Luhmann's main work on science – *Die Wissenschaft der Gesellschaft* (1990) – has not yet been translated into English. This is indicative of the relatively low impact of Luhmann's sociology in the English-speaking world. This contrasts with its rather swift translation to other languages, such as Spanish in 1996. This remarkable difference highlights the importance of local traditions and networks in the internationalization of science.

responds both to its demonstrated helpfulness in depicting scholarly communication networks in terms of themes, co-authorships and disciplines, and to its current influence on the ecology of institutions that underpin scholarly communication.

This field of research emerged from early bibliometrics and is deeply entwined with the organization of scholarly databases and indexes. Although these instruments began to emerge in the nineteenth century (see Csiszar, 2018), the launch of the Science Citation Index (SCI) in 1961 revolutionized the field by bringing the connections between papers (citations) to the fore. This database was initially aimed at listing the leading journals and facilitating bibliographic research, but it was soon also identified as an important source of data for depicting the workings of science (e.g., De Solla Price, 1965). This representation of science quickly grew as a specialization. Between 1960 and 1980, it led to (and was supported by) the establishment of an international association, international conferences and a flagship journal called *Scientometrics*.

Scientometrics highlights a specific view of science as a communication network. As such, the number of connections between nodes (e.g., between papers, journals, or authors) represents either the impact of scholarship or the relationship between different themes, fields, and actors (e.g., Garfield, 1955; De Solla Price, 1965; Archambault & Larivière, 2009; Wyatt et al., 2017). A wide variety of indicators can be calculated on this basis, among the most widespread of which are the Journal Impact Factor, the h-index, the collaboration coefficient and the activity index (see Mingers & Leydesdorff, 2015). Along with the powerful image of the world of science that these instruments provide, scientometrics' (bad) reputation comes from it being adopted by national science policies as an accountability mechanism, especially in the context of so-called New Public Management policies (Olssen, 2015). While based on the description of networks, its extensive use in this way also transforms them, by incentivizing certain types of publication and sometimes leading to malpractice (Biagioli and Lippman, 2020). These 'constitutive effects' (Dahler-Larsen, 2014) of scientometric indicators on scholarly communication have gained increasing importance and therefore deserve a special place in the study of science from a sociological perspective.

Science as a field of struggle for power

Another relatively longstanding body of work has focused on how both social and scholarly struggles have molded scholarly knowledge. These works mostly tend to deal with how scientific enterprise is organized and are highlighted here due to their focus on the ecology of institutions that underpin science (e.g., science policy or higher education organizations). From Marx's and Engels' few reflections on the structural determination of science by social class differences (Engels, 1975) to the writings of twentieth-century economists such as George Stigler (1965), several authors have highlighted the social structures that constrain scholarship. This has continued in more recent approaches that study, for example, the privatization of research (e.g., Biddle, 2007) and, more generally, the 'political economy of science' (e.g., Tyfield et al., 2017). Several of these works seem to share the underlying goal of identifying the 'best' or most suitable organization for scientific endeavors, a goal that reminds us somewhat of what Merton aimed for.

In a different way, the work of French sociologist Pierre Bourdieu also seems to follow Merton's footprints by directing attention to science's reward system. Bourdieu proposed a refined approach to understanding science by focusing on its structuring processes. He conceptualized science as a field (Bourdieu, 1975) that includes a wide range of 'stakeholders' (e.g., policymakers, university administrators, funding agencies, industries, scientists, and so on). Thus, by default, the field's autonomy involves a permanent struggle, with both interests and the structuring of other fields having an influence on it. While the initial positioning of actors in the scientific field depends largely on their

biographies (which determine their social, economic, and cultural capital), actors' practices reflect the 'socialized subjectivity' (*habitus*) of both scientific and external fields. The relative autonomy of the field, then, is always the result of socio-historical processes, expressing both the selectivity of the field's entry barriers and the power of internal reasons when justifying its claims (Bourdieu, 1991).

Bourdieu's scientific field – like any other – is a historical product. In this sense, it is the result of historical struggles that structure the field in at least two dimensions – its autonomy from other fields and the hierarchies of actors within (Steinmetz, 2017). Therefore, the scientific field is not a homogeneous or static sphere. On the contrary, while current configurations are the result of previous struggles, the field's arrangement between dominant and dominated positions, as well as between autonomous and heteronomous ones, instead of science inner rationality, determines scientific advancement (Bourdieu, 1991). For example, Bourdieu (1975) argues that scholars in higher positions have more opportunities to impose their views on science, with their selected practices, methods, topics, or publication venues becoming a yardstick for good science. In contrast, scholars in dominated positions either use succession strategies (i.e., following the established rules) or subversive ones (i.e., aiming at changing the structuring rules).

The emphasis that these approaches put on the structuring of scientific endeavor proves to be very insightful for studying scholarly communication, especially in today's highly competitive and market-oriented publishing system. However, the strong focus on scholars' interests leads to limitations similar to those shown by Merton, failing to provide an explanation that includes scholarly knowledge itself.

Science and technology studies

Since the seventies, a stream of research has been aimed at 'opening the black box' of science. Using different perspectives, these studies share an interest in the study of scientists' knowledge-production practices. In this sense, they argue in favor of the sociology of scientific knowledge as opposed to Merton's normative sociology of science (see Knorr-Cetina, 1991). These heterogeneous approaches – including lab studies, the so-called Edinburgh-based strong program, the sociocultural model, or the actor-network theories – are often grouped under the label of science and technology studies or STS (see Jasanoff et al., 1995). Despite their differences, all of these approaches seem to share an empirical orientation, constructivist positioning and a representation of science as a seamless network that involves multiple actors beyond scholarly institutions (e.g., Knorr-Cetina, 1982; Daston, 2000; Latour, 2005).

This focus on the actual practices of scientists allows STS scholars to get over longstanding debates within the field, such as internalism versus externalism (see Shapin, 1992), or the co-dependency of instruments and knowledge (e.g., Latour & Woolgar, 1986; Knorr-Cetina, 1998). Moreover, the interest in the scientific connections beyond institutional limits has led to useful concepts for studying scholarly communication, such as the performative effects of theories, indicators and scholarly fields (see Callon, 2010). The flexibility of this approach has also made it possible that it can be applied to a wide variety of phenomena involving knowledge production, as reflected in the field's flagship journal *Social Studies of Science*, as well as in the reception of some of its concepts in a number of neighboring disciplines (e.g., performativity or technoscience). Furthermore, these seemingly radical positions – for example the strong program's symmetry principle, which puts emphasis on the relevance of the social world for the explanation of both scientific successes and failures (Bloor, 2004) – are now much more widely accepted.

Method-wise, the field has tended to focus on qualitative case-studies, enabling detailed 'thick' descriptions of the variety of scientists' practices, which do not seem to obey any shared scientific

ethos (Wyatt & Balmer, 2007). Actor-network approaches in particular have gained popularity over the last decades, arousing both interest and criticism. Whereas some ideas of the most recognized exponent of this approach, Bruno Latour (2005), seem to have been well received (such as his focus on the analysis of controversies), others (such as his generalization of the symmetry principle to include assemblages with non-human entities) have raised much more suspicion. Controversy aside, the variety of approaches included under the STS label has brought a breath of fresh air to the study of science from a sociological perspective. In particular, ideas such as the performative effects of theories and indicators, the synthetic concept of sociotechnical processes or the provocative proposal of analyzing elements that move between traditional levels of analysis (e.g., local, national, or continental) seem especially useful to analyzing the internationalization of scholarly communication networks.

All of the approaches identified in this brief overview involve relevant but different aspects of scientific endeavors. The appealing idea that the field has evolved from Merton's interest in institutional values and norms to a strong focus on network organization, power relations, or trans-institutional links should be taken with extreme caution though. Using the field's insights for self-reflexivity leads us to abandon evolutionist models, whether the positivist version of linear progress or Kuhn's idea of paradigmatic revolutions. In fact, in this light, these approaches are better understood as traditions, with specific contexts of production, network positioning and features (e.g., their openness to being linked to claims that are based on different approaches), which affect their scholarly influence and variability. Notably – and perhaps due to their operational closure, the power dynamics behind them, or their epistemic differences – communication between the approaches seems scarce within the field (see Vanderstraeten & Vandermoere, 2015; Leydesdorff & Milojević, 2015).

This dissertation aims to study science communication from an internationalization of scientific networks' perspective. In doing so, it does not rely exclusively on one of these traditions. On the contrary, this research makes use of insights from different traditions in order to construct a (more) comprehensive approach to the phenomenon. In this sense, this work can be seen as a preliminary attempt to construct a hybrid approach to the analysis of the internationalization of scholarly communication and thus to bridge the gap between scholarly traditions. This hybrid trait has proved particularly useful to inductively-oriented types of research, such as the one presented here. It provides enough flexibility to make sense of the 'stubborn facts' that emerge during the research process. This strategy, however, should not be taken as a mere 'perspectivist' critique. On the contrary – and as with the triangulation of methods – we use it here as a mechanism to help control blind spots when addressing different levels of analysis and/or aspects of scientific communication.

Furthermore, this approach may be particularly useful for understanding non-mainstream cases, such as those located in the (semi-)periphery of the world of science. Scholarly traditions researching the social aspects of science quite often focus on explaining mainstream circuits and the cutting edge of (past and/or present) scholarly knowledge. It comes as no surprise then that these approaches have several empirical and theoretical issues when they are applied to different contexts. Contextual circumstances such as the rather small number of cases for quantitative analysis, the relevance of alternative communication circuits, ideological (or contextual) biases, or the relevance of structural inequalities sometimes make it difficult to develop meaningful analyses based exclusively on one of these theoretical bodies.

The range of methodological strategies used in each chapter of this dissertation and the different levels of analysis addressed are very much oriented by the distinctions borrowed from different scholarly traditions. For example, whereas the very abstract conception of science as a self-organized system is more easily observed over relatively long timeframes and in bigger communities (e.g., in

Chapters Two and Three), power struggles and different actors' specific practices are much more salient at a local level and can better be brought to the fore using qualitative methods (e.g., in Chapters Four and Five). In this sense, adapting the title of Knorr-Cetina's (1982) article, we could say that this approach aims at understanding scientific communities themselves as transepistemic objects.

Our methodological case study design has enabled a multi-level analysis of the couplings of the system of scholarly communications with the ecology of institutions and actors that underpin it. This approach highlights how the networks were shaped socio-historically, their evolving relationships with their environment and their structuring traits. In the following chapters, particular attention is paid to the performative effects of 'new' instruments – such as international databases and indexes – that seem to reinforce the structuring traits of both communication networks and institutions. We will come back to the specific ways in which this dissertation addresses these processes in the third section of this introduction. But first, it is necessary to turn our attention to the structural characteristics of the world of science and the particularities of the case study.

Core-periphery structures within the world of science

The inequalities of our world's social structures have received quite a lot of scholarly attention (e.g., Stiglitz, 2002; Wallerstein, 2004). While traditional analyses tended to privilege economic or political inequalities at a global level, a stream of studies has also highlighted knowledge aspects related to global inequalities (e.g., Alatas, 1974; Mignolo, 2000). They have underlined how the entanglement of cultural, economic and social differences inherited from the colonial period have continued up to today using (more or less) subtle mechanisms, including knowledge hierarchies. In particular, Latin American thinkers have highlighted the inherent entanglement of modernity and coloniality (see Dussel, 1994; Quijano, 2000). According to Dussel (1994), the European (mainly Spanish and Portuguese) colonization of Latin America, which began in the sixteenth century, has led to complex power relationships with territories and people that founded the modern global world. Therefore, despite the political independence gained on the South American continent during the nineteenth century, colonial ties were still expressed through the Eurocentric universalist trait of modernity (Grosfoguel, 2007). For scholarly communication networks, these fundamental social and epistemic inequalities would imply a structural subalternate position for the knowledge produced in or based on traditions from the so-called global south.

Some scientometric analyses appear to support this hypothesis, showing the comparatively small number of scholarly communications in top journals that emanate from these parts of the world, as well as their relatively low impact (e.g., Meneghini & Nassi-Calo, 2008; González-Alcaide, 2017). This trend has also been reinforced by the historical bias of international databases and indexes, such as the Web of Science (Archambault & Larivière, 2009). Some efforts have been made to counteract the biases in this coverage. For example, a policy change introduced by WoS around 2006 was aimed at including more journals from outside the Anglo-Saxon world (Testa, 2011). However, despite the resulting increase in the visibility of those journals, they systematically end up at the bottom end of the rankings (Collazo-Reyes, 2014). In this respect, despite efforts toward equalitarian access to the networks, the evidence seems to show a correlation between the social structuring of the world and the structuring of the scholarly communication networks⁶ (e.g., Vanderstraeten & Eykens, 2018).

⁶ It is important to remember that correlation does not necessarily imply causality. Therefore, this correlation does not mean explaining science's development exclusively through social structuring variables, as this would imply subordinating science's inner rationality to social structures, a step that not even Marx – the champion of economic explanations – was willing to take. Moreover, this assumption would find it difficult to explain the empirical evidence about the emergence of scientific powers such as China or the scholarly impact of some

The varying impact of different scholarly publications has been widely documented since the classic studies of De Solla Price (1965) and Merton's works on the Matthew effect. Citation patterns diverge over disciplines and time, but most often follow a highly skewed distribution (see Mingers & Leydesdorff, 2015; Aksnes, Langfeldt & Wouters, 2019). As these studies seem to show, publication's links depend on either structural characteristics – such as author or journal's prestige – or variables attached to the publication itself, such as its language or 'novelty'⁷ (see also Nicolaisen, 2007). These and other scientometric insights, for example regarding co-authorship patterns, seem to depict core-periphery structures within scholarly communication networks in general (e.g., Hwang, 2008; Choi, 2012; Zelnio, 2012) or single fields and approaches in particular (e.g., Leydesdorff & Milojević, 2015). In this light, the core-periphery structures within scholarly networks seem to result from the system's mode of self-organization, which partly responds to the discipline's or field's orientations, such as its novelty or degree of specialization (e.g., Brown, 2001) and partly to the prestige or visibility of the papers, influenced, for example, by publication language or the author's reputation.

From this standpoint, the influence of social structuring on scholarly networks is not immediate or absolute but rather the result of specific couplings with the ecology of actors and institutions that underpin the networks. For example, despite the widespread use of English as publication language, the visibility of English papers varies according to the geographical reach or disciplinary coverage of the networks (e.g., López-Navarro et al., 2015). Similarly, recognition circuits also vary according to scholarly cultures or fields (e.g., Hessels et al., 2019). In other words, both scholarly networks and the ecologies that underpin them (countries, universities, scholars, funding agencies, or databases and indexes) are organized into hierarchical structures, while the links between them depend on their specific historical couplings. In this sense, Merton's alleged universality of the scientific system is a social achievement rather than an inherent trait of this kind of knowledge (see Livingston, 2003).

This dissertation uses the concept of the (semi-)periphery to characterize its case. Using this concept – instead of others such as the 'global south' or 'developing countries/economies' – aims to capture the essence of these intertwined but different structuring processes. Significant changes to scholarly networks – as brought about by influential role of international databases, such as WoS or Scopus – seem to reinforce these hierarchies. In this sense, the term (semi-)periphery as used in this dissertation can be interpreted in a restricted way as matching global south locations, but also as broadly encompassing every network with a (relatively) weak connection to the scholarly core, as depicted by these instruments. Moreover, using the concept of Wallerstein (1974), scholarly semi-peripheral positions are characterized by being both peripheries to the core and core to the peripheries. In this sense, they contribute to the reproduction of dominant forms of inequality within regional (continental), national and/or thematic networks.

These regional (or continental) and national networks have played an important role in developing scholarship worldwide. Science certainly existed before the rise of the modern nation-state. However, the expansion of science in the eighteenth and nineteenth centuries strongly relied on the 'nationalization' of science (Stichweh, 1996). Different national academic systems and scientific communities with their own language (instead of Latin, the international *lingua franca*) were established. In the nineteenth and twentieth centuries, 'internationalization' often followed the consolidation of national communities. Internationally-oriented institutions – such as conferences and associations – were set up to bridge the gap between national academic systems and to facilitate

approaches from non-central countries. Therefore, for analytical purposes, it is useful to maintain the distinction between the structuring of scholarly communication networks and global socio-political and cultural structuring.
⁷ As has been repeated several times by many authors, impact does not mean quality but rather centrality within the networks (see Hicks et al., 2015).

international cooperation. These institutions allowed for increasing scientific communication across national borders, although a lot of scientific work remained embedded in national communities with their own frames of reference (e.g., funding agencies, education, and research policies and institutions).

The empirical focus of this research is on the internationalization of national scholarly communities in Chile. This country, with a population of 18 million, is located in Latin America's southern cone, next to Argentina. Its unique geography – being more than 4,000 km long and only 180 km wide on average – gives it a variety of natural environments, many of which have become natural laboratories for scholarly research (e.g., astronomy in the north, Antarctic research in the south, and marine research along a coast spanning 4,500 km). Since gaining political independence from the colonial power of Spain in 1818, the country has maintained a democracy with occasional dictatorships (the last one occurring between 1973 and 1990). The genesis of its first national scholarly communities can be traced back to the nineteenth century; these communities have expanded more widely since the 1950s, with national policies aimed at improving the university system. At the end of the twentieth century, the university system transformed to provide access to the masses and, more recently, new policies have pushed for internationalization and the specialization of scholars and institutions, affecting the functioning of traditional scholarly communities.

In this light, Chile's characteristics – such as the relatively longstanding existence of its scholarly communities, its (semi-)peripheral position within scholarly networks, the different historical development of its national scholarly communities, and the strong push towards scholarly internationalization in recent years – make it a good case for observing internationalization processes in scholarly communities and for analyzing the structural changes in the relationships between and within institutions involved in the regional, national and local organization of science. In the following section, each chapter is summarized and the specific aspects of internationalization addressed are highlighted.

On the dissertation's structure

The following work is organized into six parts. While Chapters Two to Five present the research's main findings, Chapter Six reflects on the research process from a methodological standpoint and Chapter Seven summarizes the main findings and includes some general remarks and conclusions. It is important to note that the chapters were written in the same order as they are presented here (except for this introduction, which was written between the method section and the conclusion). The reason for organizing this publication in this way is twofold. It aims to reflect the inductive trait of the research, but it has also a temporal rationality. Whereas Chapters Two and Three involve relatively long timeframes, Chapters Four and Five focus on more contemporary phenomena.

The next chapter is titled 'Internationalizing a national scientific community? Changes in publication and citation practices in Chile, 1976–2015'. Using scientometric analysis, this chapter explores the effects of internationalization incentives at a specific national scientific community level, giving an analysis of internationalization forms in Chile over four decades, from 1976 to 2015. Using Web of Science data, it looks at the evolution of both publications and citations and examines the internationalization pressures on Chilean scholars and journals in relation to changes at language and co-authorship level. It specifically focuses on the differences between the three cultures (humanities, natural sciences, and social sciences) and, building on these findings, concludes with some suggestions for research policy.

From a somewhat more humanist standpoint, Chapter Three, called 'Making science international. Chilean journals and communities in the world of science' analyzes the evolution of Chilean scholarly

communities through changes to their journals. Drawing on the evolution of the socio-geographical imaginaries of scholarly journals published in Chile, this chapter provides a nuanced picture of the socio-historical trajectories of the internationalization of scholarly journals and communities in this part of the (semi-)periphery. In order to break with the presentism of many contemporary discussions, this analysis covers a relatively long timeframe, from the end of the nineteenth to the first few decades of the twenty-first century. However, based on an inductive analysis of the journals, it particularly focuses on the rise of nationalist and regionalist orientations in the late nineteenth and early twentieth centuries and the intensification of pressures to internationalize in more recent decades. Like Chapter Two, this Chapter pays particular attention to the differences between natural sciences, social sciences, and humanities journals during each period. Building on the findings, the chapter concludes by highlighting key elements and drawing general conclusions about the internationalization processes in the semi-periphery of the world (of science).

Drawing upon the context outlined by Chapters Two and Three, Chapter Four is titled 'Journal editors facing scientific indexes: Internationalization pressures in the semi-periphery of the world of science' and focuses on the effects of recent bibliometric transformations on scholarly networks from the viewpoint of journal editors. Journals occupy a central position in science. Not only are scientists pressed to publish frequently (i.e., publish or perish), but journals are also expected to uphold specific standards. The inclusion criteria and indexes of databases, such as the Web of Science and Scopus, are routinely used to evaluate those standards nowadays. This chapter discusses the opportunities and challenges currently facing scientific journals edited in the (semi-)periphery as perceived by their editors. It describes some of the editors' strategies to internationalize the journals, the negotiation processes with their traditional audiences and the conflicts that emerge in the internationalization processes.

'Scholarly communities at the crossroads. Internationalizing sociological networks in Valparaíso, Chile (2003-2019)' is the title of the fifth chapter and addresses the local effects of internationalization processes. Although achievements and the tensions derived from the internationalization of scholarly communities have attracted quite a lot of scholarly attention, very little is known about their effects at a local level. Through a multi-method approach (based on bibliometrics and interviews), this chapter provides a nuanced description of these effects on the evolution of university-based sociology in Valparaíso, Chile over the last fifteen years or so. It pays special attention to international indexes and rankings and their role in the day-to-day practices of scholarly communities. It describes in detail the influence of individual trajectories and institutional frames in the practices and discourses of sociologists in Valparaíso. This chapter concludes by highlighting the tensions emerging from the meeting of scholarly traditions and some of the trade-offs in the current form of internationalization for (semi-)peripheral communities.

The last two chapters – Chapter Six and Chapter Seven – include general reflections on the dissertation. Chapter Six, 'On data and methods', partially reveals 'behind the scenes' research, focusing on the methodological decisions made and their implications, while Chapter Seven summarizes the research's main findings and discusses some theoretical insights derived from the analyses of the empirical data. Finally, this chapter also makes some political recommendations and outlines further areas of research.

Internationalizing a national scientific community? Changes in publication and citation practices in Chile, 1976-2015⁸

Internationalization pressures are omnipresent in the world of science. Scholars and administrators now often make use of international impact as yardstick with which to assess the quality of national scholarship. However, little is hitherto known about the effects of the internationalization incentives at the level of specific national scientific communities. This chapter presents an analysis of the forms of internationalization in Chile during a period of four decades, from 1976 to 2015. Using WoS-data, we look at evolutions for both publications and citations and study the internationalization pressures on Chilean scholars and Chilean journals in relation to changes at the level of publication language and co-authorship. We particularly focus on the differences between the three cultures (humanities, natural sciences and social sciences). Building on our findings, we conclude with some suggestions for research policy.

Key words: Internationalization imperatives, scientific communities, publications, citations, Chile.

Introduction

Although internationalization is hardly a new issue in the ‘world of science,’ it has taken on new forms in recent decades (e.g., Schofer, 1999; Ollion & Abbott, 2016). International networks do not just provide the broader context within which national communities operate. Scholars and administrators now increasingly make use of international visibility or impact as yardstick with which to assess the quality of national scholarship. In a broad variety of national academic systems, international visibility is used to demonstrate the strengths and/or weaknesses of particular departments, to legitimate support for the work of particular research groups, to distribute available research funds to some researchers and not to others, and so on (e.g., Whitley & Gläser, 2007).

This transition has been enhanced by the rapid diffusion of tools, such as Web of Science (WoS) and Scopus, that were originally constructed to conduct bibliographic studies. These instruments pretend to cover and index the world’s leading scholarly journals, but they now increasingly serve to monitor and evaluate scholarly work. Administrators and policy-makers heavily rely on scientometric data to discuss the success, impact, and visibility of research conducted in various settings. Many scholars, too, have incorporated the journal rankings and impact factors into their everyday decision-making routines (Espeland & Sauder, 2007; Paasi, 2015). For them, the publications and citations included in these databases have become differences that make a difference (e.g., Auranen & Nieminen, 2010; Bloch et al., 2014; Rushforth & de Rijke, 2015; Kaltenbrunner, 2018). The world of science has not only

⁸ Published as Koch, T. & Vanderstraeten, R. (2019) Internationalizing a national scientific community? Changes in publication and citation practices in Chile, 1976-2015. *Current Sociology*. 67(5): 723-741.

become saturated by bibliometrics and scientometrics; these instruments also provide a powerful image of what ‘international’ has come to mean in the world of science.

No doubt, discussions about the coverage of these tools have generated a dynamics of its own. Growing concerns about underlying western and Anglo-Saxon biases have, among others, led to the development of repositories and indexes that center on scholarly work produced and/or published in the periphery or semi-periphery of the web/world of science. For Latin American scholarly literature, for example, several alternative indexes have been developed, such as Latindex, RedALyC and SciELO. To legitimate their own global claims, however, the western instruments have also increased their coverage of ‘local’ journals, such as Latin American ones. While, for example, WoS only covered two Chilean journals in 1976, this number increased to 12 in 2005 and 47 at the end of 2015 (see Garfield, 1984; Collazo-Reyes, 2014). More changes of this kind are likely to take place in the near future, for Latin America and other parts of the world. But the use of scientometric indexes themselves does not seem to be questioned. In a context of new public management, many countries build their research policies on these measurements of internationalization. The way these tools are used suggests that a broad consensus on scholarly impact is nowadays routinely achieved.

We might say that the international databases have ‘performative’ effects (Fourcade & Healey, 2007; Wang et al., 2017). Their selection and evaluation mechanisms change the world of science. These indexes now command an implicit, yet powerful, influence upon the scholarly environment. Many scholars now feel forced to align their efforts with the realities produced by the scientometric models (e.g., Santos, 2012; Bianco et al., 2016). But what kinds of changes have actually taken place or are likely to take place in the near future? And more particularly: what are the effects of the diffusion and institutionalization of these kinds of incentives at the level of specific national scientific communities (and not just at the level of individual scholars, research groups or departments)?

Hitherto there do not exist much analyses of the consequences of internationalization pressures at the national level. Various scientometric models of national performances have been put forward, but historically and sociologically sensitive analyses of the impact of these pressures on different national communities remain scarce (Rousseau, 2018). This chapter attempts to address this lacuna by analyzing the internationalization of the scholarly cultures in Chile during a period of four decades, from 1976 to 2015. Although (or because!) Chile is often depicted as part of the (semi-)periphery, it has in recent years put much emphasis on academic internationalization. The National Commission for Scientific and Technological Research (CONICYT), for example, now provides funding for Master and Ph.D. students who undertake their studies abroad. Almost 8500 scholarships were awarded between 2005 and 2014.⁹ Funding for the formation and consolidation of international research partnerships has also significantly increased, and special funds to enhance the international indexation of national journals are now provided. Moreover, publications in international, especially WoS-indexed journals have gained central importance in the incentive structures for both individual scholars and research institutions (CONICYT, 2020). Whereas such publications are used to rank individuals who apply for jobs or research grants, several institutions also pay bonuses to its authors or include output criteria in employment contracts. Against this background, we look in this chapter at different aspects of the internationalization of Chilean research.

Internationalization pressures may take different forms in different scholarly “cultures” (Lepenies, 1985). They may also affect different national communities and their journals in different ways

⁹ Similar initiatives have been taken in some other countries. One might think, for example, of the Vietnam International Education Development (VIED) scholarship programs, whose official target was to produce 10.000 internationally educated PhD’s for Vietnam in the period between 2010 and 2020.

(Vanderstraeten, 2010; 2011). To study their effects in Chile, we primarily make use of the same tool as most science administrators, viz. WoS, as WoS provides us with a large and rich database that allows for fine-grained analyses of publication output and citation networks. But we do *not* use publications and citations included in the WoS-databases as indicators of scientific quality. We look instead at the ways in which WoS-guided internationalization pressures have transformed the scientific community in Chile. We aim at understanding and contextualizing the structural changes that have taken place in its different scholarly cultures. We also intend to discuss how these structural changes have transformed the world of science for Chilean researchers and Chilean publication venues.

Hereafter we clarify how we composed our database of Chilean publications and Chilean citations. The main part of this chapter is then devoted to a presentation of the results of our analyses. After having presented an overview of evolutions over time and differences across disciplines, both for publications and citations, we look at changes in publication language and international collaboration or co-authorship. We furthermore specify these analyses at the level of disciplines and scholarly cultures (humanities, natural sciences, social sciences). On the basis of these findings, we finally discuss the changing relation between citation and publication rates at the disciplinary level. Although the visibility of Chilean research in the world of science (as represented by WoS) has changed, the changes do not point to a straightforward process of internationalization. For the social sciences and humanities, a Latin American ‘continentalization’ of research communities can be observed. Building on these findings, we conclude with some suggestions for research policy.

Data and methods

Starting from the WoS-database, the following analyses address the internationalization of the scientific networks in Chile. We pay attention to, on the one hand, Chilean articles, i.e. articles authored or co-authored by scholars based in Chile, and, on the other, Chilean journals, defined as journals whose editorial address is located in Chile. Analyses at both levels – articles and journals – allow us to add nuance to the discussion. Moreover, we make use of both publication and citation data. Whereas publications are seen to stand for productivity, citations are often additionally used as a proxy for visibility or impact by scholars and administrators alike. Altogether, the WoS-database permits us to study a period of four decades, from 1976 to 2015.

To analyze changes at the *article level*, we first retrieved all Chilean papers published between 1976 and 2015 from the core collection of WoS, which consists of the Science Citation Index Expanded (SCIE), the Social Sciences Citation Index (SSCI), the Arts & Humanities Citation Index (A&HCI), and the Conference Proceedings Citation Indexes. To avoid some well-known quality issues that plague this database, we hand-checked and cleaned the raw data with the help of publication lists made available by Chilean research institutions. We then divided the resulting set of 121,451 papers into ten-year periods and disciplines, using WoS’s list of scientific disciplines. Disciplines classified by WoS in more than one index (SCIE, SSCI or A&HCI) were dealt with as different ones, each including only the journals listed in the index in question. Given both the significant increase in the number of WoS-covered publications in recent decades and substantial variations in publication and citation cultures, we calculated the ratio of Chilean articles to the total sum of WoS-indexed papers per discipline and per decade. In addition, we retrieved the total number of articles citing at least one of the 121,451 Chilean papers and then calculated the ratio of these citing papers to the total sum of papers that cite other papers per discipline and per time period.¹⁰

¹⁰ We collected all citation data from 1955 onwards, as this was the year in which the first article authored by a Chilean scholar was included in WoS.

To address changes at the *journal level*, we retrieved all papers published in all the Chilean journals since their inclusion in WoS (whether or not these papers are co-authored by Chilean scholars). We also retrieved all the articles citing those journals per journal and decade. To understand these changes, we, moreover, analyzed the editorials of these Chilean journals, looking for changes in their international ambitions, publication languages, peer review practices, and so on. Finally, we gathered similar information for the Chilean journals that are not included in WoS. Due to space limitations, however, we here primarily focus on those aspects of internationalization that can conveniently be addressed from a substantial body of quantitative data.

We should add a cautionary note. Due to the lack of a national database covering the entire Chilean publication output, we cannot discuss our dataset against the background of all Chilean publications or citations. However, in view of both the increasing numbers of Chilean articles and Chilean journals included in WoS and the increasing importance attached to this particular type of output, we believe that the following results not only provide a good overview of the changes currently taking place in different Chilean scientific networks, but also shed light on the challenges and problems which will ensue from these changes in the near future (see also Collazo-Reyes, 2014).

Results

We start our analysis with brief overviews of the evolution of the shares of Chilean articles and of citations to these articles in WoS. For clarification purposes, we divide, as already mentioned, the time period for which WoS-data are available, viz. 1976-2015, into four decades. To understand the evolutions during this entire period of time, we subsequently pay attention to changes in publication languages and collaboration or co-authorship structures at both the article and the journal level. We then deal in more detail with these underlying aspects of internationalization in the different scholarly cultures: the natural sciences, humanities and social sciences. Based on this distinction, we afterwards discuss in more detail the relation between international publications and international citations. Our findings finally lead us to some reflections on the consequences of the recent (largely unanticipated) changes in the coverage of the WoS-databases.

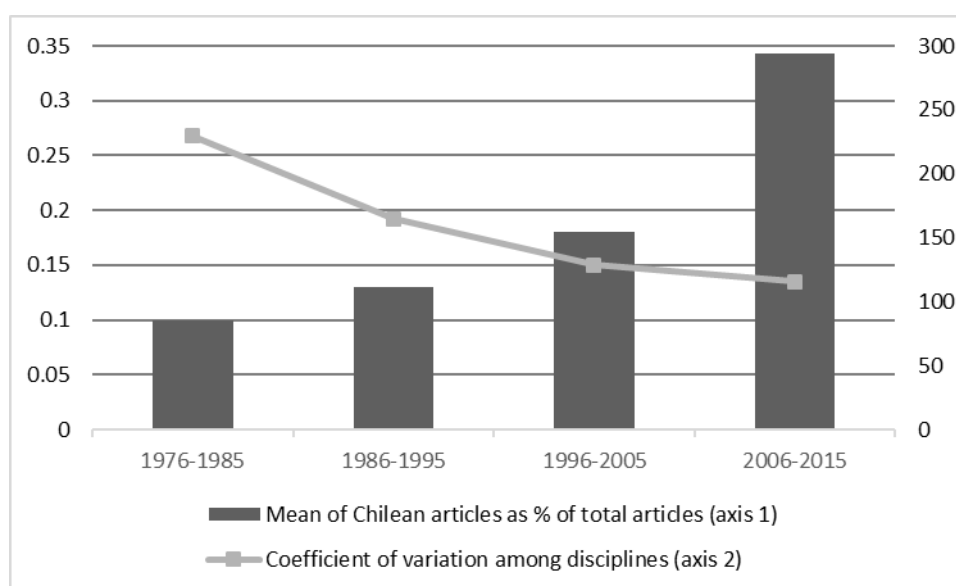
Publications

Figure 2-1 presents an overview of the growing presence of Chilean papers in the WoS-databases. Averaged by discipline, 0.10% of the papers published in the period 1976-1985 was (co-)authored by Chilean scholars. This share increased to 0.13% in 1986-1995, 0.18% in 1996-2005, and 0.34% in 2006-2015. While the relative presence of Chilean authors grew with a factor of almost 3.5 in this 40-year period, the increase is particularly evident during the last decade. In this sense, we may say that the internationalization strategies pursued in Chile have been relatively successful.

Figure 2-1 also shows the variation across disciplines. The share of disciplines (as defined by WoS) to which Chilean researchers contributed increased from 82% in the period 1976-1985 to 99% in the period 2006-2015. The coefficient of variation displays a continuous decrease from 227% in 1976-1985 to 115% in the last decade (2006-2015).¹¹ The increase of the mean values thus reflects the internationalization of publication output in a growing number of disciplines. As, however, the values of this coefficient remain quite high, it is difficult to speak of a gradual homogenization across disciplines.

¹¹ The coefficient of variation shows how large the standard deviation is relative to the mean. It is calculated as follows: $\sigma/\mu \times 100$, whereby σ stands for the standard deviation and μ for the mean value.

Figure 2-1. Evolution of Chilean publications, 1976-2015



A caveat is again in place. Although our findings show that international publications have gained in importance across all disciplines in Chile, the large number of journals published throughout this 40-year period in Chile (more than 820) suggests that national or local settings continue to play an important role within many scholarly disciplines. The orientation towards international peers has emerged next to a domestic ‘world.’ Our datasets do not allow us to provide a systematic analysis of all – national and international – publication output. In the following, however, we will return to the diversity which is characteristic of contemporary networks of scholarly communication.

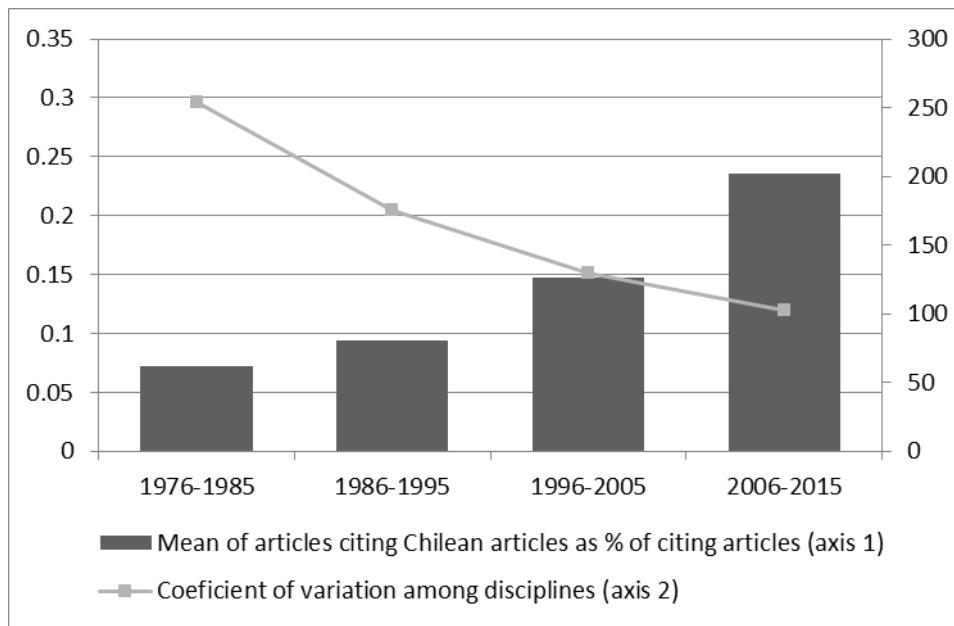
Citations

Complementary to Figure 2-1, Figure 2-2 provides an overview of the recent evolution of references to Chilean articles. How did the global impact of the work of Chilean researchers and institutions change over time? Did the evolution of the share of citations of Chilean publications match the increase of the share of Chilean publications in the WoS-databases?

By and large, the evolutions displayed in Figure 2-1 and Figure 2-2 are very similar.¹² Figure 2-2 displays, on the one hand, the steady rise of the average share of papers citing Chilean papers during the 40-year period under study. This share grew from 0.07% in the period 1976-1985 to 0.09% in 1986-1995, 0.15% in 1996-2005, and 0.24% in 2006-2015. Figure 2-2 shows, on the other hand, a decrease of the variations across WoS-disciplines. The coefficient of variation shrank from 253% to 102% during the same 40-year period. Despite this strong decrease, however, the variations across disciplines again remained substantial. Whereas more papers (co-)authored by Chilean scholars from more disciplines are currently cited in the WoS-indexed scholarly literature, the differences in the visibility of Chilean publications at the disciplinary level are still considerable.

¹² The correlation between the evolution of Chilean (co-)authored publications, on the one hand, and that of citations to Chilean (co-)authored papers, on the other, is quite strong ($r=0.79$).

Figure 2-2. Evolution of Chilean citations, 1976-2015



Although both the publication and citation data point to the increasing visibility of Chilean research in international networks, it should be noted that the growth of the citation rates has been slower than that of the publication rates. In comparison with publication rates, citation rates are of course more difficult to manage. While national policy-makers and administrators can incentivize their scholars to publish in international, WoS-indexed journals, citations are dependent on importing settings, which are often hard to control by scholars and their administrators.

This discrepancy should not come as a surprise. Most of the available evidence shows a negative bias towards work from the (semi-)periphery. Not only has the long-standing bias of WoS towards Anglo-Saxon journals led the authority of Anglo-Saxon (and especially US American) scholars and journals to rise inexorably (Archambault & Larivière, 2009; Pontille & Torony, 2015). But papers authored by Latin American scholars also have fewer citations than those by US American ones in top-ranked journals in the sciences, despite the fact that all submissions passed through the same peer review process (Meneghini et al., 2008; see also González-Alcaide et al., 2017). The internationalization imperatives in Chile (and elsewhere) will have to come to terms with the divergences that ensue from such – now well-known – ‘reputation’ biases (Hirschauer, 2004). Before looking in more depth at the changes in the relation between publication and citation data in our period of four decades, we first explore in more detail the kinds of changes internationalization brings about.

Chilean papers: languages and co-authorship

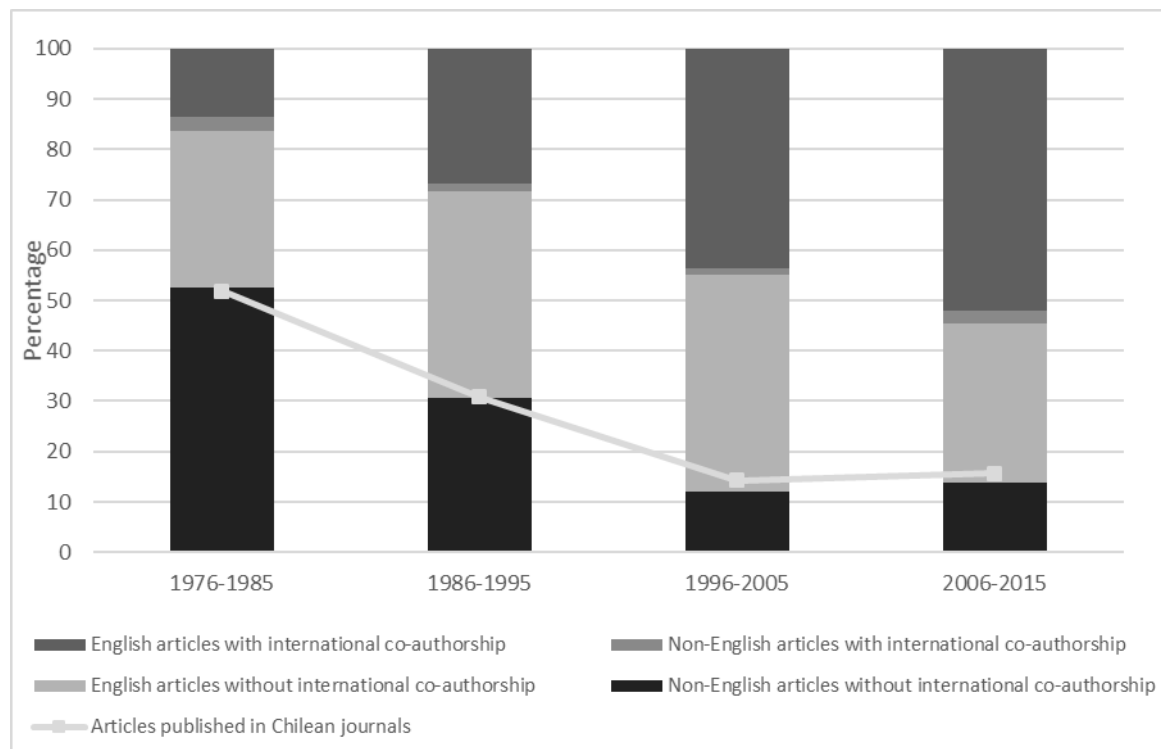
Internationalization is often associated with two kinds of changes: the shift towards English as the language of publication, on the one hand, and increasing international collaboration, on the other. Publications in English are thought to be accessible to a larger audience. Even for non-native English scholars, there is a clear tendency to publish primarily if not exclusively in English, assuming that this will give them more recognition and/or reward (Lopez-Navarro et al., 2015; Di Bitetti & Ferreras,

2017).¹³ This tendency is reinforced by the Anglo-Saxon bias of databases, such as WoS. Moreover, international collaborations often result in co-authored English publications.

Figure 2-3 displays the transformations of Chilean research output in terms of language of publication and authorship. Above all, the stacked bars show the increase of internationally co-authored and English-language publications during this period of four consecutive decades. Between 1976 and 1985 14% of the publications were in English and internationally co-authored; between 2006 and 2015 this proportion had nearly quadrupled to 52%. Given the fact that the proportion of articles written in English but without international co-authorship remained relatively stable across time, it is clear that the growing internationalization of the Chilean publication output, as displayed in Figure 2-1, primarily builds on the internationalization of research collaboration.

As a corollary, the share of articles in a language other than English and published without international co-authors decreased markedly during our time frame, from roughly 53% in the period 1976-1985 to 31% in 1986-1995, 12% in 1996-2005, and 14% in 2006-2015. The slight increase of non-English (mainly Spanish) and nationally (co-)authored articles during the last time period is mainly a consequence of the aforementioned policy changes of WoS, which led to the incorporation of several national and continental (Latin American) scholarly periodicals.

Figure 2-3. Evolution of authorship and language of publication of Chilean articles, 1976-2015



In addition, Figure 2-3 displays the evolution of the share of Chilean articles published in the WoS-indexed Chilean journals. Initially, the share of those articles decreased considerably: from 52% in 1976-1985 to 14% in 1996-2005. The increase of Chilean articles thus was not an effect of the inclusion of more Chilean journals in WoS. However, WoS's new editorial strategies, which led from the

¹³ Of course, English is not just the preferred language of publication. It is, in a broader sense, the preferred language of communication in the world of science. It is now commonly used in international conferences, international journals, by international associations, and so on.

coverage of 12 Chilean journals in 2005 to 47 ones at the end of 2015, account for the relatively small increase during the last decade (2006-2015). Altogether, the internationalization of the Chilean publication output in recent decades thus largely ensues from the increase of internationally co-authored work that is presented in international, non-Chilean journals.

Chilean journals: languages and co-authorship

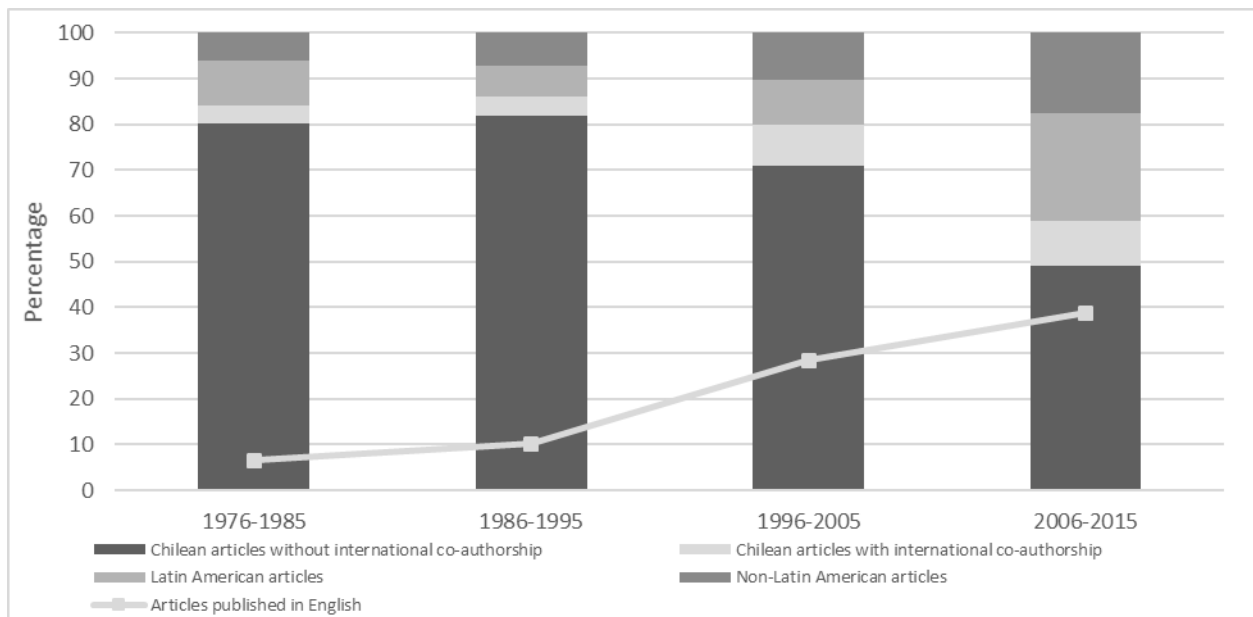
In spite of this trend, it is useful to pay attention to the Chilean journals in relation to WoS and internationalization. Pressed by internationalization imperatives, many journals in Chile have in recent years tried to address an international audience. Several of them have not only started to allow for, but also to give preference to papers written in English instead of Spanish (Bordons & Gómez, 2004). In disciplines such as biology, ecology, or chemistry, there is a clear tendency for journals to turn into English-only as their language of publication. An analysis of the output in the Chilean journals may therefore provide for an additional perspective on the consequences of the internationalization pressures in Chilean research.

Figure 2-4 shows, on the one hand, that the proportion of the publications in English in the WoS-indexed Chilean journals increased substantially from almost 7% in 1976-1985 to roughly 39% in 2006-2015. While Spanish remains the dominant publication language in these journals, English has in the twenty-first century become omnipresent, too. Such a trend is not unique to Chile; it takes place in most non-English parts of the world of science (e.g., Choi, 2012; Engels et al., 2012).

Figure 2-4 displays, on the other hand, changes in authorship structures and publication languages in these Chilean journals. The proportion of Chilean papers in Chilean journals that did *not* involve international co-authors decreased from over 80% in 1976-1985 and 1985-1996 to around 70% in 1996-2005 and less than 50% in 2006-2015. However, the share of internationally co-authored Chilean papers did only display a modest increase, from 4% in 1976-1985 to 10% in 2006-2015. For Chilean scholars, the Chilean journals are clearly not the venue to showcase internationally co-authored work. When they participate in international partnerships, the results of this work rather tends to appear in non-Chilean journals, as shown in Figure 2-3. The Chilean journals broadened their horizon in other ways. Figure 2-4 shows that the proportion of papers published by non-Chilean scholars increased from 16% in the period 1976-1985 to 41% in the period 2006-2015. The increasing presence of Latin American (co-)authors on the pages of the WoS-indexed Chilean journals is especially remarkable.¹⁴ Figure 2-4 shows an evolution towards a Latin American 'continentalization' of the communication networks of the Chile-based journals.

¹⁴ We define Latin American papers as papers with at least one author who is based in Latin America, but not in Chile.

Figure 2-4. Evolution of authorship and language of publication of Chilean journals, 1976-2015



It may be added that the citation culture in the Chilean journals has changed as well. Whereas the average share of self-citations at the journal level decreased from 53% in 1976-1985 to 10% in 2006-2015, the share of citations in papers written by non-Chilean and non-Latin American authors gradually increased.¹⁵ This trend was not homogeneous across disciplines, however. In the period 2006-2015, more than half of the citations to Chilean journals in the natural sciences came from non-Latin American authors, but this share was only around 30% for journals in the humanities and the social sciences. These differences are connected with different editorial policies. In the natural sciences, the internationalization pressures not only led Chilean journals to opt for English as language of publication; some of them are now also published by large multinational groups (e.g., Springer). In the social sciences and humanities, however, several Chilean journals now opt to reinforce a ‘continental’ orientation: they privilege Spanish as language of publication, aim at a continental audience, address regionally relevant topics, and so on. It indicates that internationalization can indeed mean different things in different scholarly cultures and traditions.

Co-authorship cultures

As next step in our analysis, we look at differences in co-authorship between the scholarly cultures. Figure 2-5 presents co-authored Chilean articles as a percentage of the total number of Chilean articles published between 1976 and 2015, thereby distinguishing between nationally and internationally co-authored publications. Noteworthy, first, is that co-authored publications continue to constitute an exception in the humanities. Although the share of co-authored humanities papers is slowly increasing, 85% of this publication output in the period 2006-2015 is still single-authored. In this period, the share of internationally co-authored papers increased to 9%.

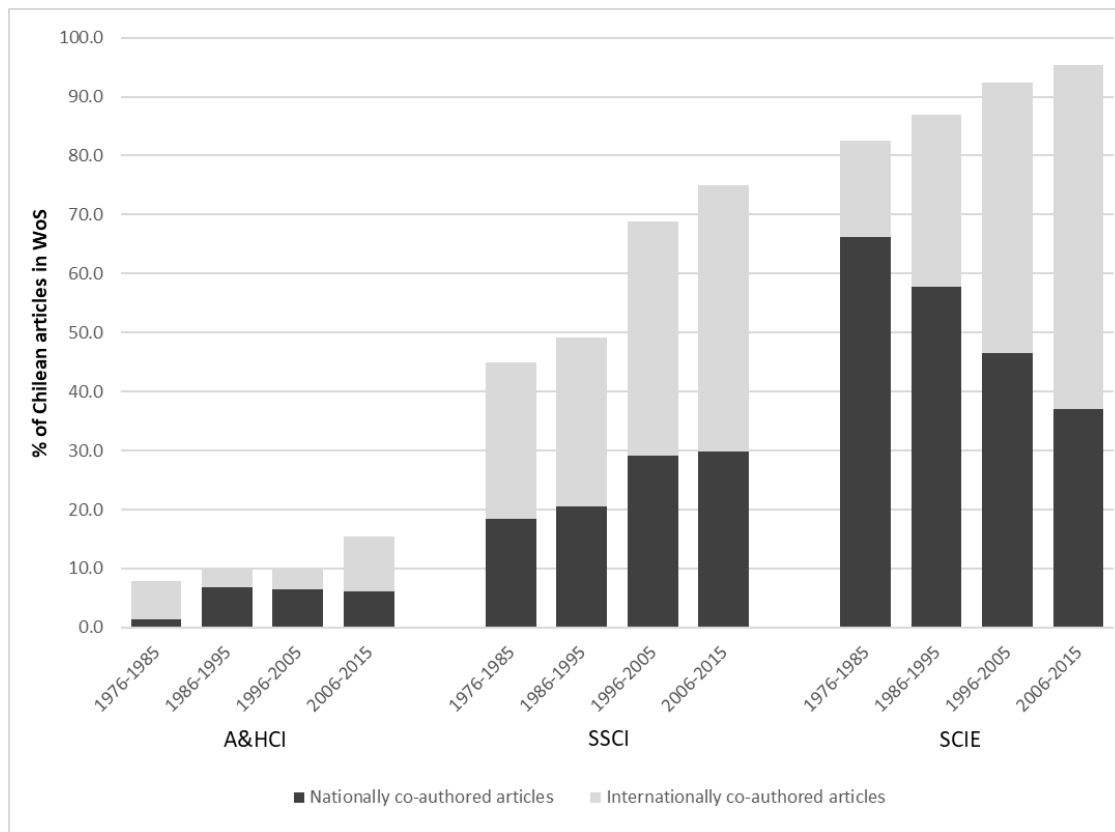
The differences with the other scholarly cultures are considerable. The social sciences are situated in-between the natural sciences and humanities, but they have increasingly come to resemble the

¹⁵ Altogether, the impact factor of most Chilean journals is still quite modest. Most of these journals are classified in the third or fourth quartile of their discipline. In 2015 only two journals made it to the top half: *Maderas – Ciencia y tecnología* (Material science: Paper and wood) and *Andean Geology* (Geology).

natural sciences. In fact, the increase of co-authored publications is most distinctive of the social sciences in the period under study. The shares of both nationally and internationally co-authored publications increase for the social sciences, but the increase is more outspoken for international cooperation. The latter share evolved from 27% in 1976-1985 to 45% in 2006-2015. Following international trends, the average number of co-authors per paper grew at a steady pace from 2 in 1976-1985 to 2.2 in 1986-1995, 3.1 in 1996-2005, and 3.3 in 2006-2015 (see also Ossenblok et al., 2014).

Figure 2-5, finally, shows that co-authored publications are standard practice in the natural sciences. It is, moreover, remarkable that internationally co-authored publications are here gradually replacing nationally co-authored ones. The kinds of ‘big science’ practiced in many of the natural sciences have increasingly come to rely on international cooperation and increasingly lead to multiple-authored and multi-national publications (O’Brien, 2012). In the humanities and social sciences, by contrast, such large consortia (yet?) hardly exist. In these scholarly cultures in Chile, internationally co-authored publications are more often the outcome of occasional collaborations.

Figure 2-5. Evolution of co-authorship of Chilean articles in WoS index, 1976-2015



In fields of study, such as astronomy, astrophysics or particle physics, around 15% of the Chilean output is now produced by large research consortia (which often attribute the authorship of papers to over 100 individuals).¹⁶ In astronomy, for example, international missions already played an

¹⁶ We prefer to speak of the attribution of authorship as not all individuals actively contribute to the articles they ‘author.’ In such multiple-authored articles, it is often specified who actually conducted the experiments, analyzed the data and/or wrote the article. Altogether, the number of co-authors per paper rocketed in the natural sciences: from an average of 4.1 between 1976 and 2005 to 24 in the period 2006-2015.

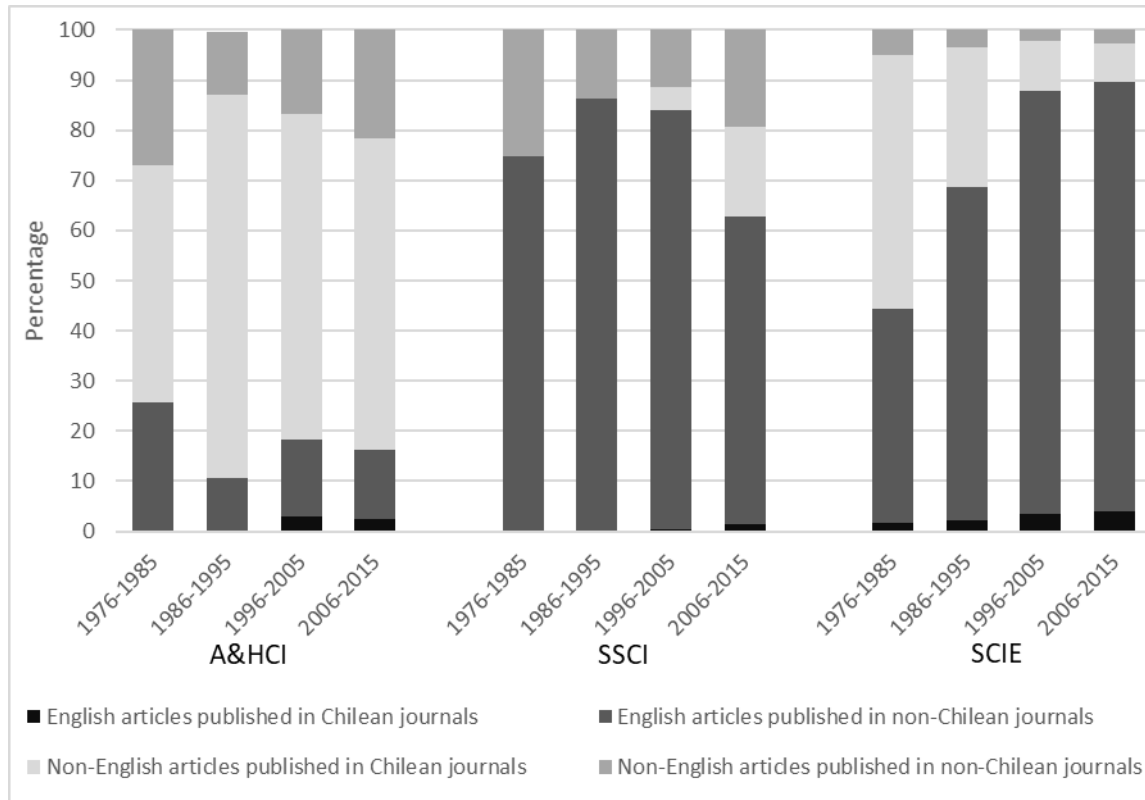
important role in nineteenth-century Chile, but the installation of large, internationally operated telescopes in Chile's Atacama Desert at the beginning of the twenty-first century quickly led to an unprecedented expansion of international research. Not only are many foreign scholars now working in Chile, but several Chilean scientists have also become integrated in large research consortia and now contribute on a regular basis to their publication output (see Barandiaran, 2015). This case also illustrates the complex path dependency of particular internationalization trajectories.

Publication language cultures

Figure 2-6 displays the evolution of the share of Chilean papers by language for each of the scholarly cultures. English-language articles dominate in the natural and social sciences. In the humanities, however, the share of English-language articles has remained low. In the last two time periods, about 16% of this scholarly output was in English, with some 2.4% of it published in Chilean journals. In other words, Spanish has remained the prevalent international language in the humanities in Chile. Some variation across fields of study is present, but 82% of the Chilean humanities papers published by Chilean scholars between 1976 and 2015 appeared in Spanish.

For the social sciences, WoS did not include a single Chilean journal before 2000. Until that year, all WoS-indexed Chilean publications were thus published abroad. An important share was written in English: 75% in 1976-1985 and 86% in 1986-1995. The inclusion of several Chilean social-scientific journals in WoS – 2 journals were covered in the period 1996-2005 and 11 in the period 2006-2015 – later changed the picture. Whereas 5% of the Chilean articles appeared in Chilean journals in the period 1996-2005, this share increased to 19% in 2006-2015. About 90% of these articles was in Spanish. As WoS also extended the coverage of journals from other Latin American countries, the share of social-scientific articles written in English reduced quite substantially to 63% in 2006-2015.

Figure 2-6. Evolution of language of Chilean articles in WoS index, 1976-2015



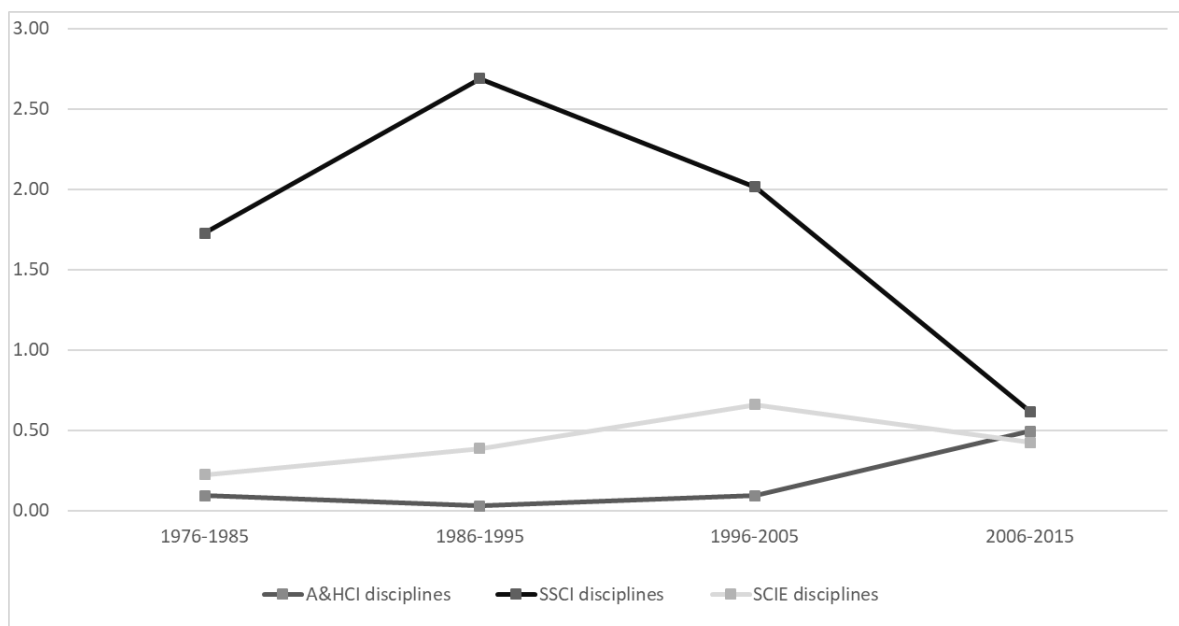
For the natural sciences, 52% of the output during the first period (1976-1985) was published in national journals; almost all of these publications (97%) were written in Spanish. Of the papers published abroad, the majority was in English (90%). In the following decades, this pattern changed gradually. More articles were published internationally: 70% in 1986-1995 and around 88% in the last time periods. Almost all of these papers appeared in English (97%). Moreover, the language of publication of the articles in the Chilean journals also changed. In 1976-1985 only 3% of these articles were in English, but this share increased to 8% in 1986-1995, 26% in 1996-2005 and 34% in 2006-2015.

As language of publication, English has become more important in all scholarly cultures. In the natural sciences, this trend is evident in both the non-Chilean and Chilean journals. In the social sciences and humanities, however, the incorporation of national and continental (Latin American) journals in the WoS-database during the last period (2006-2015) has led to an upgrading of Spanish as international language of publication, providing support for the aforementioned continentalization of publication networks (see also Liu, 2017). Against this background, we now look again at the relation between international publications and international citations in/for Chile.

Three cultures – or one?

As we have seen, the scholarly cultures differ with regard to the international orientation of their publication output. But are there also different citation cultures? How has the internationalization of the Chilean publications affected the citation rates for each of these scholarly cultures? To shed light on changes in these relationships, we look hereafter at the evolution of the slopes of the regression lines of citations on publications for the disciplines included in each index.

Figure 2-7. Evolution of the relation between citation and publication rates



At first sight, the trends seem to differ markedly for the three cultures. For the humanities, the slope has long been almost horizontal. Only in the most recent decade, it has become positive. The shift is a consequence of the relatively high number of citations to Chilean papers in the Chilean humanities journals that were included in WoS in the early-twenty-first century. For the natural sciences, the evolution is quite different. The slope does increase until the period 1996-2005, but falls back in the period 2006-2015. Although WoS's new policies also did have a significant effect on the publication

output in the natural sciences, the ensuing increase in publication output was not followed by an increase in citations. For the social sciences, finally, the evolution is quite remarkable. The slope was ≥ 1 until the period 1996-2005, which means that the change in the share of citations was higher than the change in the share of publications. Especially papers which commented on the Chilean dictatorship (1973-1989) gained much visibility. The impact of Chilean social-scientific publications diminished in more recent years, however. The increases in the Chilean publication output in the social sciences in the period 2006-2015 were not matched at the level of citations – quite to the contrary. The slope of the regression line fell well below the value of 1.

To understand this trend, it is useful to remember that the scientometric instruments provide a particular image of the ‘world of science.’ In fact, the hierarchical rankings of journals have become a reality in their own right. The scientometric tools lead to the diffusion of *their* selection criteria; the ways in which journal rankings and impact factors are calculated reinforce the hegemony of the Anglo-Saxon part of the world. To build their argument, ‘international’ authors and institutions often prefer to rely on what is considered to be officially acknowledged, certified knowledge. In the recent past, academics and academic institutions in Chile (and elsewhere) have learned to define themselves in relation to Western, especially Anglo-Saxon-dominated hierarchies. To give credibility to their work and to enhance their chances of success, they tend to accept and reproduce the rankings produced by the western instruments (López-Navarro et al., 2015; Kurzman, 2017). They have difficulty building upon a national orientation, while they now define themselves in relation to international, western-dominated models of science (see Heilbron, 2014; Mosbah-Natanson & Gingras, 2014).

But not just the different trajectories of the cultures attract attention. Figure 2-7 also shows that the slopes for the scholarly cultures converge in the period 2006-2015. For the three cultures, the slope of the regression lines is around 0.50 in this period, which means that the changes in Chilean citation shares are about half as large as the changes in the Chilean publication shares. Of course, it is difficult to foretell whether this convergence will last in the following years. But it is remarkable that different evolutions with regard to forms of international collaboration (Figure 2-5) and language of publication (Figure 2-6) do result in a point of convergence in which increases in publication output do *not* match those in citations. The efforts and incentives aimed at increasing the international visibility of Chilean scholarship clearly do not always bear the fruits they are supposed to bear. The structural features of the world of science, which we discussed, impose limits on Chilean scholarship.

Discussion and conclusion

The focus of this Chapter is on the internationalization of the scientific community in Chile. Although it is wise to exercise caution in drawing more general conclusions from analyses of a single case, it is also reasonable to assume that other national scientific communities are being confronted with similar pressures and transformations. Internationalization imperatives are changing research and communication practices in a broad range of countries. Research evaluations now increasingly rely on data provided by internationally-oriented scientometric instruments. Against this background, some more general conclusions and suggestions for research policy may be presented.

Firstly, the most used scientometric tools are characterized by particular biases. Several alternative repositories and databases have been developed to counter such biases. As mentioned before, we now dispose of several indexes that focus on work published in the semi-periphery of the world of science. But WoS itself has recently also extended its coverage of the scholarly literature in different parts of the world and different fields of study; the unprecedented large growth of the number of indexed journals of Latin America, for example, certainly also serves to counter the new, competing initiatives. It is difficult to predict to which editorial decisions the commercial interests of WoS might lead in the future. As we have seen, however, WoS’s decisions to include or not to include particular

journals can have important consequences. Especially for the humanities and social sciences, the changes in the coverage of Latin American journals are also changing the ways in which international research is defined or appears on the monitors of science administrators and scholars. These changes not only make it difficult for scholars to know what does or does not count as international research, but they should also stimulate us to critically look into the selection and evaluation mechanisms at work. Of course the question also is why policy-makers aim at controlling and internationalizing their national research communities on the basis of such disputed indexes.

Secondly, we have seen that the editorial practices and policies of many journals have changed as a consequence of internationalization pressures. But the reactions to these pressures may diverge; the divergences between the three scholarly cultures are remarkable. While several Chilean periodicals have opted for a global orientation with English as their language of publication, other periodicals now display a regional or continental orientation. Especially in the humanities and social sciences, a continental orientation now gradually seems to take root (see also Heilbron et al., 2017). In Chile and other parts of Latin America, this development is connected with the rise and reinforcement of an international Spanish-speaking scientific community. As our analyses show, it gives way to more collaboration within a relatively large community of scholars, for whom Spanish is their native language. We believe that there are grounds to advocate for more regional diversity within the world of science. Especially in the humanities and social sciences, research might benefit from such diversity. Intimate knowledge of local circumstances often is important for this type of research, but the large diversity of relevant empirical configurations also makes findings from one context possibly irrelevant in another. In this light, we believe that different linguistic communities can still play an important role.

Against this background, a third comment can be made. Internationalization pressures, journal rankings and impact factors support a 'citation consciousness' that reproduces center-periphery differences. The selection and evaluation mechanisms embedded in WoS (and related instruments) are both institutionalized and interiorized.¹⁷ In this regard, many scholars and journals now 'play it safe.' As a consequence, regional scholarship can become alienated from its own traditions (Ollion & Abbott, 2016). In several fields of study, however, countries of the (semi-)periphery have been able to establish relatively strong scholarship traditions. Important innovations or challenges to dominant paradigms or research programs have emerged in several (semi-)peripheral countries. We do not oppose internationalization, but we advocate for the recognition and protection of different forms of national and continental diversity. Such diversity may indeed not only be beneficial for scholars in the (semi-)periphery, but also prove an asset to the world of science.

Scholarship has long been shaped by specific national contexts. Next to academic systems (with their universities, research institutions, departments, and so on), scholarly associations and publication venues have in the nineteenth and twentieth century often been organized along national lines, too. The recent focus on internationalization has not just broadened the horizon of national scholarly communities, but also altered the everyday world of most scholars. Internationalization pressures have often been translated into output requirements; internationalization has become measured in terms of publications and citations in indexed journals, especially in WoS-indexed journals. As our analyses show, the new incentive structures reinforce WoS's evaluation criteria. The scientometric indexes reduce the visibility of work from the (semi-)periphery and reinforce the hegemonic position

¹⁷ For WoS's founder, Eugene Garfield, a citation consciousness was an essential part of good scholarly practice; scholars had to build on and explicitly refer to the scholarly work that was relevant to their topic. Although much work has been conducted on citation management and impact engineering, Garfield did not imagine how his databases would imprint a particular citation consciousness (e.g., Garfield, 1998).

of the Anglo-Saxon center. At the same time, however, the changes we observed in a period of 40 years (1976-2015) do not point to a straightforward process of internationalization of the national scientific communities in Chile. For the social sciences and humanities, in particular, a Latin American 'continentalization' of publication networks can also be observed. In part, this 'continentalization' gains impetus from the inclusion of regionally-oriented journals in WoS. In the near future, this evolution might further the international visibility and impact of scientific work conducted in the (semi-)periphery. However, the recognition and protection of scientific diversity will require full support from policy-makers and administrators in the center and the periphery.

3

Making science international. Chilean journals and communities in the world of science¹⁸

Globalization is currently studied and debated extensively in a variety of fields, however, little attention has hitherto been directed to the globalization of/in the scientific field itself. Drawing on the evolution of socio-geographical imaginaries of scholarly journals published in Chile, this chapter provides a nuanced picture of the socio-historical trajectories of internationalization of scholarly journals and communities in this part of the (semi-)periphery. In order to break with the presentism of many contemporary discussions, the analysis covers a relatively long period of time, from the end of the nineteenth century until the first decades of the twenty-first century. However, based on an inductive analysis of the journals, the article particularly focusses on the rise of nationalist and regionalist orientations in the late-nineteenth and early-twentieth centuries and the intensification of the pressures for internationalization in more recent decades. The chapter pays particular attention to the differences between natural sciences, social sciences, and humanities journals in each of these relevant periods. Building on the findings, the chapter concludes highlighting key elements and drawing some general conclusions on the internationalization processes in the semi-periphery of the world (of science).

Key words: Science communication, scholarly journals, internationalization, core-periphery, globalization

Introduction

The complex processes of globalization that have transformed the world during the past decades are the subject of a vast body of literature and vivid controversies. The benefits and burdens of economic globalization, for example, are widely discussed in the economic literature (Stiglitz, 2002; Milanovic, 2016). The advantages and threats of different forms of global governance equally generate much debate in the political literature (Fukuyama, 2017). While globalization is studied and debated extensively in a variety of disciplines, only little attention has hitherto been directed to the globalization of/in the scientific field itself, however (e.g., Drori et al., 2003, Fourcade, 2009; Heilbron et al., 2018). Predominant conceptions of science constitute 'epistemological obstacles' to this type of research. As science, in contrast to other activities, is often considered to be universal by nature, its processes of globalization seemingly do not merit much scholarly discussion.¹⁹

¹⁸ A shortened version of this chapter is published as Koch, T., Vanderstraeten, R., & Ayala, R. (2021). Making science international: Chilean journals and communities in the world of science. *Social Studies of Science*. 51(1):121-138.

¹⁹ In his sociology of science, for example, Robert Merton argued that universalist aspirations are part of the 'affectively toned complex of values and norms which is held to be binding on the man of science.' As other values and norms, it is expressed 'in the form of prescriptions, proscriptions, preferences, and permissions... [It

The historical development of science is, however, marked by important tensions between different geographical orientations, especially between national and international frames of reference (see Crawford et al., 1992; Stichweh, 1996; Schofer, 1999; Heilbron, 2014). For sure, science existed before the rise of the modern nation-state. But the expansion of science in the eighteenth and nineteenth centuries strongly relied on a 'nationalization' of science. Different national academic systems and different national scientific communities with their own language (instead of the international *lingua franca*, Latin) were established. In the nineteenth and twentieth century, 'internationalization' often followed the consolidation of national communities. Internationally-oriented institutions, such as conferences and associations, were set up to bridge the differences between national academic systems and to facilitate international cooperation.²⁰ These institutions allowed for increasing scientific communication across national borders, although much scientific work remained embedded within national communities with their own frames of reference.

In many instances, the impetus towards international science was fueled by national pride, the professional ambitions of leading scientific figures, and governmental policies. The expansion into the international sphere provided scholars with opportunities to consolidate or improve their own positioning (e.g., Kreuder-Sonnen, 2016). The articulation of the universalist ethos of science also made clear that national communities and national traditions were embedded within broader, global settings. The rise of international science did, however, not replace or eradicate the national sphere (e.g., Hollinger, 1999). National disciplinary associations still exist all over the world; many scholarly journals that aim to have global impact still emphasize their national foundations (*American Journal of ...*, *Revista Chilena de ...*, *Deutsche Zeitschrift für ...*, *Revue française de ...*, and so on). Despite the expansion of international exchanges, and despite the explicitly universalist ambitions of science, the nation-state has remained a principal arena and an important structuring unit of scientific activity.

However, tensions between different geographical orientations have become more pronounced in recent decades. International and transnational projects have expanded to an unprecedented scale. New scientometric databases, such as Web of Science (WoS) and Scopus, have also made it possible to display global networks of collaboration and exchange, and to calculate the visibility of single units (researchers, universities, journals, nations, and so on) within these expanding networks. Although these databases were originally meant for bibliographic studies, they have so-called 'performative' effects (Callon, 2010; Espeland & Sauder, 2016). Scholars and administrators all over the world now increasingly make use of international visibility and/or impact as a yardstick with which to assess the quality of national scholarship. Journals, too, have incorporated the global rankings and impact factors of scientometrics into their everyday decision-making practices (Paasi, 2015).

The expansion of these global networks of collaboration and exchange has, in recent decades, been documented by a stream of scientometric studies on co-authorship and citation patterns. Following these studies, globalization processes in the field of research have essentially favored the already dominant regions of North America and Europe. They have also increased the dependencies of nations in other regions on the dominant centers (for an overview, see Heilbron et al., 2018). At the same time, however, very little is hitherto known about how national communities, their associations and

is] transmitted by precept and example and reinforced by sanctions' (1973: 268-269). While Merton was interested in institutionalization and internalization problems, he did hardly consider this universalist and internationalist ethos to be a socio-historical achievement (see Livingston, 2003: 89).

²⁰ Among the first initiatives in this regard were the international statistical congresses convened in the third quarter of the nineteenth century by the Belgian *homo statisticus* Adolphe Quetelet. Different nation-states were represented at these congresses; the representatives aimed at the development of standardized methods for collecting and processing a broad range of statistical data (Randeraad, 2011).

their journals make sense of the pressures for internationalization. Scientometric overviews of unequal distributions do not tell us very much about the ways in which geographical orientations, whether national or international, are established, reinforced, and changed.

Given the fact that international relations are not symmetrical and resources unequally distributed (e.g., Wallerstein, 2004), national communities in the periphery or semi-periphery of the world of science may be particularly sensitive to the pressures for internationalization.²¹ In order to shed light on the tensions between the national level and these globalization forces, it therefore is useful to analyze how national communities in the (semi-)periphery frame their contribution to the world of science. How do they perceive their international environment and how do they respond to the perceived pressures? By directing attention to these questions, we will be able to look more closely into the processes of globalization that gave and give shape to the scientific field.

In this chapter, we use scholarly journals produced or edited in Chile to analyze the (inter-)nationalist orientations of disciplinary communities. We look at changes in composition and content and analyze how current internationalization pressures differ from previous ones. To break with the presentism of many contemporary discussions, we cover a relatively long period of time, from the late-nineteenth until the early-twenty-first century. Our goal, however, is not to present a chronological history. We rather focus on significant episodes and changes within this time span, and analyze the main elements and tensions that have characterized the major transitions. We, therefore, particularly focus on two periods: the rise of nationalist and regionalist orientations in the late-nineteenth and early-twentieth centuries and the intensification of the pressures for internationalization in more recent decades.

The increasing use of English as the *lingua franca* of international science is an important aspect of this transition. Despite the large number of people who speak or read Spanish, Spanish does not seem capable of competing with English as the international language of science and scholarship. As we shall show, however, the globalization processes entail a variety of other changes, too. Hereafter we present the methodological approach and the data we used to uncover these changes. Next we discuss the findings of our analysis for the two periods of time. In the concluding section, we briefly summarize the main findings of our analysis. Altogether we are able to provide a nuanced picture of the socio-geographical 'imaginaries' that provided and provide orientation to the Chilean scientific communities. Although several features of these imagined communities are the outcome of specific, path-dependent processes, the relatively long time period and the broad range of scientific journals and communities we cover also allow us to draw more general conclusions.

Data and methods

Internationalization depends on a variety of institutions, networks, migration and mobility trends, and so on. Core-periphery differences and asymmetrical relations are often found in analyses of international exchange. Scientometric studies of the geographies of science, for example, show that the global research output is still concentrated in a relatively small number of nations, especially in North America and Europe (e.g., Leydesdorff & Persson, 2010). Translation flows tend to reproduce, not correct, this unequal distribution. Many more books are translated *from* English than *into* English, whereas for all other languages the reverse holds true (de Swaan, 2001). Following Heilbron (2014: 692), about 60% of all book translations worldwide are made from English, while book translation into English represents barely 2 to 3% of the national book production in the US and the UK. Citation and

²¹ Of course, center and periphery are not primarily a matter of spatial location, but one of the combined effect of a variety of social relations. This point of view is elaborated in a variety of recent studies on globalization (for an early statement on dependency structures in science, see Alatas, 1974).

reputation studies display similar results: research from the core has better chances of being cited and being translated than research from the periphery (e.g., Meneghini et al., 2008; see also Chapter Two).

However, these core-periphery differences do not tell us very much about the ways in which national communities in the periphery try to come to terms with internationalization pressures. In order to understand the shifting frames of relevance, it is necessary to look for other sources. In our view, scholarly journals constitute a particularly useful source to study the ways in which (inter-)national ambitions resonate within national communities. Journals play a key role in modern disciplines. They not only allow for regular communication between the members of scholarly communities, but also endorse what these communities take to be certified knowledge (Csiszar, 2018). They are gatekeepers; they are able to impose particular orientations. In order to be published, (potential) authors have to come to terms with the expectations specified in the journals' editorial programs (Bazerman, 1988; Baldwin, 2015). In this chapter, we use Chilean scholarly journals to trace the evolution and impact of the internationalist ambitions and pressures in this part of the (semi-)periphery of the world of science.

To select the journals for our analysis, we first of all included the Chilean journals which are indexed by *Web of Science*, as this indexation now epitomizes global visibility and prestige. We examined all issues of the 47 Chilean journals which were included in WoS' core collection at the end of 2015 (see Annex 1). The digitally available issues of these journals were downloaded from official websites, while the non-digitized issues were consulted at the National Library of Chile. We searched in each issue for relevant structural features, such as types of articles (translations, literature reviews, news items, and so on), institutional addresses of authors, referencing styles, and publication language(s), as well as (more or less explicit) statements about the geographical orientation of the journal and its community within editorials, chronicles, or letters to the editor. Alongside our own notes about the structural features and editorial policies of the different journals, our final dataset contained 1,529 documents from the journals themselves (such as editorials, letters to the editor, news, and author guidelines). The selected documents display considerable variation in length, ranging from some short paragraphs to more than ten pages.

All these documents were qualitatively analyzed using Atlas.ti. Our analysis departed from an open coding, yet focusing on the journals' national and international orientations, their internationalist and universalist rhetoric, and their editorial practices. This coding process was further refined and organized into inductively constructed themes that structured the findings section. For the sake of clarity, the Spanish quotations being used here have been translated into English. We make use of WoS' journals' abbreviated names to cite our primary sources²².

Our dataset, then, is focused on the journals published or edited in Chile that have achieved international visibility demonstrated by their inclusion in WoS-Databases. However, in order to contextualize our findings, we supplemented this material with information from three other sources. Firstly, in light of the relatively long period we cover, we compiled a list of 915 Chilean scholarly journals not included in WoS (many of which no longer exist). This list entails descriptions of the fields of study, publication language(s), editor(s), and so on. Secondly, we calculated standard scientometric measures for the publications and citations of the Chilean journals that were included in WoS between 1976 and 2015 (see Chapter Two). The quantitative figures used to contextualize our interpretations are derived from these calculations. Finally, we interviewed a group of editors-in-chief of leading Chilean scholarly journals in order to double check key turning points of the journals. Due to space

²² Full references to primary sources are provided in Annex 2.

limitations, here we primarily focus on the features and changes that can be observed in the journals themselves – and that are thus visible to their respective readerships.

It should be added that our empirical material imposed limitations. We analyze scholarly perceptions of relevant geographical horizons from the late-nineteenth until the early-twenty-first century. Also because of space constraints, details about other structural changes that might provide the context for the changes in the Chilean scholarly journals and their communities will not be accounted for here. At times, we briefly refer to relevant structural changes, such as shifting power relations in world society, but the focus of our analysis is upon the expectations regarding the relevant setting of scholarly work.

Nationalist internationalization

On the basis of the coding process, we divided the following discussion into two periods. Dominant in the first period is the nationalization of the scientific communities, both relative to the world of science and the Latin American continent, while the increasing impact of international scientometric databases and their indicators is central to the second period. As for the first period, we start in this section with a general overview of the predominant geographical imaginaries and then pay special attention to manifestations of different disciplinary cultures.

Geographical Imaginaries

Chile gained political independence in the early-nineteenth century. Its first scholarly journals were founded around the mid-nineteenth century by national associations, such as the *Sociedad Chilena de Agricultura y Colonización* (1838), and national institutions, such as the University of Chile (1842). But journal publishing would only gain momentum in the last decades of the century. Journals such as *Boletín de la Sociedad de Agronomía* (1869), *Revista Médica de Chile* (1872), *Anales del Instituto de Ingenieros de Santiago* (1888), *Anales del Museo de Historia Natural* (1891), and *Revista Chilena de Historia y Geografía* (1911) reflected the challenges with which the new nation-state was confronted: population health, territorial expansion, economic growth, and so on. Not only did these journals frequently publish papers on these national challenges, but several of them also defined themselves accordingly. Illustrative is the following excerpt from *Revista Médica de Chile*:

This journal aims at spreading science, assisting professional practice, and promoting public and private hygiene. The journal shall display the health conditions of the country and its public health services. It shall supply statistics of hospitals' functioning in order to provide a basis to characterize the most common illnesses. This journal shall publish the works of practitioners and enhance their communication. (...) The journal shall also have a bibliographic section of the most important international venues selected for either their scientific relevance or their practical utility (REV.MED.CHILE, 1872: 2).

Despite their focus on nation-building, these communities and journals did not close themselves off from their international environment. They observed this environment and tried to establish some couplings. The journals contained translations of articles, which had previously appeared in European or US journals, notes on international conferences, and annotated international bibliographies. A few internationally co-authored articles also appeared. But the main orientation at that time was national. In light of the organization of national public services, for example, *Revista Médica de Chile* included descriptions of university programs and health services in Europe and in the US (REV.MED.CHILE, 1875; 1920).

Some geographical imaginaries were present in these journals. Whereas Europe and the US were depicted as foreign and leading networks, Latin America was seen as a large continent with national

communities that shared the same concerns. Scholarship could more easily be shared within this Latin American network. Even more, the continent could provide the geographical basis for strengthening the position of the journals and their communities in the world of science. This continuity between national and regional orientations can be seen in the attention given to Latin American subjects and conferences (e.g., REV.CHIL.HIST.NAT, 1901), annotated Latin American bibliographies (e.g., REV.MED.CHILE, 1910), and the inclusion of papers authored by Latin American scholars. The following excerpt, written at the moment when the Nazis assumed power in Germany, illustrates this viewpoint:

We have to create an American culture joining together all the Hispano-American people. These nations, which have suffered many and tragic troubles, have a common orientation. These troubles are perhaps a consequence of the youth of our peoples. Hopefully, someday we will find the true way and reach the fate that awaits for our America, an America that looks at Europe, and that has always been tied to the cultural mission of Europe. (...) This journal was conceived as an expression of an America without barbarity nor servility (ATENEA-CONCEPC, 1933: 159-160).

The distinction between both international environments would last until the mid-twentieth century. The international political conflicts of the first half of the twentieth century did not have significant impact on the journals' geographical imaginaries (Wulf, 2013), but the US leadership after WWII marked the beginnings of a new era for the journals. The tensions arising from the Cold War worked their way through Latin American politics in the form of different US-led programs. Chile's academia could increasingly make use of US technical aid under the Truman policy (1947), economic-technical aid of the Alliance for the Progress (1961), funds from different private agencies, such as the Ford and Rockefeller foundations, and so on (Fuenzalida, 1984; Solovey, 2013; Beigel, 2016).

On the basis of 'modernization theory' (Rostow, 1960; Germani, 1971), the Chilean government also renewed its nation-building efforts. Scholarly expertise was seen to constitute an important input. Structural innovations, such as the allocation of research funds to the universities in 1954, the restructuring of the universities along disciplinary lines during the 1950s-1960s (Fuenzalida, 1984), and the establishment of new international (mostly US) partnerships, put the universities right at the center of scholarship. This meant for the journals that their links with the nation's ambitions, now reframed in modernization terms, would be mediated by their couplings with the universities.

In this context, many new journals could be established.²³ Some of them would subscribe to nationalist ambitions by using the language of development and modernization in their editorials (e.g., REV.BIOL.MAR.OCEANOLOG, 1955; CHUNGARA, 1972; ESTUD.ATACAMENOS, 1973; INV.MARINAS, 1985). Several journals also explicitly tried to define both their role in the country's modernization and their relevant audiences. Some even depicted themselves as part of the 'extension services' of the universities. The following excerpts illustrate these imaginaries:

The articles' style is quite direct, and it seeks a balance between the technical language of the specialist and plain language. This kind of communication is necessary to reach a broader audience of humanities students and high school teachers, who want to update or deepen some of their knowledge (ALPHA-REV.ARTES.LET, 1986: 5).

[With this journal] the Faculty of Agronomy goes beyond the boundaries of teaching and research activities to present the output of scholarly work and reflection to the whole country. (...) Communicating what is thought and done in classrooms, laboratories and research centers

²³ According to our datasets, at least 12 new journals were established in the 1950s, 38 in the 1960s, and 82 in the 1970s. Roughly 67% of them were published by national universities.

allows scholars to participate in and contribute to national development with a body of knowledge that would otherwise be wasted (CIENC.INVESTIG.AGRAR, 1974: 5).

An Anglo-American orientation also gained footing in Chilean communities in the last decades of the twentieth century. As the first bibliometric analyses of Chilean journals show, references to US publications began to replace European ones (Parada & Hoyl, 1970; Krauskopf & Pessot, 1980).²⁴ Some journals started to publish English-language papers. However, several Chilean journals increasingly emphasized their continental, Pan-American or Latin American orientation.

Disciplinary Differences

Whereas the foregoing overview aimed to present a general picture of changing geographical frames of reference, we now look at disciplinary variations. We particularly look at differences between the natural sciences, on the one hand, and the social sciences and humanities, on the other.

Natural Sciences

Since their early beginnings, the Chilean journals from the natural sciences perceived themselves as embedded within international, disciplinary communities. Although they aimed primarily at national and regional audiences, they intended to link these audiences with the mainstream international literature. In the late-nineteenth and until the mid-twentieth century, Spanish was omnipresent in these journals, even if some of them, such as *Anales del Museo de Historia Natural* (1891), *Actes de la Société Scientifique du Chili* (1891), and *Revista Chilena de Historia Natural* (1897), included articles published in French, English and German – mostly written by European and US scholars working either temporally or permanently in Latin America. Journals often included translated articles from either Europe or the US, but this practice diminished notably in the twentieth century when more and more Chilean and Latin American scholars started to contribute with their own original research and address international debates in these journals.

Until mid-twentieth century, the national orientation of the journals and their communities was strong. State agencies and scientific associations published several journals covering subjects that could have specific national relevance, such as (bio-)medicine (e.g., *Revista Médica de Chile*, 1872; *Revista Dental de Chile*, 1918; *Revista Chilena de Pediatría*, 1930; *Boletín del Instituto Bacteriológico de Chile*, 1942; *Revista Chilena de Neuro-psiquiatría*, 1947), engineering (e.g., *Anales del Instituto de Ingenieros de Chile*, 1888; *Minerales*, 1946), and agronomy (e.g., *Boletín de la Sociedad Chilena de Agricultura*, 1869; *El Campesino*, 1933; *Boletín de Sanidad Vegetal*, 1941). The universities also published some multidisciplinary periodicals (i.e., *Anales de la Universidad de Chile*, 1842; *Scientia*, 1934), which became outlets for scholars based in these institutions and for highly internationally-oriented disciplines, as astronomy, which lacked their own national journals.²⁵

These early journals gave particular importance to nation-building processes. Many changed their names as to emphasize their national orientation (e.g., *Anales del Instituto de Ingenieros de Santiago* became *Anales del Instituto de Ingenieros de Chile*), while others held meetings with and reserved pages for regional branches of professional groups (e.g., REV.MED.CHILE, 1882; 1915). Moreover,

²⁴ Our analysis of the eight Chilean journals included in WoS between 1976 and 1995 shows that these journals had an average of four out of five papers authored by Chilean scholars, and three out of five citing publications came from Chilean scholars. International articles came mostly from Latin American countries, with one out of ten articles (co-)authored by scholars based in Latin America, and one out of twenty by US scholars.

²⁵ Chilean astronomers have had a longstanding tradition of international training and publishing. This tradition would be reinforced with the installation of large internationally operated telescopes in the Atacama desert (Gemini-Sur and ALMA). Although some popularizing journals have been published (e.g., *El Universo*, 1957), to our knowledge no national scholarly journal for astronomy has ever been published in Chile.

several journals also engaged with the national territory as their empirical scope. One frequently finds reports of national and international scientific missions on Chilean soil, such as the national expedition to Tarapacá (ANALES.MNCH, 1891), the Belgian Antarctic Expedition (REV.CHIL.HIST.NAT, 1900), or the Argentinean *La Uruguay* Expedition (REV.CHIL.HIST.NAT, 1904).

In the 1950s, the expansion of the universities triggered important changes, as the universities themselves would start publishing several journals and become the most important publisher for the natural sciences. This expansion would also contribute to disciplinary specialization, with several journals aiming at the new university-based programs (e.g., *Revista de Biología Marina*, 1948; *Boletín de la Sociedad Chilena de Química*, 1949; *Comunicaciones del Departamento de Geología*, 1960; *Investigaciones Marinas*, 1970). Most new disciplinary journals would contribute to consolidating national scholarly communities. Their editorials systematically addressed the importance of local scholarship and of local training programs for scientists, as the following excerpts illustrate:

For some years, our scientific endeavors will be limited by the current state of the biological sciences, especially marine biology, within our country. Here, as well as in most of the Latin American Spanish-speaking countries, biological research is in an early stage, with the scientists' efforts oriented to organizing the scientific work and creating the material and intellectual conditions to develop this science (REV.BIOL.MAR.OCEANOLOG, 1948: 3).

The scientific development in the country requires the training of PhDs in the sciences. There is a shared consensus within the Chilean scientific community on the need for organizing fundamental PhD programs in Chilean universities (BOL.SOC.CHIL.QUIM, 1953: 3).

This focus on the consolidation of national communities was supported by universalist disciplinary orientations. Effectively, journals would adopt mainstream methods and approaches intending to resemble European and especially US journals, while addressing national modernization needs. *Boletín de la Sociedad Chilena de Química*, for example, reproduced opening statements of the 9th Latin American Conference of Chemistry (1972), which called for a science based on universalistic principles albeit aimed at '*establishing priorities according to our reality and giving inputs to change it*' (BOL.SOC.CHIL.QUIM, 1972: 12).

The regional sphere would then be conceived as the extended network of the journals. Many changes point in this direction: the number of articles from Latin American authors, the attention paid to regional conferences, the foreign editors for special issues, the couplings with Latin American and Pan-American organizations and associations, and so on. Some disciplinary differences in the geographical imaginaries within the natural sciences are manifest, too. Some journals aimed at regional audiences, for example, by focusing on the (Latin-American) continent (e.g., *Revista Geológica de Chile*, *Investigaciones Marinas*), while others established couplings with Pan-American organizations, which even backed new journals such as *Cuadernos del Programa Regional de Bioética* (1991). It is clear that disciplinary cultures interact with the (inter-)national orientations of the journals.

In the late 1960s, the journals increasingly oriented themselves to Anglo-Saxon models. Several editorial changes were introduced, notably the introduction of abstracts in English, the increasing use of peer reviewing, and the requirement of structuring papers according to the IMRAD format (e.g., ARCH.BIOL.MED.EXP, 1970; CHIL.J.AGR.RES, 1971).²⁶ During the following two decades, these practices would become standard for natural sciences journals, while the increasing number of articles

²⁶ IMRAD is the acronym for Introduction, Method, Results, and Discussion. It is now a commonly used way of structuring an article which presents original research (see also Bazerman, 1988).

published in English actually transformed many journals into bilingual venues (e.g., *Gayana*, *Boletín de la Sociedad Chilena de Química*, *Archivos de Medicina Veterinaria*).

Social Sciences and Humanities

Unlike the natural sciences, the social sciences and humanities were initially not yet characterized by disciplinary specialization processes. The journals that existed at the end of the nineteenth century moved fluidly between literature, philosophy, history and politics, and aimed at the dual mission of strengthening the nation-state while connecting it with 'western civilization'. They often included discussions that simultaneously opposed the former colonizing power (Spain) and embraced the 'western values'. Their geographical imaginaries were particularly sensitive to the broader social and political transformations with which Chile and Latin America were confronted.

During the nineteenth century, social sciences and humanities papers were published in general academic journals, such as *Anales de la Universidad de Chile*, *Anales de la Sociedad Alemana de Chile* and *Actes de la Société Scientifique du Chili*, along with several other short-lived journals, such as *Revista de Santiago* (1848-1855) or *Revista Chilena* (1875-1880). This situation persisted until the early-twentieth century, when the first disciplinary journals were established (e.g., *Revista Chilena de Historia y Geografía*, 1911). These journals focused on both Chile and (Latin-)America, among others by discussing the nation's and the continent's 'intellectual heritage' and their 'history canon' (e.g., ATENEA-CONCEPC, 1933; REV.CH.HIST.GEO, 1911).

Latin American thought was often depicted as a distinctive type of scholarship, which, nonetheless, embraced the universal value of modern rationality. However, the regional imaginaries were far from undisputed. Throughout the twentieth century, successive distinctions following international politics would replace the nineteenth-century opposition to the former colonizing power and change the journals' framing of their contribution to the world of science. During the first three decades of the twentieth century, editorials reflected the emergence of a (Latin-)Americanist discourse that sought to counter US foreign policy. However, as this discourse was also framed within modernist ambitions of social progress, it would not exclude all of the 'developed world'. On the contrary, it would merge the ideal of social progress with other socio-geographical constructions, with several journals aiming at Hispanic- or Iberian-American audiences (e.g., ATENEA-CONCEPC, 1924).

By the mid-twentieth century, a short-lived Pan-American rhetoric reframed the continental sphere from a territorial-linguistic basis (Hispano-America) to a territorial one (Pan-America) aligned with US leadership (e.g., REV.MUSIC.CHIL, 1947). However, the scholarly decay of modernization theory in the 1970s, the sharp decrease of US funds and the emergence of anti-imperialist approaches (i.e., dependency theory, philosophy and theology of liberation, post-colonial studies), would contribute to a new discourse that depicted Latin America in opposition to the First World (Europe and the US). This discourse stressed the centrality of Latin America as the relevant audience for the journals, while highlighting its particularities and scholarly traditions, as exemplified in the following excerpts:

The journal not just intends to provide information to Chilean scholars but also to provide information about the Chilean law system to foreign scholars and allow comparative studies between countries with shared legal traditions [viz. Latin America]. That is the sense in which the journal intends to link national and foreign scholarship (REV.CHIL.DERECH-PUCC, 1974: 5).

A new theological reflection is growing in Latin America. This reflection has a particular trait and contributes with new visions to the Church, expanding it to new zones hitherto unknown to Christianity. Latin American theological thought may open up a new dimension for the Church and Christianity (TEOL.VIDA, 1973: 227).

This orientation did not disappear in the 1960s and 1970s, when the expansion of the universities allowed for the expansion and increasing differentiation of the social sciences and humanities. In a variety of disciplines new journals emerged, such as economics (*Economía Chilena*, 1967; *Estudios de Economía*, 1973), anthropology (*Chungará*, 1972), international relations (*Estudios Internacionales*, 1967; *Diplomacia*, 1974), education (*Cuadernos de Educación*, 1969; *Estudios Pedagógicos*, 1976), social work (*Trabajo Social*, 1970), psychology (*Cuadernos de Psicología*, 1970), political sciences (*Cuadernos del Instituto de Ciencia Política*, 1976), and urban studies (*EURE*, 1970). Many of these journals were strongly coupled to various newly-established Latin American organizations, such as *EURE*, which started as the journal of the Latin American Council for Social Sciences (CLACSO) and *CEPAL Review* (1976), which was and still is the official journal of the Economic Commission for Latin America and the Caribbean (ECLAC).

Throughout the last decades of the twentieth century, several journals strengthened their orientation to the core: they began to introduce English as a publication language (e.g., *Acta Literaria*, *Estudios de Economía*), include English abstracts (e.g., *RLA*, *Terapia Psicológica*, *Taller de Letras*), adopt mainstream publication formats (e.g., *Estudios Filológicos*), or embrace international disciplinary definitions (e.g., REV.CIENC.POLIT-SANT, 1979). However, it is questionable whether these transformations significantly expanded their national and regional audiences. At the end of the century, journals continued to aim at Latin American audiences and frame their contribution to the world of science as Latin American scholarship.

Calculating internationalization

Globalization trends changed in important ways in the last decades of the twentieth century. Of particular relevance for the Chilean scholarly journals and their communities is the impact of the new scientometric databases and their indicators. In this section, we again start with a general overview of predominant geographical imaginaries and then turn to disciplinary variations.

Geographical Imaginaries

With the collapse of communist regimes in Eastern Europe and the rapid growth of some economies in Asia and various parts of the southern hemisphere, combined with the rapid development of new communication technologies and scientometric instruments, scientific internationalization entered a new phase. Many of the scholarly journals in Chile openly reacted to the new international indexes and databases. Scientometric interests did not only bring about changes in their frames of reference. The journals often also adapted their publication practices. They aligned their formats, publication language, and disciplinary coverage with their relevant international peers, and thus also distanced themselves from their traditional national (and regional) audiences. When inclusion and performance in indexes were used as evaluation mechanisms, the journals had to meet different expectations. The executive order n°40 of the Ministry of Public Education (1988) illustrates this:

The Scientific Journals Publishing Fund intends to fund editorial processes of Chilean journals that are part of the mainstream literature. This status is certified by entering international indexes recognized by the Council of Science and Technology (Art. 1).

The omnipresence of these databases altered the journals' functioning. This new rationale would encroach their rhetoric and practices, and take the place of their nationalist orientation. Whereas international indexation was initially announced by journals' editorials as a mere indicator of quality and international visibility (e.g., REV.MED.CHILE, 1973: 391; BOL.SOC.CHIL.QUIM, 1986: 1), during the first decades of the twentieth century it started to serve as key parameter for the journals' self-observation. And this influenced a broad range of other editorial choices.

In Chile, the digital turn was marked by the launching of the regional database SciELO in 1998.²⁷ State agencies took an active role in journals' internationalization by providing technical and financial support for their digitalization. Many journals saw in the digital, open-access policies of SciELO an opportunity to expand their readerships, as illustrated by the following extracts:

To facilitate the international visibility of selected Chilean scientific journals, the 'Comisión Nacional de Investigación Científica y Tecnológica' enforced the program 'SciELO Chile' with a website (www.scielo.cl) including full-text articles published in recent issues. Revista Médica de Chile is the first Chilean medical journal that appears in this website. (...) We expect that this website will give scholars easy access to our articles (REV.MED.CHILE, 2001: 131-132).

It is with great pleasure that we inform our collaborators that the 21st issue marks the end of the journal's first phase. From 2006 onwards, the journal will be published two times per year in both printed and electronic versions. This will be possible thanks to the incorporation of the journal into the SciELO index, which will allow us to expand our readership (ALPHA-REV.ARTES.LET, 2005: 5).

During the early-twenty-first century, other regional databases (both REDALyC and Latindex Catalog in 2002) also emerged seeking to counter the biased coverage of WoS while increasing regional scholarship's own visibility (Chavarro, 2017). On the whole, these new regional indexes, alongside SCOPUS (2004), came to build an ecology of indexes that would gain ground in delimiting, structuring, and gatekeeping the regional and global spheres of science. This environment changed how the journals perceived themselves. The way journals made sense of the indexes changed from an initial opportunity to gain international visibility to an unavoidable requisite for ensuring submissions and obtaining funding. Extracts from 2000s editorials may help understand this association:

Fortunately, the number of psychology journals has grown. However, articles are not easily available. Today, a local journal that reaches just a specific group of readers is worthless. Journals must become international. They have to be included in international databases, and ideally be part of the select group of indexed journals with high impact factor. Accordingly, journals should adopt the international standards of articles, format, periodicity, and so on (TER.PSICOL, 2003: 3).

The number of submissions has grown in recent years because of the increase of research activity and the new requirements of publishing in WoS-indexed journals (ARCH.MED.VET, 2004: 103).

These changing perspectives became of central importance to the journals themselves. They also changed the outlook of the journals and their communities. A view at the language of publication and the institutional addresses of the authors who published in the WoS-indexed Chilean journals is telling. Whereas until 1995 less than one in ten articles published in these journals were in English, this proportion grew to three in ten between 1996 and 2005, and to four in ten between 2006 and 2015. Likewise, whereas almost one third of the papers published between 1996 and 2005 had international authors, this share rose to about one half between 2006 and 2015.

Although lively controversies accompanied these transformations, the new ecology of indexes gained further salience in defining what would constitute relevant spheres of scholarship. Scientometric indicators would rapidly transform into evaluation criteria for universities, journals, and scholars

²⁷ SciELO (Scientific Electronic Library Online) is a non-profit, online, open-access scholarly database. This project soon grew in number of disciplines and countries; it expanded across Latin American countries, and in recent years to Spain, Portugal and South Africa.

across disciplines (see CONICYT 2020). The indicators would not just supply a technical basis for the measurement of global impact; they would also establish an 'indexes ladder' from regional to global databases. This hierarchy of internationalization would soon inform the editorial policy of many scholarly journals – first gaining indexation, and then climbing in the ranking.

Competing to have 'the best' (or most citable) paper was a priority for several journals. In so doing, journals used a variety of strategies, ranging from 'internationalizing' their audiences (by adopting English as a publication language, changing formats in view of indexation requirements, and so on) to marketing strategies (i.e., presenting themselves as official 'representatives' of regional networks). Our analyses show that from 2010 onwards this orientation became omnipresent in 'international' Chilean journals. Again, however, it is important to pay attention to disciplinary differences.

Disciplinary Differences

In the first decades of the twenty-first century, WoS started to expand its coverage to several non-English journals (Collazo-Reyes, 2014). Aiming to legitimate its global claims and improve its position in the new ecology of indexes, WoS included an increasing number of Chilean journals (as well as other journals from the semi-periphery). Since 2006, this policy change has clearly affected the international status of these journals and their communities. In this section, we look at the ways in which different disciplines reacted to the challenges these changes brought about.

Natural Sciences

Although the earliest international indexations of Chilean journals date from the 1960s and 1970s (WoS included *Archivos de Biología y Medicina Experimentales* in 1965 and *Revista Médica de Chile* in 1972), the language of scientometrics (impact factor, citations, rejection rates, journal rankings) only began to appear consistently in editorials during the 1980s and 1990s. This was a discursive turn editorially justified by the need to align the journals with 'international science'. A journal's worth would relate to the number of cites its papers receive (e.g., BOL.SOC.CHIL.QUIM, 1981).

By the early 1990s, English had gained ground as a publication language in natural sciences journals in Chile, triggering a debate about the importance of publishing in Spanish. Following on from this debate, which epitomized the shift in geographical imaginaries of the world of science, many journals changed their name into English as to emphasize their international orientation. Some of them became English-only periodicals (e.g., *Biological Research*, 1992). This shift is also reflected in the publication patterns of the 23 natural sciences journals that had been indexed by WoS by 2015. For example, the proportion of articles in English grew from about one third between 1996 and 2005 to about one half between 2006 and 2015 (see Chapter Two).

This turn, however, was not exempt of controversies. The tensions surfaced across a whole range of issues, like discussions about the return of scholars exiled during the latest dictatorship (1973-1989) (e.g., ARCH.BIOL.MED.EXP, 1991), the content of Ph.D. training programs (e.g., BOL.SOC.CHIL.QUIM, 1985; ARCH.BIOL.MED.EXP, 1992), and the establishment of international research networks (e.g., BOL.SOC.CHIL.QUIM, 1994). This extract shows the problematic transition:

How many of the scholars currently in training would abandon their academic careers to address the country's needs? How much social sensibility is needed to escape from the evaluation net within which our scholars are trapped and which forces them to pay attention to publication scores rather than to the impact they could have in their own country? Are the evaluation systems, grading projects, and scholars' evaluation disconnected from reality while the science administrators continue looking to the world rather than to their own country? (REV.CHIL.HIST.NAT, 1990: 146).

Controversies aside, scientometrics and its observation methods seem ubiquitous in the twenty-first century. Several natural sciences journals now use scientometric indicators to promote and justify changes in their language of publication, name, and even the appointed Editor-in-Chief. The following quotations show how the language shift is editorially justified:

Years ago, national pride was conceived in terms of publishing only in the native tongue, but that is contrary to the scientific ideal of a human enterprise without borders (...) National pride must be understood nowadays as having the means to serve the international community (BIOL.RES, 1998: 323).

Communications have changed our world so dramatically that we need to adapt BSCHQ [Boletín de la Sociedad Chilena de Química] to the international scientific community standards. I think it is time to introduce drastic changes to improve the position of our journal in the scientific world. These changes should imply improving its format, adopting English as the only language for publication, including a table of contents with graphic abstracts and finally changing the name of BSCHQ. In fact, its name sounds rather outdated and does not match well with the standards of the scientific papers that are currently published. I sincerely believe that the suggested modifications will lead to a substantial increase, not only in the number of submitted papers but also in the ISI impact factors (BOL.SOC.CHIL.QUIM, 2002: 199).

Since January, we only accept review articles written in English. This is part of our effort, in recent years, to contribute to the steady increase of our impact factor (ARCH.MED.VET, 2011: V).

Contrarily, several natural sciences journals make sense of their participation in the regional sphere and their continental couplings as status-markers, claiming to 'represent' Latin American scholarship, as they are often the single (or the most important) WoS-indexed Latin American periodical in their respective disciplinary fields. The high status that WoS indexation meant, the possibility (in some of them) to publish in Spanish, and the widespread use of performance-based assessment across Latin America reinforced their positioning in the regional sphere. According to our analyses, the inclusion of Latin American authors in the WoS-indexed Chilean journals augmented dramatically in a decade span, from one in ten papers (1996-2005) to one in four (2006-2015). This trend is indicative of the particular regional/global entanglement of the natural sciences, and highlights the threats but also the opportunities that this environment brought to national and regional networks.

Social Sciences and Humanities

The first indexations of journals in the social sciences and humanities date from the 1980s (WoS included *Estudios Filológicos* in 1982 and *Revista Chilena de Literatura* in 1984). However, unlike natural sciences journals, the social sciences and humanities first reacted by addressing Latin American audiences rather than the Anglo-Saxon world. Several journals began to accept articles in Portuguese (the second most spoken language in Latin America), devote more space to regional news and conferences (e.g., ESTUD.ATACAMENOS, 1984; REV.MUSIC.CHIL, 1993; ALPHA-REV.ARTES.LET, 1994), or call for stronger regional networks (e.g., REV.MUSIC.CHIL, 1992; TEOL.VIDA, 1995). Though these practices reinforced the regional orientation of the journals, this orientation would be severely challenged during the decades to come.

The sudden indexation of several Chilean journals in the social sciences and humanities during the second half of the 2000s and the new accountability mechanisms used by the universities brought about a landmark shift for the journals. Several of them also described their WoS-indexation as a

paradigmatic shift, and tried to adapt themselves to the changing expectations with which they were now confronted. Selected excerpts may illustrate these changes:

This issue [included in WoS] marks a new phase in the process of internationalizing the journal. We have introduced changes in the editorial structure, such as increasing the number of papers written in English, to broaden our current pool of authors, peer reviewers and readers (CHUNGARA, 2005: 4).

We intend to make the necessary efforts to (...) adjust the journal to international standards. That would allow us to increase our presence in international indexes and catalogs, expand our readerships, and then fulfil all the requisites of full scientific indexation [in WoS] (REV.CHIL.DERECH-PUCC, 2007: 199).

Despite the omnipresence of the scientometric indexes, disciplinary differences are also manifest. Whereas some journals started to include scientometric information (e.g., ESTUD.ECON, 2013; TER.PSICOL, 2012) or become bilingual periodicals (*Estudios de Economía*), others maintained their regional orientation (e.g., *Eure*) or even stressed the damaging effects that the Anglo-Saxon orientation could have on the humanities (e.g., REV.CHIL.LIT, 2012; 2013; ATENEA-CONCEPC, 2014). Interestingly though, these different practices were all justified in disciplinary terms. While some journals referred to the universalist models developed within their disciplines (e.g., psychology or economy), others advocated their regional scope and/or publication practices with reference to the local orientation of their disciplines (such as territory, 'heritage', and/or language).

These various practices highlight the relevance of disciplinary distinctions for how journals assess and face the opportunities and threats of the new environment. Nonetheless, journals' generalized practices such as maintaining Spanish as both the language of the name and the language of publication may reflect the prevalence of the regional relevance of journals. This correlates with publication and citation patterns. According to our analyses, even recently (2006-2015) less than one in ten articles in the WoS-indexed Chilean journals is in English, while two in three citations are from either Chilean or Latin American scholars.

Conclusion

In the nineteenth century, the rise of nation-states created new spaces for scholarship. Different national academic systems were established; different national scholarly communities organized themselves by means of their own associations, journals, conferences, and so on. Even at present, much scientific work is still contained within the boundaries of specific nation-states, if only because the labor market, career paths, institutions and funding continue to be predominantly national in most parts of the world. At the same time, however, there is little doubt that science has become more international in the past two centuries. To make sense of the current internationalization pressures, it is useful to put the shifting expectations in historical perspective.

Already in the nineteenth century, increasing international collaboration went along with the reinforcement of global intellectual orientations and value systems, like those expressed in the universalist ethos of science (Crawford et al., 1992: 16). Evidently, however, these universalist ambitions were not part of a self-realizing program, able to transform a plurality of heterogeneous national communities into one unified global system of science. As available scientometric analyses of publications and citations show, the modern global system is fundamentally characterized by its core-periphery structure. The relations within the world of science are characterized by asymmetry, by unequal distributions between the dominant regions and the (semi-)periphery (e.g., Wallerstein, 2004; Paasi, 2015; Beigel, 2016; Heilbron et al., 2018). Against this background, it is, in our view, not

only important to analyze how scholarly communities in the (semi-)periphery are embedded in global scientific networks, but also to examine the ways in which these communities make sense of and respond to the changing expectations in the increasingly global world of science.

On the foregoing pages, we have analyzed the predominant socio-geographical imaginaries of the research communities and their scholarly journals in Chile. Over the last century and a half, these journals identified and targeted different relevant audiences, at the national, the regional (or continental) and the global level. The relatively sudden transitions, which took place at the beginning of the twenty-first century, are in important respects elicited by the rapid diffusion of internationally-oriented bibliographic databases and scientometric instruments. Though contested, the numerical representations of the 'world of science,' which WoS and other databases produce, have become widely used as indicators of international visibility or impact. These representations not only enable new forms of knowledge but also new modes of interventions; they are able to transform different scientific communities into the target of both research and policy interventions. In important ways, the editorial changes, which many Chilean journals have implemented in the course of the last decades, respond to the presumed requirements for inclusion in WoS and other databases.

We have also shown that internationalization dynamics are entangled with disciplinary distinctions. Although nationalization tendencies were strong in the natural sciences during the nineteenth and early-twentieth centuries, globalization nevertheless was quite self-evident for the natural sciences, given the fact that their object – 'nature' in its different forms – transcends national boundaries. The trends are different for the humanities and the social sciences. Disciplinary specialization here mostly took place at later moments in time. The objects studied in the humanities and the social sciences are also more context-dependent than in the natural sciences. Altogether, the globalization of these disciplines seems to be a more diverse and contradictory process than that of the natural sciences. Next to local and national frameworks, both continental and global horizons have gained relevance. The confrontations between these different frameworks constitute specific challenges for the re-orientation and re-organization of the social sciences and humanities in Chile. The establishment of regional databases also seems to reinforce regional/continental orientations.

Our analysis thus shows that globalization processes in science depend on a range of structures and institutions. They depend on the formation and institutionalization of continental and global spheres, and the acceptance of 'international' standards to measure national or local accomplishments. They also depend on disciplinary characteristics, including differences in indexation trajectories across the disciplinary cultures. Moreover, internationalization pressures may be translated into a variety of editorial criteria (language of publication, format, disciplinary scope, and so on). Our analysis suggests that internationalization is not a synonym for the gradual extension of scholarly communities and their predominant socio-geographical imaginaries. Nor is it a synonym for the formation of one worldwide community of scientists with a shared set of normative and cognitive presuppositions. These processes remain characterized by struggles, conflicts, and confrontations.

Of course, national academic systems may diverge in how they stimulate internationalization. They may adopt different measures and different incentives. Currently, many different national varieties of internationalization policies exist. The internationalization trajectories of the Chilean journals and communities we included in our analysis show some of the wide-ranging effects of such policies. It would be misleading to draw more general conclusions, although it is reasonable to postulate that other scholarly communities in the semi-periphery are being confronted with similar challenges. To understand how exactly the ambitions of international science are articulated in different parts of the world seems to be of high importance for understanding the evolution of the field of science.

4

Journal editors facing scientific indexes: Internationalization pressures in the semi-periphery of the world of science²⁸

Peer-reviewed journals occupy a central position in science, but they are also routinely monitored in the world of science. The inclusion criteria and the indexes of databases, such as Web of Science and Scopus, do not just identify the value of these journals, but also define what is valuable. In this chapter, we discuss the opportunities and problems currently facing scientific journals edited in the (semi-)periphery as perceived by their editors. We analyze the editors' strategies to internationalize their journals, the negotiation processes with their traditional audiences, and the conflicts that emerge in the current internationalization processes led by international scientific indexes. The chapter concludes reflecting on the possibilities and pitfalls of this representation of the world of science, especially for so-called semi-peripheral communities.

Key words: Journal editors, internationalization, scholarly indexes

Introduction

Journals occupy a central position in science. Scientists are not only pressed to publish frequently (publish or perish), but journals are also expected to monitor the flow of ideas and to uphold the standards that allow members of scientific communities to work together to extend knowledge. According to some sociologists, the journal literature displays how science is supposed to work. For Robert K. Merton, for example, the review system, implemented by journal editors, has been '*crucial for the effective development of science*' (1973: 461). Editors and experts, called on to judge whether a submitted paper ought to be published, are accordingly seen as doing their duty not only to a journal's reputation and prestige, but to science as a whole. Despite its different imperfections, '*the structure of authority in science (...) provides an institutional basis for the comparative reliability and cumulation of knowledge*' (1973: 495). This structure of authority sets science apart from other forms of knowledge acquisition and knowledge exchange; it displays that/how the scientific system is largely self-organizing and self-policing (Stichweh, 1992).

This approach has been criticized, however. Historians of science have looked in more detail at the history of this medium of scientific exchange, and the ways in which the boundaries of this system have been mapped out. Alex Csiszar (2018), for example, has highlighted how bibliographical tools have become part of the invisible infrastructure of scientific research and, more particularly, how the Royal Society of London's *Catalogue of Scientific Papers* was instrumental in defining and delimiting the scientific journal. From the mid-nineteenth until the mid-twentieth century, the inclusion criteria of the *Catalogue* (and similar lists modelled after it) have shaped '*imaginaries not only of the scientific literature but of the identity of researchers*' (2018: 238). In this light, it is necessary to link the history

²⁸ This chapter is co-authored with Raf Vanderstraeten, and a shortened version of it is accepted for publication in *Learned Publishing*.

of science with the politics of science. Instead of merely displaying forms of systemic self-organization, the history of scientific journals may show how specific conventions and boundaries are socially enforced.

This kind of approach is also relevant in the light of contemporary developments in science. It is important to attend to the ways in which information technologies, constructed to extend access to knowledge, operate as technologies of valuation. The inclusion criteria and the indexes of databases, such as Web of Science and Scopus, are nowadays routinely used to evaluate scientific output (see Whitley & Gläser, 2007; Hessels et al., 2019). But although the usage of these ‘performance-based’ evaluation measures has been criticized on several occasions, and a variety of scientometric studies on their ‘unintended consequences’ now exists,²⁹ it is not at all clear how the scientific indexes are changing the ways in which research takes place. Indexed journals hold a privileged position within science, but it is not clear how the value ascribed to publishing in these media has an influence on the types of research projects that scientists choose to pursue, the modes of collaboration that they are apt to engage in, and/or the kinds of knowledge that finally make it into print.

Despite their ambitions to include the world’s leading journals, databases, such as Web of Science and Scopus, are known to be biased towards Anglo-Saxon journals published in the Western center of the world (e.g., Münch, 2014). However, the global diffusion of performance-based evaluation measures also puts scientists and journals in the (semi-)periphery of the world of science under pressure. Internationalization pressures confront them with a range of new expectations regarding ‘output’ (see Stöckelová, 2012; Kreimer, 2019). Because the scientific databases have acquired a prominent role in research assessments, their selection politics and rankings have changed the environment within which scientists and journals in different parts of the world have to position themselves. One way to explore the political consequences of contemporary scientific information technologies is by analyzing the influence which the inclusion politics of new scientific databases has on scientists and journals from or in the (semi-)periphery of the world of science.

While the commercialization and the geopolitics of scientific knowledge occupy a central place in a range of recent studies on scientific exchange and collaboration in the (semi-)periphery of the world (e.g., Gazni, 2015; Paasi, 2015; Collazo-Reyes et al., 2017), little is hitherto known about how journals in the (semi-)periphery react to internationalization pressures and try to position themselves in the new global science scenario. Little is also known about the range of practices, strategies, and norms, which these journals try to enforce. A more detailed look at their editorial functioning is still largely missing within debates over the current state and the future of scientific communication.

In this chapter, we discuss some of those neglected aspects by focusing on how editors-in-chief of leading Chilean journals perceive the ongoing transformations of the world of science, and how they navigate within this new environment. By focusing on journal editors and the ways they make sense of the scholarly publishing world, we gain access to aspects of journal functioning that can hardly be captured by standard scientometric or quantitative approaches. While focusing on journals edited in Chile gave us insights into the perceived problems and opportunities in Chile, the relatively strong national and continental networks, within which these journals are historically embedded, also allow us to address issues which are of broader relevance within the world of science (see also Packer, 2009). Moreover, the wide reach of the transformations analyzed allows us to discuss some key challenges

²⁹ For criticisms of performance-based evaluations, see, for example, the San Francisco Declaration on Research Assessment (DORA) from 2012, the Leiden manifesto from 2015, or cOAlition S from 2018. For an overview of the findings of scientometric studies, see Gingras (2016).

with which scientific journals in the (semi-)periphery are confronted and interrogate the role of these venues in the current world of science.

This chapter proceeds as follows. We first provide some background about journal publishing in Latin America and Chile. Afterwards, we present our methodology and data. The third and main section is devoted to the presentation of the empirical findings. We focus on how the structures of the new publishing environment are perceived, how self-monitoring mechanisms are put to use, and what management strategies, aimed at maintaining or improving the journals' position in the perceived environment are developed. In the fourth and final section, we briefly summarize our main findings and discuss some more general scientific and political implications of our study.

Background

Latin America has a relatively long tradition of scientific journal publishing, with the first journals dating from the eighteenth century. During the following centuries, the growth and specialization of these media went hand in hand with the development of national scientific institutions, especially universities (Vessuri, 1987). It is estimated that the number of scientific journals produced or edited within Latin America did account for around 3 to 4% of the world's total at the end of the twentieth century (Cetto & Alonso-Gamboa, 1998).

At the beginning of the early-twenty-first century, new indexing services have started to change the space within which these journals have to position themselves. On the one hand, growing concerns about the visibility of the scientific work conducted within the world's 'periphery,' including Latin America, have led to the creation of a range of new databases aimed at covering the scientific output from 'peripheral' parts of the world (SciELO, Redalyc, Latindex, etc.). On the other hand, the world's most influential set of publication and citation databases, viz. Web of Science (WoS), has started to implement new editorial policies. In reaction to the rise of regional databases, as well as the launch of Scopus in 2004, WoS has substantially expanded its global coverage. While, for example, WoS covered 69 Latin American and 13 Chilean journals in 2006, it included 248 Latin American and 45 Chilean journals in 2009 (Collazo-Reyes, 2014). As a consequence, the new editorial policies of WoS have helped to improve the visibility of Latin American and Chilean periodicals, too.³⁰

Journals, which are included into databases, such as WoS or Scopus, have to meet several minimum criteria, however. They are required to consist of peer-reviewed content, to be published without delays or interruptions in the schedule, to provide content that is relevant for and readable by an international audience (often specified in terms of: to have English-language abstracts and titles, and provide references in Roman script), to make the full journal content available online, to dispose of a 'good' English-language journal home page, to have ethical guidelines and publication malpractice statements, and so on. All indexed journals are also regularly re-evaluated on the basis of these or similar criteria. Moreover, these journals often compete with one another for standing in their field (e.g. Delgado, 2014; Collazo-Reyes et al., 2017). For most journals, citation rates, compared to peer journals in the same field, have become of focal concern.

In this sense, the expansion of indexing services has so-called performative effects (see Callon, 2010). It now is more or less common practice to use scientometric indicators to assess the output of individual scholars or research groups, but the selection and evaluation criteria of databases, such as WoS and Scopus, are also used as yardstick to assess the quality of different scientific outlets (de

³⁰ Similar evolutions took place in other parts of the world. Since 2008, WoS hosts a number of regional indexes, including the Chinese Science Citation Database, the Korea Citation Index, and the Russian Science Citation Index.

Oliveira et al., 2015). Both scholars and science administrators often evaluate the reach and impact of scientific journals on the basis of their position in rankings and other indicators.

Acceptance into international databases may thus have important ramifications for the journals themselves. In fact, many Chilean journals have in recent years broadened their horizons. Many of them have increasingly oriented themselves to the continental level. For the Chilean journals, now included into WoS, this evolution is significant: the proportion of papers, which are (co-)authored by Latin American (but non-Chilean) scholars, has increased from roughly 10% in the period 1996-2005 to about 24% in the period 2006-2015 (see Chapter Two; see also Gazni, 2015). The Chilean journals, covered by international databases, now strengthen the scientific networks on the Latin American continent; the prestige, which comes with international indexing, and the spread of performance-based assessments across the continent, is changing their position in the broader field.

The indexing services have also propelled the commercialization of academic publishing. Several Latin-American journals have in recent decades been bought by major commercial publishers, such as Elsevier and Springer. Scientific journals, which are internationally visible, become of interest to commercial houses, which try to expand their hold on the market (Packer, 2009).

The indexes and their rankings have generated new spaces, within which scientific journals have to perform. They have created and structured larger territories, within which these journals have to compete for visibility and impact. Of course, not all the ensuing pressures and demands point in the same direction. The transformations, with which journals are nowadays confronted, rather seem to bring about a variety of opportunities, challenges, and threats. They also seem to call forth a variety of reactions. One may expect that the transformations gain special meaning within peripheral parts of the world of science, whose output was long not included in major scientific databases. We here focus attention on scientific journals in Chile, but we believe that the decisions and choices, which these journals and their editors have to make in view of perceived internationalization pressures, exemplify some of the main challenges in the present world of science as a whole.

Data and Methods

In order to gain insight in how journals make sense of the world of science, we opt for a qualitative approach based on interviews with the editors-in-chief of leading Chilean journals. We selected these experts as relevant informants not just because of their familiarity with the daily editorial practices, but also, and more importantly, because of their institutionalized authority. We focus attention on the deliberations and decision-making processes of these actors, because *'they are in a position to actually put their own interpretations into practice'* (Bogner et al., 2009: 7).

We interviewed the editors-in-chief of 12 journals, which are all included in WoS, as inclusion into the WoS-databases is seen to symbolize international visibility. To select our experts, we used a theoretical sampling method that was based on the principles of 'maximum structural variation' and 'minimization of differences' in Grounded Theory (Glaser & Strauss, 1967). The first principle prompted us to look for the widest possible range of interpretations and practices in order to be able to sketch the structured complexity of the field as a whole, while the second principle made it necessary to compare different kinds of data (gathered by means of interviews and analyses of supplementary material, such as journal websites) in order to identify the general characteristics pertaining to the field and remedy remaining unclarities. This sampling method was used until a 'saturation point' was reached and the inclusion of additional data could no longer be expected to enrich our analyses. The interviews and analyses took place between 2016 and 2019. All the interviewees were informed about the research objectives and agreed to participate in the study. As stated in the informed consent letter, we hereafter do not provide details, which might make it

possible to identify the interviewees and/or their journals. Table 1 instead presents an overview of the main structural features, which oriented the sampling process.

Table 1. Editors-in-chief interviewed

Structural features	Categories	Number of interviews
Disciplines	Social Sciences and Humanities (SSH)	6
	Science, Technology and Medicine (STM)	6
Publisher and/or Sponsor	University	8
	Scientific society or research center	4
Language of publication	Spanish (and Portuguese) only	3
	English only	4
	Bilingual (Spanish-English)	5

Regarding publisher and/or sponsor, it is important to note that all the SSH (Social Sciences and Humanities) journals included in the sample are published by universities or university presses, while two of the STM (Science, Technology and Medicine) journals are now published by globally-operating companies. We classified these two journals on the basis of their sponsor (university vs. scientific society or research center), given the similarities between them and the other journals in these same categories, but we pay attention to the particularities of these journals when relevant. Regarding language of publication, it needs to be added that all the journals in our sample that publish only articles in Spanish (and Portuguese) belong to the field of SSH, whereas all the English-only journals situate themselves in the field of STM. The periodicals we classified as bilingual (3 SSH and 2 STM journals) diverge quite a bit: some of them included a few articles in English but remained predominantly Spanish-language journals, whereas others have by and large become English-language journals but occasionally still include some Spanish papers. These differences are not correlated with the disciplinary orientation of the journals.

All of the interviews covered the history of the journal, perceived transformations in the world of publishing, the journal's goals and editorial strategies, the audiences targeted at, and institutional couplings. The interviews ranged from 45 minutes to two and a half hours. All of them were in Spanish³¹, voice-recorded, and fully transcribed.

The transcriptions were qualitatively analyzed using Atlas.ti. We first used open coding to select and identify relevant ideas and phrasings of the interviewees. By assigning codes to these selections, we were able to sort and structure the mass of raw data. We next organized this set of codes in double-entry tables (codes/interviewees), thereby comparing the different bits of texts and the different interviewees. This procedure allowed us to keep track of the heterogeneity and variance in the data (including inconsistencies in arguments and differences between interviewees). The initial set of codes was then refined. On the basis of our analysis, we identified both more comprehensive and more accurate codes for the data material. After two iterations of this inductive process, we classified the data into a set of twelve codes and grouped them into three code families.

These code families and the data material were then again linked with our broader research design. By means of tables, we particularly studied the relevance of the main structural features, which had oriented our sampling process (disciplinary aim of the journal, publisher and/or sponsor, language of

³¹ For reasons of readability, we here present English translations of the quotations. The original quotations in Spanish are available in Annex 3.

publication). In other words, we analyzed the data covered by each code again in light of the relevant distinctions of our study. The final set of themes constructed through this process constitutes the basis for the organization of the findings section: how the world of scholarly publishing is perceived, how journals monitor their own position in the world of science, and how the editors try to come to terms with journal management tasks and demands.

Findings

We present in this section the main results of our analyses. Although we are very aware of the fact that our qualitative approach imposes limits on the generalizability of these results, the strength and extent of the ongoing transformations also make it reasonable to assume that journals and scientists in other (semi-peripheral) parts of the world are currently facing similar challenges.

The new world of scientific publishing

The indexes have created new spaces, within which the journals have to perform and within which their performance is continuously monitored. All interviewees spoke of hierarchization processes, which structure these spaces, and which are first and foremost driven by the major databases and indexes, especially WoS. They described two entangled prestige orders, one of authors and one of journals, which reinforce each another. While high-ranked journals are able to attract highly-cited authors (i.e., authors with high h-index), the prestige of high-ranked journals is normally translated into more citations to the papers published in them, and thus to the consolidation of both prestige orders. Interestingly, the shift in literature search strategies, from manually going through entire journal issues to searching for single papers in electronic databases, does not seem to affect this entanglement. The editors mention several explanations for this apparent contradiction, such as the increased visibility of high-ranked journals and the ranking-consciousness of citers, but they all underline the impact of international databases on literature search strategies and prestige hierarchies.

Against this broader background, they give much attention to the inclusion and performance of the journals in the international databases. Several interviewees indicated that they have included the likelihood of citations as editorial criterion, while all of them have gained expertise in identifying and adapting their journals to the various scientific databases and indexes. The following quotation illustrates the influence of those databases on the aims and scope of journals.

Because the journal is indexed in these clubs or international databases, we have to adapt to them. Then, what should we publish? That is novel to science. Many authors think, 'I have an article about something I developed, and it is of national interest,' and want to publish it in this national journal. But the context has changed nowadays (...) In fact, when we receive an article on a very specific and local topic, it doesn't fit [in the journal]. We reject it, because it only has local importance. (Interviewee 4, STM journal)

The rise of scientific databases has not only positioned the Chilean journals within a global environment, however. It has also structured regional spaces. All interviewees identify SciELO³² as the most important regional database within Latin America, which provides technical and financial support for the electronic publication of journals, and distributes their content free of cost. All are also positive about the open access publishing model of SciELO (which improves the visibility of their journals), although their disciplinary background leads to diverging assessments of SciELO's impact.

³² The SciELO (Scientific Electronic Library Online) database is managed by national agencies (CONICYT or the National Council for Science and Technology in the case of Chile). This facilitates the easy coupling of SciELO standards with national science policies.

Whereas SciELO is (just) one of many databases for several STM editors, it is perceived to be key to improve the visibility and even secure the future of their journal by most SSH editors (especially when their journal is dependent on the technical infrastructure provided by SciELO).

At the same time, SciELO's role in journal publishing is not uncontested. As one interviewee told us, some Chilean universities have difficulty with the fact that the DOI names (Digital Object Identifier), which SciELO assigned to the journals it supports, refer to CONICYT, which finances SciELO in Chile, and not to the universities, which sponsor the journals themselves. For the Chilean universities, this practice damages their own position in international rankings. Indirectly, they thus also compete with CONICYT for visibility within transnational scientific spaces. The current global scientific scenario has affected the relationships between local actors in several aspects, creating new opportunities for collaboration but also for competition. Despite such tensions, however, all the journal editors highlight the convergence between the regional and global databases. In this regard, the SSH journal editors express themselves in the most pronounced ways:

Being included into SciELO is the natural way to jump to them [WoS and Scopus], because, in the end, it secures quality. And we, as journal, do not have a direct relationship with Scopus or WoS, but [only an indirect one] through the publication of the articles on the SciELO webpage, from where they create links to us. (Interviewee 5, SSH journal)

We never applied for inclusion into SciELO or other [regional] databases, and everyone, who applied, told us how long and difficult this whole process was. But, when we were included by Thomson [WoS], SciELO invited us, they asked us to be included into SciELO. Then, all the others [viz. regional databases] started inviting us, although we never applied for one of them. (Interviewee 12, SSH journal)

Somewhat similar tensions are manifest with regard to the author processing charges (APC), which authors have to pay to make their work available open access. Whereas all STM journals included in our sample currently make use of APC, none of the SSH journals does. Not surprisingly, the editors of the SSH journals tend to be more critical of APC and the business model behind it, even depicting it as 'infringing on the Open Access ethos' (Interviewee 2, SSH journal). For all interviewees, however, APC is an important factor driving the expansion of international publishers – and a new source of competition between journals. Most of the interviewees also told us stories about how commercial publishers are 'buying' small journals, because APC could constitute an important new source of income for them. This worldwide extended practice, however, tends to be more important for STM disciplines (see Larivière et al., 2015). In fact, only STM journals in our sample actually received offers.

Next to structuring new spaces within which their journals have to perform, another topic, discussed by the interviewees, is related to the ethical standards, which the databases are believed to monitor. In light of the performance pressures with which editors and journals are confronted, the databases are at times perceived as 'ethical guardians.' They are known to label certain editorial strategies as unethical (e.g., promoting journal self-citations), and to control for possible biases in the peer review and selection process (e.g., selecting authors on the basis of their h-index). They also have the ability to sanction contraventions; they can exclude (repeat) offenders from the database. Remarkably, all the editors referred to the role played by this editorial ethics, independent of their actual familiarity with the databases' ethical policies. In many cases, the 'folk tales' surrounding these policies are very different from the way these databases actually assess publication ethics.

Given the high number of paper submissions, the increasing competition between journals, and the unprecedented online visibility of their journal content, the editors themselves also feel increasingly called upon to check for publication malpractices. In this regard, disciplinary differences (again) play a

considerable role. While the SSH editors tend to rely heavily on the peer review process and the referees, most of STM editors are directly involved in overseeing publication ethics. Several of them make use of international associations, such as Crossref, to screen for plagiarism, while some also check the references in submitted papers in order to avoid referrals to non-peer-reviewed texts, retracted papers, or articles published by so-called predatory journals.

As a consequence of all these transformations, journals are currently expected to perform in spaces or environments, which are quite different from those, which existed a few decades ago. The rise of international databases and indexes has created and structured this new space; concerns about the position of their journals in this transnational environment have been reinforced by the increasing emphasis on scientometrics at the level of national and local research policies. Together with the institutionalization of publication and performance pressures, several concomitant transformations are currently also taking place, such as the advance of new audiences (e.g., graduate students) and of 'publication businesses' (e.g., writing skills courses, indexing consultancy). These entangled shifts are, according to our interviewees, key to understanding the current publishing environment:

Currently, we are facing a terrible trend in Chile, because Chilean scholars say 'if it's not quartile 1 or quartile 2, the journal doesn't have value' (...) As a consequence, I no longer receive so many articles from top scholars in Chile (...) They ask instead their students; when they have Ph.D. students, they send their paper to us. It is not the same with other [Latin American] countries. Publishing in our journal is very important for Peruvian, Colombian, or Ecuadorian scholars. Mexico is similar [to Chile]. As they are being paid for publications, they are publishing a lot, and publishing has become mandatory for Ph.D. students. So, we are receiving a lot of [papers based on] dissertations. (Interviewee 6, STM journal)

[Publishing] scientific journals today is more about external evaluation and about the intellectual and academic status of the group of people [which assumes responsibility for the journal] than about facilitating the expression and discussion of particular ideas (...) The university also pressures us to ensure indexing of the journal by these databases (...), because this goes hand in hand with all the things imposed by accreditation agencies and the higher education market forces. (Interviewee 9, SSH journal)

Self-monitoring mechanisms

The editors-in-chief not only try to make sense of the environment within which journals need to perform, but also make use of a variety of information sources to monitor how their own journals perform. They do not directly draw consequences from the type of metrics, which are now routinely compiled, but also make use of some particularities of these journals – their history, institutional partnerships, standing in the field, and so on – to give meaning to this information. In addition, most editors referred to the high speed, with which scientometric information is now becoming available, while it pressures them to permanently reassess their journals' position. The never-ending stream of scientometric information puts the use of 'traditional' editorial criteria under pressure:

When I'm rejecting about 80% of the articles it is because I'm looking for quality. Striving for this quality should result in cites. However, when the impact factor doesn't grow [it means that] I'm not doing well. (Interviewee 4, STM journal)

All the editors-in-chief describe a transition in the kind of data used for self-monitoring purposes: from mostly qualitative, rather impressionistic information, based on the journal's tradition or the opinion of peers (other scholars and other editors-in-chief), to quantitative data calculated on the basis of the journal's submission and publication history and/or international indexes (mostly WoS and Scopus).

Not all editors, however, are willing to passively undergo this transition. Although the STM journals in our sample, which are distributed by major commercial publishers, tend to rely almost exclusively on metrics, the editors of most other journals incorporate 'other' sources of information in their decision-making. As the following excerpts illustrate, they make use of this information to re-emphasize the relevance of the national or regional 'market' for their journal, and to oppose the narrowness of some dominant indexes.

I think that it is good to publish papers in Spanish from time to time. It facilitates the diffusion of knowledge to other spheres. Likely, such papers are not going to be highly cited. But they are going to play a role in domestic discussions, and that's good. It's good to maintain that kind of influence. (Interviewee 12, SSH journal)

I'm part of this international committee. This topic [the relevance of the Journal Impact Factor] emerges there from time to time, and every journal which participates, more than 15 international journals, agrees about the fact that the impact factor is not a decisive measure. Then, why worrying about non-critical things? More important is to appear in time and to ensure the overall quality of the journal. (Interviewee 7, STM journal)

Despite the use of other sources, most of the self-monitoring mechanisms, which the interviewees described, rely on quantitative, scientometric information (partly generated by the editorial teams themselves and partly obtained from international databases and indexes). This information serves different purposes. Data on rejection rates, impact factor or ranking is often used to document the perceived quality of the journals. Particularly for journals, sponsored by Chilean universities, metrics of this kind serve as accountability measures, illustrating the technification of university accountability mechanisms (see also Whitley and Gläser, 2007). But this kind of scientometric information is also used for marketing purposes; it is often prominently displayed on the journal's website in order to attract potential authors (as well as readers and citers). Moreover, they draw upon this type of information to develop or elaborate editorial strategies, which aim at improving the journal's position or rank in international databases and indexes. Some editors, for example, actively search for articles on 'hot topics,' which might improve their journal's visibility. The following excerpt shows another way in which citation rates can be used to improve the status of the journal and its papers:

I turn to the papers that are not cited in [for example] 2016 or 2017 in Scopus or WoS, and I ask myself, why are these papers not cited? Why do these themes have no citations? In some of these papers, the images are of poor quality. For others, I check the keywords (...) and look at the frequency with which they are used, among other things. Then, I can find the most frequently used keywords for the papers that are not cited. Then, I should avoid using these keywords, because [researchers] are not going to find me. (Interviewee 10, STM journal)

For most of the interviewed editors, the turn to scientometric instruments as indicators of scientific quality and of international visibility has had consequences for the relation or coupling between their journals and the national or continental communities, to which their journals used to be directed. Although, as a consequence of the reliance on scientometrics, the editors now primarily (have to) pay attention to their journal's position in the international indexes, some conflicting interests surfaced repeatedly. Two tensions in particular came to the fore in our interviews, viz. the journals' self-depiction as not-for-profit outlets and their role within regional, Latin- or Hispano-American networks.

The journals' self-understanding as not-for-profit outlets is connected with ambitions to provide free open access, and at times also justified with reference to the well-known communist/communalist ethos of science (see Merton, 1973). Improving accessibility is especially important for the journals,

which define the Latin American continent as their main environment.³³ Not only SSH journal editors, but several STM editors as well, subscribed to this perspective. They explained their position in terms of a commitment to regional scholarly networks and/or to themes that are particularly important for the development of science and of society in this part of the world. For some editors, the choice for English as publication language did not conflict with this regional orientation.

Mediating between internationalization pressures and local traditions is often seen to be a crucial editorial task. Internationalization processes have at times led to important changes in the name of the journals, their publication formats, languages of publication, periodicity, and so on. According to our interviewees, however, most of these changes had neither by editorial board members nor by sponsors and traditional stakeholders been strongly opposed. While they were rather perceived as inevitable in the light of the globalization of science, it was also argued that several changes did not conflict with the communalist ethos of science. At the same time, however, the editors also had to find ways to deal with the tensions between internationalization pressures and local orientations. One interviewee, for example, described how about half of the editorial committee resigned when the journal started to be edited by a major commercial publisher. According to the discontents, the journal was selling out its values, and, especially, its defining not-for-profit tradition. Although other challenges or tensions did not lead to open conflicts, it is clear that they could also have an important influence on the ways in which journals from the periphery nowadays position themselves within the world of science. The following quotation provides another illustration:

I feel very disappointed when I receive the impact factor and see the journal so low in the ranking. I, more than anyone, want [the journal] to be better ranked. But, what can I do? Should I dump all those articles that I know were produced with enormous difficulties in Latin American countries? There is great effort invested in those papers (...) I'm old school, I think we have to help them and support their work. Someone has to do it! (Interviewee 6, STM journal)

Journal management strategies

Topics directly related to the editorial and operational management of their journal were of central importance to all the editors-in-chief, despite the fact that these journals diverged substantially in terms of technical resources and support staff. Whereas some editors have, in their own judgment, sufficient staff and technical resources at their disposal, others (especially some who are working for university-sponsored journals) complained about the lack of material and human support. In some cases, the editorial role seems to be dependent on a 'one-person bureaucracy.'

Most of the interviewees distinguish between routine events and decisions, on the one hand, and 'extraordinary' events and decisions, on the other. 'Extraordinary' events include significant changes in the volume of submissions, the journal's impact factor, or other output indicators. Often editors tried to adapt the editorial practices to perceived international standards (with regard to publication language, publication fees, speed of publication, and so on), although they also tried to protect the identity of their journals. The following quotation illustrates the relations between global pressures, international databases, editorial strategies, and the number of submissions:

[Commenting on figures elaborated by the editor-in-chief on the basis of the journal's archive] See? This increase [of submissions] was when we were included in ISI [WoS]. (...) Here we tried

³³ It should be added that Latin America has the highest proportion of open access publications in the world (Miguel et al., 2011). This expression of the idea that scientific knowledge is a common good is reinforced by the non-commercial orientation of regional databases, such as SciELO.

to publish more because we started to receive a lot of submissions. So, we said 'hey, with so many submissions, we should publish more.' But I later realized that this was not the right strategy. If you publish more, your denominator [for the impact factor calculation] increases and [your citation rate] decreases. Then we did the necessary adjustments, not just for that reason, but for many things. For some years, we published less because things were more difficult. Here for example [pointing to a year with less submissions] we changed to English-only. Or here [pointing to a year with high publication numbers] we published more because we had a special issue. And this year here, in which submissions decreased, we introduced a publication fee. (...) We were receiving too many submissions. (Interviewee 4, STM journal)

With a range of strategies, the editors try to secure the impact or success of their journals. Given the importance of scientometric indices, it is clear for them that they have to reach audiences within the so-called center of the world of science (the US and Western Europe). As, by contrast, high numbers of submissions from non-central countries are perceived to be detrimental for the journals' impact factors, some editors also felt forced to limit that stream of submissions, echoing the center-periphery structures of the world of science (see also Hwang, 2008). Journal editors of different disciplinary background described 'strategic' decisions – about publication language, special issues, and marketing strategies – which were directed at reaching 'core audiences.' For some of them, such decision also aimed at reducing the number of submissions the journals received from scientists of the (semi-)periphery. The following quotations illustrate some of these strategies.

We try to publish transversal and global themes in the journal (...) Then our policy is clear, this [thematic] issue will be with US scholars and the next one with Europeans. There we go. We are a journal that intends to be global, and the thematic issues intend to show that. I think we have a clear project in that sense. (Interviewee 8, SSH journal)

What is happening is that Asian scholars are prone to submit papers, and we receive a lot of submissions from Ukraine, Afghanistan, Pakistan, India, China, and so on. (...) Then [employing thematic and linguistic standards] is a form of filtering them out. They have to understand that the focus of our journal is on Latin America. (Interviewee 5, SSH journal)

Although all journals primarily aimed at an audience of expert scientists, several editors, especially SSH journal editors, also pointed to other relevant audiences (policymakers, professionals outside the academia, students). The greater variety of styles and formats within these journals seems an effect of this broader orientation. Especially for journals, which in part target non-academic audiences, the role of citations in editorial decision-making is downplayed. This fact illustrates the diversity of reactions to internationalization pressures across journals and disciplines and highlights the importance of both local and disciplinary traditions in the internationalization process (see also Chapters 2 and 3).

At the same time, publication speed seems to be omnipresent in all the strategies editors nowadays use to attract authors. All the interviewees described the ways they tried to speed up and otherwise improve the peer review process, while some of them also discussed the strategies they employed to manage the number and the origin of submissions, as illustrated above. Noticeably, several editors also reflected on the importance of controlling the number of publications, as this number affects the journal's impact factor. Speculations about (expected) publication and citation numbers, and the ways they are likely to affect index scores, presently rival with classic notions, such as readerships. As an interviewee put it: '*Currently, we do not care about who reads us or not, in the end, the question is who is citing you and who doesn't*' (Interviewee 4, STM journal).

As several interviewees told us, this kind of ‘citation consciousness’ penetrates their editorial work in a variety of ways. They include, for example, the likelihood of citation as editorial criterion, develop strategies to improve the visibility of their journal, and publish papers online well ahead of schedule. This strategy epitomizes the impact of current transformations in the scholarly communication, but it also seems to call into question the tradition of journal publishing itself. Having papers published in a reputable journal seems no longer the ultimate product of scientific communication.

[If you do not publish ahead of schedule,] *you are condemning your own authors, because they are not getting citations, and your journal is not receiving those citations (...)* Our authors are happy now. They don’t care if I accept an article for the first number of the next year, because they know that in about two months’ time it will be online and they will be able to distribute it, they can upload it to ResearchGate. (Interviewee 8, SSH journal)

Conclusion

The scientific databases and indexes have created new worlds within which scientists and scholars have to perform. The prestige of publications in indexed journals has come to delimit the type of output that is valued in science. The inclusion and exclusion politics of the main scientific databases, especially WoS, also reproduce and legitimate center-periphery differences within the world of science. Despite the expanded coverage of these databases, the visibility and impact of research conducted and published in the (semi-)periphery of this world remains limited. In this light, we have in this chapter looked at the ways in which journals from the (semi-)periphery try to position and ‘prove’ themselves within the new world of scientific publishing.

We have, more particularly, analyzed how editors-in-chief of Chilean journals perceive this new world, how they monitor the position and reputation of their journals in it, and how they try to improve the visibility and impact of their journals. Although the journals diverge in a range of respects (disciplinary orientation, publisher and/or sponsor, language of publication), the interviews make clear that concerns about their journals’ position within scientific databases and indexes are quite pervasive for all editors-in-chief. A new ‘citation consciousness’ is omnipresent; all the editors-in-chief have learned to take the main scientific indexes, and the journal rankings they produce, into account. Exclusion from these indexes is often perceived as death sentence.

However, criticism of the perceived developments and internationalization pressures also abounds. As we have seen, most journal editors are conscious of other expectations. They mostly do not just position their journals as global players, but instead focus on regional or continental ‘niches.’ Several journals explicitly orient themselves to the Latin American continent and aim to provide space for research from scholars of the continent and/or on themes that are of importance to the continent; many editors also hope that their journals have sociopolitical impact in the region. Especially the SSH journal editors were outspoken about these ambitions. They were also the most critical observers of the ways in which international databases (especially WoS and Scopus) dominate the spaces within which their journals now have to operate. Supporting the development of regional niches is difficult, when journals are evaluated in terms of their visibility in international databases. The pressures may rather lead to an alienation of scholarly communities from their own traditions, reinforce center-periphery structures in the world of science, and jeopardize scientific diversity.

It is not difficult to see that regional databases, such as SciELO, support the continental orientation. At the same time, several journal editors also underline their commitment to internationalization by referring to continental sensitivities and traditions. In a general way, making publications available open access has become an important ambition within Latin America. The region is known to have the highest rate of open access publications across the world (Miguel et al., 2011), and regional databases,

such as SciELO, Redalyc or Latindex, are not-for-profit enterprises. Referring to this tradition, several editors criticize the ways in which commercial interests have been able to expand their hold on the globalizing academic market (see also Debat & Babini, 2019). These concerns seem to embody important aspects of the so-called scientific ethos, such as the (Mertonian) communalist value in science. In this view, the (semi-)periphery has become a key place to secure this ethos.

An important question, however, is whether there is one best representation of the world of science. The different scientific databases may also be seen to stand for different, competing imaginaries of the future of scientific publishing (and scholarship itself). When given more visibility and recognition, regional databases and other, recently developed instruments to measure scientific impact and visibility (e.g., Altmetrics) may draw more attention to alternative imaginaries of the world of science. Broadening the range of evaluation measures may not only allow us to increase our awareness about the ways in which the standards of specific citation indexes now affect editorial policies, and hence what does or does not make it into print, but it may also be a way to protect diversity within the world of science and contribute to more politically sensitive views of its basic structures and of the position of journals in the world.

Scholarly communities at the crossroads. Internationalizing sociological networks in Valparaíso, Chile (2003-2019)³⁴

Achievements and tensions derived from the internationalization of scholarly communities have attracted extensive attention. However, very little is hitherto known about the effects of these processes on specific situated communities. Through a multi-method approach (bibliometrics and interviews), we provide a nuanced description of these effects on the development of university-based sociology in Valparaíso, Chile, during the last fifteen years or so. The chapter pays special attention to the emergence of the particular form of internationalization based on international indexes and rankings, which has gained influence on the day-to-day practices of the scholarly communities in this part of the scholarly (semi-)periphery. We thoroughly described the entanglements of individual trajectories and institutional framings in the practices and discourses of sociologists in Valparaíso. The chapter concludes highlighting the tensions emerging from the encounter of traditions and some trade-offs of the current form of internationalization for (semi-)peripheral communities.

Keywords: Internationalization, sociology, scholarly communities, institutionalization, disciplinary traditions

Introduction

The organization and development of scientific communities is a recurrent theme for many studies on scholarly disciplines, remarkably since the publication of the influential book by Thomas Kuhn in 1962, *The Structure of Scientific Revolutions*. Since then, several approaches have stressed scientists practices, the sociohistorical trajectories of the disciplines, and scientists' mobility and communication patterns. All of these approaches share their aiming at the actual practices of scholars as a mechanism to describe the functioning of the disciplines (e.g., Knorr-Cetina, 1998; Fleck et al., 2019; Engels et al., 2012; Mosbah-Natanson & Gingras 2013).

Perhaps due to their relatively recent origin or the particularities of the objects with which they deal, historical approaches are very prolific in the study of social sciences communities and especially sociological ones³⁵. The different developments illustrated in such histories reflect the 'multi-paradigmatic' trait of this discipline, which contributes to blurring the distinction between the history of the discipline and its developments (Graham et al., 1983). In other words, different approaches and disciplinary emphases across sociological communities worldwide are based on historical distinctions, with several of them even traceable to the discipline's origins (see Merton, 1973; Lepenies, 1988; Levine, 1995; Burawoy, 2005). The different sociological communities worldwide translated these

³⁴ This chapter is published as Koch, T., Blanco-Wells, G. & Ayala, R.A. (2021) Scholarly Communities at the Crossroads: Internationalizing Sociological Networks in Valparaíso, Chile (2003–2019). *Minerva* 59, 99–122.

³⁵ For example, an ambitious project to map the evolution of sociology worldwide can be found in the Sociology Transformed series (<https://www.palgrave.com/gp/series/14477>).

emphases into recognized approaches, methodologies and practices that reproduced for themselves the disciplinary distinctions and often led to indexical pairs, such as universal/local or explanation/transformation (see Abbot, 2001).

Of course, these local traditions are by no means constructed behind the world's back. On the contrary, international connections have been key since the early origin of the discipline (see Lepenies, 1988; Heilbron et al., 2008) and became especially salient in its institutionalization worldwide (e.g., Fleck et al., 2019). During the last decades, however, a somehow different type of internationalization seems to have developed, prompted by the expansion of international databases and indexes and their increasing centrality in the mechanisms to assess scholarship and the performance of both scholars and universities (see Chapter Three; see also Whitley & Gläser, 2007). The impact of these instruments has been especially important in the so-called (semi-)periphery of the world of science, with several national policies explicitly aiming at increasing their participation in such global networks (e.g., Aksnes et al., 2008; De Oliveira et al. 2015). Moreover, the emergence of national and regional databases across the world³⁶ has also contributed to reframing the limits between global and regional scholarly networks.

This new form of internationalization challenges regional and national sociological traditions³⁷. While institutional internationalization pressures now compel scholars to publish in certain venues, and thus to address certain networks, the internationalization of scholars' trajectories diversifies the disciplinary approaches, goals, and emphases within local communities (Rostan & Höhle, 2014). Despite the relevance of these changes, very little is hitherto known about the effects of these transformations on local traditions, how scholars cope with them, or how they affect traditional disciplinary distinctions. In other words, how current transformations affect the practices and discourses of sociologists.

In this chapter, we aim at answering these questions through a detailed analysis of the becoming of university-based communities of sociologists in a (semi-)peripheral region. We argue that institutionalization processes at universities are especially insightful to study scholarly communities owing to the high visibility of both institutional frames and disciplinary traditions. Most of the scholarly development of sociology worldwide continues to be framed by local and/or national organizations (mostly universities) and involves both research and the training of future generations of sociologists (Frank & Meyer, 2007; Simbürger, 2010; Baecker, 2011; Lenartowicz, 2015). The double trait of the university as both a global institution and a situated organization that moor the everyday life of sociologists stresses the relevance of the institutionalization processes to study the becoming of scholarly communities.

³⁶ See, for example, the Latin-American databases SciELO (1998) and Redalyc (2002), the Chinese Citation Index (2000), the Russian Citation Index (2005), the African Citation Index (2016), and so on.

³⁷ As we have shown in Chapter Three, internationalization trends in Chile radically changed at the end of the twentieth century. Although international ambitions were present in Chilean scholarly communities since the nineteenth century, these ambitions were often framed by 'nationalist' orientations (e.g., national socio-economic development). This trait started to change at the end of the twentieth century, a process reinforced by the rise of international databases and indexes and their 'calculated' representation of the world of science. For a recent commentary on the transformations of university's internationalization worldwide, see also De Wit (2020).

We analyzed in detail the trajectories of university-based communities of sociologists in Valparaíso (Chile) since the organization of the first departments, in 2003. The Valparaíso case proved particularly useful to our objectives for two main reasons. Firstly, the (semi-)peripheral position of both the country in the world of science and the region within the country makes it a good case to assess the effects of global transformations in a context where tensions between traditions gain especial relevance. Secondly, the recent organization of sociology departments at Valparaíso's universities and the rather small number of universities and scholars enabled a detailed description of the transformations in both scholars' discourses and practices. On the basis of interviews and bibliometric analysis, we present a nuanced picture of the coming into being of (institutionalized) sociology in a region where processes of 'localization' occur beside those of internationalization. All in all, our findings highlight the open-ended processes of community formation, problematize the complexities of internationalization processes at a local level, and reflect on the impact of the new internationalization pressures over the disciplines from the perspective of the involved scholars.

The chapter is divided into four parts. Firstly, we give a brief background for the institutionalization of sociology in Latin America and Chile during the twentieth century. Secondly, we present the data and methods used in our case study. Thirdly, we present our findings, which are organized into three sections, namely disciplinary traditions and sociologists' practices, organizational framings and demands, and scholarly networks and connections. Finally, we summarize our main findings and share some reflections on the trade-offs of the current form of internationalization for semi-peripheral regions.

Background. Institutionalization of sociology in Chile and Latin America

Although the seed of sociology was sown in Latin American universities during the last years of the nineteenth century (Olvera, 2004; Beigel & Sorá, 2019; Domingos & Neri, 2019), it was not until the mid-twentieth century when sociology departments were created across Latin American universities, including Chile. This institutionalization was strongly influenced by the US, guided by modernization theory, and enhanced by regional agencies, such as the Economic Commission for Latin America and the Caribbean (ECLAC) founded in 1948, the Latin American Faculty for Social Sciences (FLACSO) in 1957, and the Latin American Council for Social Sciences (CLACSO) in 1967 (see Blanco, 2005; Garretón, 2005; Beigel, 2016). This boost for the institutionalization of sociology at universities occurred in a Cold War context and reflected the global expansion of the discipline underpinned by US public and private agencies (see Solovey, 2013). This influence contributed to the organization of specialized journals and to picturing the newly institutionalized discipline as an empirical endeavor strongly oriented by US methods and approaches (Portes, 1994; Tavares-dos-Santos & Baumgarten, 2005).

In Chile, the first university-based programs on sociology started life during the 1950s in the *Universidad de Chile* and the *Pontificia Universidad Católica de Chile* (Barros & Brunner, 1988), both based in the capital city of Santiago. In parallel, the localization of the headquarters of FLACSO and ECLAC in Santiago contributed to placing Chile at the center of sociological thought in Latin America. Several Latin American scholars were trained and/or worked in Chile during the following decades, while some European sociologists, mainly French, moved to or visited these institutions (see Beigel 2009). During the following decades, these organizations were key to producing the so-called 'dependency theories' (Falleto, 1998; Beigel, 2006) in critical opposition to the spread of modernization theory. Dependency theories, which can be broadly defined as neo-Marxist, had by then induced social change as a hallmark and highlighted the need for a sociology made by Latin

Americans and aiming at the transformation of Latin America. Despite the evident differences between this tradition and more recent critical approaches within the region (e.g., decolonial approaches), all of them resonated with a tradition known as critical Latin American thought and challenged disciplinary distinctions, for example, between politics and science³⁸.

The consecutive military *coups* that established dictatorships across the region since the 1960s triggered a step back in Latin-American sociology. This situation was especially dramatic in Chile, where all sociology departments were intervened, with several sociologists forced to find shelter in NGOs and many of them exiled (Garretón, 2005). However, sociology did not disappear from the universities altogether. With the 1973 *coup* in Chile, the military only closed one (*Universidad de Concepción*) of the three sociology departments of the country. The sociology developed in the remaining two universities was, according to their protagonists, emptied of any critical approach, with quantitative methods and functionalist theories dominating the curriculum, moving away from the distinct Latin American tradition (Donoso, 2016). Meanwhile, the dramatic reduction of local funding forced sociologists to look for international support (Brunner, 1988). Despite these restrictions, sociologists' first professional association was created in the 1980s as a way to both protect their members and provide an alternative space for communication; this was reflected in planning and convening the first national conferences during that decade.

The dictatorship ended in 1990 introducing important changes in the Chilean higher education system, which would affect the further development of sociology in the country. The 1981 Education Act (MINEDUC, 1981) had allowed the opening of private universities, granted autonomy to the former regional branches of the national university (*Universidad de Chile*), and established a funding mechanism for universities mostly based on student fees. These transformations laid the organizational foundations for the expansion and diversification of sociology across universities during the following decades. The (re-)institutionalization of sociology in Chile since the 1990s, and particularly in Valparaíso since the 2000s, largely focused on offering undergraduate programs. While in 1989 only two universities offered sociology degrees (three before 1973), this number rocketed to 16 in 2010 (several being taught in more than one campus at a time). A number of these new institutional spaces also created journals, which would serve as communication media for the re-emergent community of Chilean sociologists.

During the 1990s, both Chilean and Latin American sociology differentiated in themes and approaches (e.g., Rangel, 2003; Farías, 2004). In Chile, this differentiation can be partially explained by the return of exiled sociologists, many of whom studied and/or worked abroad, notably in European universities where they became familiar with a variety of approaches and traditions. Remarkably, since the 1990s, sociology departments spread across the country altering the Chilean centralist tradition (see Annex 4). Not just *Universidad de Concepción* reopened its sociology department, but also other regional universities such as *Universidad de la Frontera* or *Universidad Arturo Prat* opened sociology departments at the beginning of the 1990s. At the end of the decade, the need for expansion of the universities and the reinforcement of the sociologists' job market (see Gomez & Sandoval, 2004) would trigger another wave of sociology departments being launched. Eight brand-new

³⁸ For a recent compilation of Latin American critical thought see <https://www.clacso.org.ar/antologias>

undergraduate programs opened between 1998 and 2003, four of them in Valparaíso³⁹. Notably, the four departments in Valparaíso opened their doors simultaneously in 2003, in the two public universities (*Universidad de Playa Ancha* and *Universidad de Valparaíso*) and the two private ones (*Universidad Arcis* and *Universidad de Viña del Mar*).

During the 2000s, new education policies such as a student loan policy (2005) and its entanglement with an accreditation system in 2006 would secure the higher education funding system. In parallel, since the second half of the decade, Chile's science policies strongly boosted internationalization. The National Commission for Scientific and Technological Research (CONICYT) significantly increased funding for the formation and consolidation of international research partnerships, provided special funds to enhance the international indexation of journals, and importantly for the development of sociology, it expanded the funding for master's and Ph.D. students to undertake studies abroad⁴⁰. This policy would reinforce the trend of training scholars in Europe and the US by subjecting the allocation of grants to the universities' position in international rankings. Interestingly, many of the Ph.D. scholarships (around two out of five between 2008 and 2012) were awarded to students in social science disciplines (CONICYT, 2013). This renewed interest in social science disciplines echoed the launching of new departments in the late 2000s; and in Valparaíso this interest was further reinforced with the opening of one additional bachelor's program at the regional branch of *Universidad Andrés Bello* in 2011.

This brief background highlights some key aspects of the trajectories of institutionalization of sociology within Chilean and Latin American universities during the twentieth century. From the early US influence in the 1950s to the central role of regional agencies in the 60s and 70s and more recent internationalization trends, international connections have been crucial for the development of university-based sociology in Chile and the continent. National particularities, such as periods of political nationalism, certainly influenced internationalization trends. However, it would be misleading to assume causal explanations based on these or other contextual elements. Several other factors can either boost or hinder international connections, which largely depends on the involved disciplines as well as the historical couplings of the scholarly communities at local, national, continental or global level (see Chapters 2 and 3). The simultaneous effect of these connections and national political and organizational turns has molded the coming into being of communities of sociologists during the twentieth century.

In the next section, we present the data and methods used for our case study on the evolution of sociology departments (or their equivalent divisions) in Valparaíso⁴¹ throughout the last 17 years. Both institutional and individual trajectories became salient in this recent phase of institutionalization of sociology.

³⁹ The Valparaíso conurbation (Gran Valparaíso) is located at 115 km from the capital, Santiago. It extends for 1,230 km², and it is Chile's second biggest region in terms of both population (951,311 inhabitants in 2017) and university students (81,767 in 2019).

⁴⁰ The national scholarship program was also enhanced. This program was crucial for the further organization of post-graduate programs in sociology at Chilean universities.

⁴¹The nomenclature changes across the universities studied (i.e., department, institute, school, or study program). A hybrid program of sociology and economy (*Socioeconomía*) also existed between 2002 and 2010 in *Universidad de Valparaíso*. We did not include this in our study because of its rather limited contact with the sociology departments within the region.

Data and Methods

To analyze the practices and discourses of university-based sociologists in Valparaíso, we included all the universities that either have or had sociology departments within the region: *Universidad Andrés Bello*, *Universidad Arcis*, *Universidad de Playa Ancha*, *Universidad de Valparaíso*, and *Universidad de Viña del Mar* (see Annex 4). Although some of these departments have closed down (those of *Universidad Arcis* and *Universidad Viña del Mar*), we decided to include them in our case study because of their role in the training of sociologists and because they attracted scholars to the region.

We collected information in two main phases, eight and sixteen years after the organization of the first programs (i.e., 2011 and 2019)⁴². This methodological design allowed us to depict the institutionalization processes in two moments, providing us with longitudinal data that allowed for comparisons and gaining access to some crucial aspects of the transformations of sociological communities. It is also important to note that one of the authors is a scholar working in one of such departments since 2010. This not just facilitated access to the field but also enabled a greater understanding from an insider positioning. We used a multi-method approach based on interviews and bibliometric analysis.

Firstly, we conducted six interviews with the forebears of the involved departments and 24 interviews with scholars working during 2011 and/or 2019 in those departments. On the one hand, interviews with forebears (five in 2011 and one in 2019) were oriented to reconstruct the early years of the departments. We supplemented this information with public documents retrieved from the webpages of the universities in 2011 and 2019 (e.g., graduate profiles, curriculums, institutional decrees, and so on). On the other hand, the interviews with scholars (twelve in 2011 and twelve in 2019) focused on their perception of the discipline, organizational environment, current scholarly practices, and scholarly communities. We selected interviewees working on different themes and from approaches (based on the screening of their publications), gender (12 male and 12 female), and covering a range of different universities. Despite the difficulty implied in the closing of some departments, the high mobility of scholars between Valparaíso's universities allowed us to trace and interview scholars that had worked in those universities. Two scholars were interviewed twice (2011 and 2019) in order to control for possible shifts in their perception. The interviews ranged between 40 minutes and two hours, were in Spanish⁴³, voice recorded, and fully transcribed.

Secondly, we performed bibliometric analysis of the scholars' publications between 2003 and 2019. In doing so, we compiled a list of 44 scholars who were working or had worked at the involved departments and double-checked this list with the forebears and departments' heads who were in office in 2011 and 2019, respectively. Although we cannot affirm that we covered all of the sociologists who have worked at the departments, our list comprised all the authors of papers with an institutional address in one of them, and some additional scholars we were told worked (semi-)permanently there.

We retrieved scholarly outputs (co-)authored by these sociologists from international and regional databases (WoS, SciELO, Redalyc), Google Scholar, and their profiles on ResearchGate and

⁴² Though not intended, these years coincide with the two biggest cycles of social protest in Chile (2011 higher-education student's demonstrations and 2019 general uprising). Albeit the topic was not fully addressed in the interviews, to some extent, scholars' discourses reflected the social climate, for example, in the importance they attributed to the social impact of sociology in 2019.

⁴³ We use translations of the quotations into English. Original quotations in Spanish are available in Annex 5.

Academia.edu. We compiled overviews of 424 publications. The figures presented here, however, are based on the 230 documents that included the involved departments in the affiliations. These overviews included institutional addresses, co-authorships, type of document (article, book, or book chapter)⁴⁴, source (journal or editor), indexation, year, language, and title. When available, we also used these sources to identify the educational trajectories of scholars. In other cases, we used scholars' résumés or interviews.

While quantitative data obtained through these processes were analyzed by using Excel, the qualitative material was organized by using Atlas.ti. Quantitative data were divided into four periods: 2003-2007 (20 publications from 12 scholars), 2008-2011 (30 publications from 26 scholars), 2012-2015 (71 publications from 33 scholars), and 2016-2019 (109 publications from 33 scholars). The qualitative analysis started from an open coding approach, which was refined in further coding processes aiming at constructing themes (Braun et al., 2018). In all the subsequent coding phases, data were contrasted across interviewees and compared against the quantitative information looking for variations, inconsistencies, differences, and patterns. The final structure of the following section is the result of this analysis and reflects the three themes constructed during the analysis – namely disciplinary traditions and sociologists' practices, organizational framings and demands, and scholarly networks and connections.

Findings

Confronting sociological traditions. Disciplinary discourses and practices

In Valparaíso, sociology often became institutionalized based on a 'project', an imaginary arrangement of scholars, students, courses, practices, structures, and resources as designed by the forebears and negotiated with a rather small network of institutional actors (mostly university and faculty authorities). The scholarly prestige of the forebears and the department headships that some of them sat in helped their early control over the identity and evolution of the new departments. Key elements for the operation of these early departments, such as the appointment of scholars, the editorial orientation of their journals or the list of books to be bought for the institutional libraries, were controlled by them. Interviews with early appointed scholars and with forebears illustrate the central role of the founders in the departments' organizing. They highlighted, for example, their omnipresent control over the curriculum, which was illustratively described by a forebear as '*an opportunity to train sociologists in the way you believe they should be trained*' (Interviewee 2, 2011), or the importance of their networks in the early staff's appointment – '*my networks with very important Chilean sociologists were key to attracting others to the project*' (Interviewee 6, 2011).

Despite their common identification as sociologists, the representations about the discipline diverged between the forebears in important ways, with scholarly trajectories rooted in Continental Europe, Anglo-Saxon countries or Chile, becoming key referents for them to justify the projects' emphases. These differences expressed themselves in the early curriculums, which, according to the forebears, emphasized the training of scholars, intellectuals, or professional sociologists engaged with either local or national transformations. While these differences reflect the 'multi-paradigmatic' trait of sociology, they also illustrate the relevance of local traditions in the global expansion of the discipline.

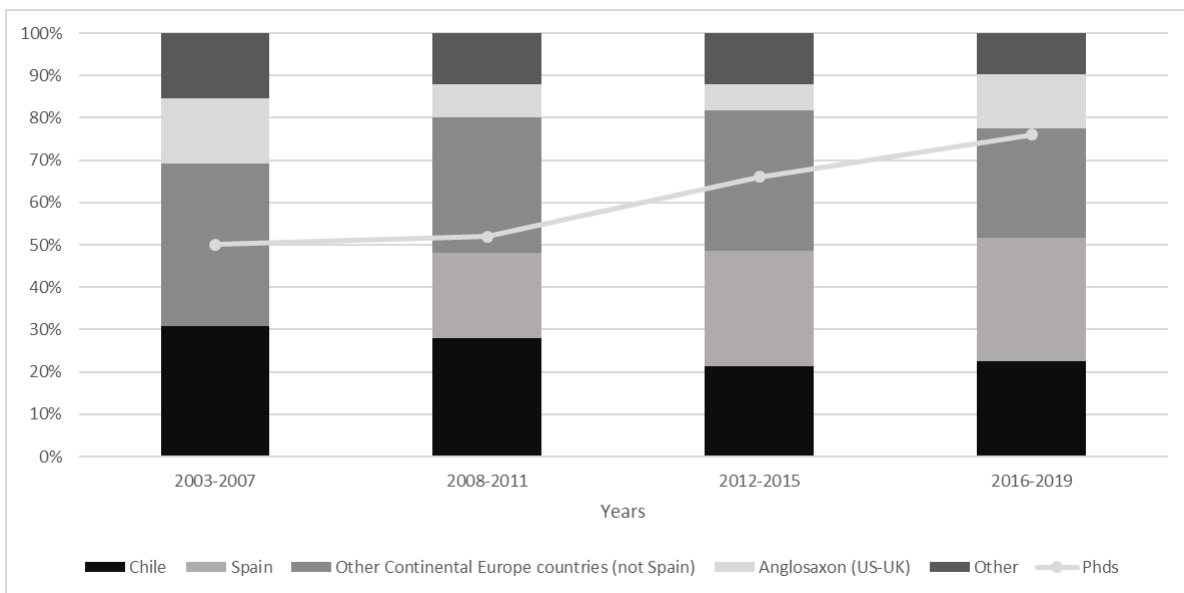
⁴⁴ We did not include other documents such as reviews, letters, editorials, technical papers, or press publications because of the limits imposed by the sources, which did not fully cover these types of documents.

The relative internal homogeneity that characterized the departments earlier on contrasts with the noticeable heterogeneity between the departments. Yet this trait did not last. Changes in the size and trajectories of the staff helped to increase heterogeneity within departments, whereas science and educational policies at a national level prompted homogeneity between them (e.g., similar curriculums, standardized scholarly outputs, and so forth). These trends, however, do not seem to be leading to some converging sense-making of the sociological endeavor on the part of the academics. Our interviewees used different variants of the broad distinction between explanation and transformation (not necessarily as opposites) to express how they make sense of their scholarly practices. These variants were expressed during the interviews as distinctions between theoretical/empirical, academic/professional, or scientific/political. These distinctions seemed to reflect the multidimensionality of sociology and the current relevance of traditional distinctions in the discourses about their own practices.

Many interviewees pointed to curricular transformations as an important device in identifying the competing emphases of sociology as borne by the scholars. In all the cases being studied, the curriculums have changed since their initial formulation (either by introducing an entirely new curriculum or through changes in specific syllabuses). As the forebears did earlier, scholars look for inspiration to change the curriculum in their own respective trajectories, which have indeed increasingly internationalized (see figure 5-1). As an interviewee put it, when discussing the curriculum, *'some [colleagues] think of England, others the US, or Germany (...) [This international background] became salient in the discussions, referents, papers, themes and approaches'* (Interviewee 13, 2019). To be implemented, these different orientations must come to terms with the national sociological tradition. For example, some interviewees told us about the strong resistance to a curricular reform in one of the cases because it was not aligned with the Chilean tradition regarding the number and structure of theoretical courses (see also Paz, 2017). After deliberation, the curriculum went back to the canon.

These controversies between different traditions of sociological thought also relate to a generational change in the staff as well as the increasing specialization and internationalization of Valparaíso sociologists. Figure 5-1 illustrates these trends. While the stacked bars display the country of the last degree obtained by the scholars, the line shows the increase in the proportion of scholars holding Ph.D. degrees from about a half of them between 2004 and 2011 to around two thirds between 2012 and 2015 and to three quarters between 2016 and 2019. Regarding the country of the last degree, the stacked bars show the increasing importance of Spain in the training of Valparaíso sociologists. This trend is explained partly by a shared language (inherited from the colonial past) and partly by the relatively higher ranking of Spanish universities compared to Latin American ones, which made them eligible for CONICYT scholarships. The figure shows the loss of relative importance of the national training in the scholarly trajectories during the first three periods, from around 30% between 2004 and 2007 to 22% between 2012 and 2015. This decrease is explained in part by the increasing number of foreign scholars (from two before 2011 to six in the last time-period) as well as the late organization of Ph.D. programs in sociology in Chile (the first one opened just in 2007). The slight increase of this indicator during the last time-period is mostly explained by the scholars finishing Ph.D. degrees in Chilean universities by then.

Figure 5-1. Country of the last degree obtained



But the contrast between different traditions of sociology did not end in the curricular discussion. These traditions also surfaced in the preference for certain research networks, approaches and themes, which also have to come to terms with both national sociological traditions and new institutional demands. These adaptation processes became especially salient in our interviewees' stories about themselves arriving or returning to Chile, with networks, themes and approaches influenced by the needs to fit into Chilean academe. The following quotations exemplify some of these tensions:

[When I returned,] I realized that my theme doesn't get much attention here in Chile. At the same time, I felt that the kind of questions that the community of scholars with which I got involved [during my Ph.D.] were very historical; historical in the sense that they addressed the emergence of a field (...) In Chile these kinds of questions are not common, they don't work, here sociologists don't do historical sociology, here sociology tends to study living people (Interviewee 18, 2019)

This approach isn't well received in Latin America. Me and some colleagues who studied in universities [that use similar kinds of paradigms] have tried to form a network, collaborating, and we simply haven't been able to. (Interviewee 15, 2019)

This also happens to emergent sociologies, such as sociology of sports, of food, of emotions, or of the body. We have learned that these themes are key to any society, but the institutional, or conventional sociology, marginalizes them because in Chile most of the sociology has always been political and some also economic (...) that is a symbolic, theoretical, or epistemic barrier, but you also have a practical barrier that is related to the access to research grants. Those who evaluate you (...) come from that conventional sociology. (Interviewee 16, 2019)

Many of our interviewees associated these tensions with the generational change in Valparaíso and of Chilean sociologists more broadly. According to several of them, this change resulted in

transformations in the ethos and practice of sociology, from the seniors' shared engagement with national transformations either in terms of modernization or political activism, to newcomers' heterogeneous conceptions. All of this stressed the competing orientations, either local or international relevance, and either academic or social impact; in other words, tensions between the institutional pressures towards publication in internationally indexed journals and (more) continentally or nationally oriented venues, and between different institutional requirements (i.e., teaching, research, and public engagement activities). The following four passages from interviewees appointed in different time periods illustrate these differences:

I studied sociology because I thought that doing social sciences would help social change, and I still believe that. (...) But I think that, in order to have an effect, research should be based on theory, because theoretical mistakes can lead to practical mistakes, as happened with the left wing. (Interviewee 3, 2011)

It is a problem because it [publishing in international journals] distances you from the local environment because you must meet international parameters and not local or national motivations or relevant themes. (Interviewee 25, 2019)

This is not the generation that lived the coup, that carried the hallmark of the Latin American sociology of the 1960s. That is a generation of Chilean sociologists that is extinguishing. (...) This new generation (...) has a more 'focused political engagement', I think it is a hallmark of our times, also. They have a political engagement through feminism or environmentalism, for example. (Interviewee 17, 2019)

Action and reflection should have entangled developments. This is not about coming back (...) to the 70s that were pure activism, nor being a bookworm. Both things should dialogue with one another and develop together. (Interviewee 16, 2019)

Valparaíso sociologists display a wide variety of ways for making sense of their scholarly practices. And these closely related to their individual trajectories. National policies aiming at the international training of scholars have contributed to diversifying the fields of inquiry and approaches. Scholars are now compelled to link their heterogeneous practices and representations with national sociological traditions and institutional requirements. In the following section, we turn the attention to these demands and the reactions of the scholars to them.

Facing new institutional incentives and pressures

The early control that the forebears had during the first years of the studied departments was soon undermined by the joining of new actors and the technification of organizational procedures. At a local level, while teaching requirements and the institutionalization of recruitment processes contributed to increasing the staff's heterogeneity, the incorporation of students would actually dispute the early omnipresent control of the forebears. Several interviewees told us stories about how student demonstrations were key to triggering changes in the curriculum or to the removal of scholars and/or authorities. At a national level, the implementation of a national accreditation system for higher education in 2006 would exert a strong influence on the sociology departments in Valparaíso.

The quality assurance system quickly gained symbolic and material importance for Chilean universities. While it provided a hierarchizing mechanism for universities based on standardized parameters, the entanglement of this system with a student-loan policy aiming to provide mass access to higher education (MINEDUC, 2005) secured the key position of the accreditation within the higher education system. In other words, once based purely on prestige and tradition, the mechanisms for university (and program) assessment as well as funding schemes are now based on a periodic examination through standardized parameters. This new accreditation system would thus affect the functioning of the sociology departments in Valparaíso through the increasing technification of the university processes and goals, as one interviewee explained to us:

Functioning in terms of accreditation means operating in terms of indicators. Accreditation demand student retention, progress rates, number of books in the library, number of teachers holding postgraduate degrees, and so on (...) And there are only indicators, like courses requirements for passing, student satisfaction, all of these are statistics. And the university has increasingly implemented central systems to produce those statistics, which influences annual plans (...) of study programs. (Interviewee 18, 2019)

But accreditation mechanisms not only influenced the doing of traditional university tasks, they also contributed to institutionalizing some demands from the university's environment. For example, adding student satisfaction as a criterion helped (to some extent) to institutionalize such demands, while the increasing importance of public engagement as an accreditation dimension actually became a core mission of the university. These transformations affected scholars' day-to-day practices by either prompting accountability (e.g., in teaching) or adding new demands (e.g., public engagement activities). The increasing importance of this area across universities is illustrative of the performative effect of the accreditation system and the rankings it supports⁴⁵. This renewed importance was indeed echoed in the interviews. While several interviewees in 2011 used expressions such as *'I have enough work with research and teaching; moreover, I don't like it [public engagement] much'* (interviewee 8, 2011), all of the interviewees in 2019 highlighted the importance of addressing this dimension.

Nonetheless, despite the increasing importance of public engagement, all of the interviewees agreed on its rather low institutional status compared with the traditional tasks of teaching and research. In all the analyzed cases, rationalization of university management, fueled by the accreditation system, has established accountable mechanisms to distribute scholars' working hours. In doing so, they have set teaching as the default task for scholars and created an incentive structure to those involved in research; this enables reducing the teaching workload and earning monetary incentives per publication and/or research grants being awarded. Yet no incentive is available to public engagement. All of our interviewees identified this renewed hierarchy of scholarly functions, and this has helped reinforce the perception of teaching as a 'burden' for several of them. In the words of an interviewee: *'It is carrot-and-stick policy, teaching is the yoke, while the incentives, the recognition, the awards and the fame come from publications'* (Interviewee 23, 2019)

⁴⁵ Although the ranking of universities based on accreditation involves two elements (years of accreditation and the number of dimensions accredited), these elements are highly correlated ($r=0.91$ in 2010 and 0.76 in 2019), and institutions have tended to include elective areas of accreditation sequentially, from public engagement, to research and to graduate teaching. The rather flexible definition of 'public' contributed to positioning public engagement as a necessary step to climb up in this ranking.

Furthermore, the use of standard productivity indicators to evaluate research has pushed for certain research outputs very much aligned with national science policies and international university rankings (e.g., QS World University Ranking, ARWU Ranking, or THE World university Ranking). Along with the accreditation policy, national science policies have put much emphasis on internationalization of academe, especially since the second half of the 2000s (see Chapter Two). Accordingly, articles included in international databases and indexes (i.e., WoS, Scopus) have become key criteria to obtaining research grants, and even to university funding (CONICYT 2020; Escobar et al. 2012). This move gained momentum in the selected cases at the beginning of the 2010s, mirroring, for example, standards for appointing scholars. According to our datasets, of scholars hired before 2011, around 10% of the pre-appointment publications were included in international databases and indexes. This figure increased to over 35% for those appointed after 2011. The following quotations reflect the centrality of this increase:

That year [2011], my curriculum received a high score, almost the maximum! And the year afterwards (...) the same curriculum obtained a much lower score (...) I had always published in journals that weren't included [in international indexes] and then this trend started, the [omnipresence of] ISI [WoS] and Scopus. (Interviewee 14, 2019)

In the beginning, the most important [hiring] criterion was expertise. Of course, we looked at whether he or she held a Ph.D. or a master's degree, but the key variable was their theme of interest, their seniority in teaching. We didn't have this conditioning [of using] productivity as the most important criterion. Sometimes we privileged the matching [of their profile] with the study program, with the curriculum, their teaching skills, their links within the region or their projects. But that is no longer determinant. Now a candidate [who is a perfect fit] can be beaten by someone with more [international] publications (Interviewee 19, 2019)

This change in the assessment of scholars' trajectories, along with other national policies such as the increase of Ph.D. scholarships (CONICYT 2013) and retirement incentives for senior scholars (MINEDUC 2017), contributed to changing the profile of the departments' staff. While the percentage of scholars holding Ph.D. degrees in the departments studied increased from around 50% in 2011 to over 75% in 2019 (see fig. 5-1), the number of publications per scholar has – on average – doubled during the same time period, and internationally indexed publications have become more salient in scholars' output, as shown in Figure 5-2.

Figure 5-2. Average number of publications per scholar

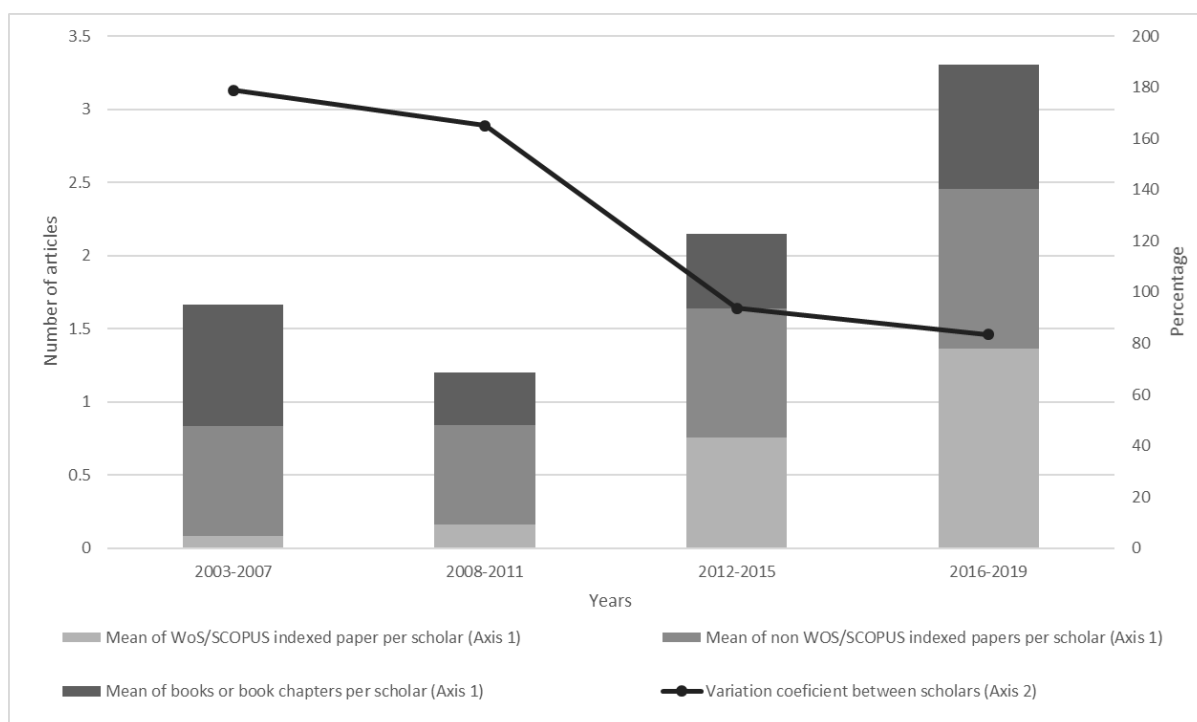


Figure 5-2 displays the change in the publication output of the scholars. Both the average number of papers per scholar (columns) and coefficient of variation⁴⁶ (line) reflect the effect of institutional transformations on scholars' publication practices. The line shows the decrease of the variation in the number of publications between scholars reflecting the widespread importance of publishing among scholars. Furthermore, while the columns display the increasing number of publications per scholar⁴⁷, the stacked bars show that this increase is mainly explained by the increase of internationally indexed papers, which represent roughly 40% of the publications between 2016 and 2019. Interestingly, however, this increase has not been at the cost of replacing traditional publication outputs, such as books or (more) continentally or nationally oriented papers. On the contrary, data seem to show that internationally oriented papers tend to grow beside traditional publications.

No doubt, institutional changes have impacted the sociology departments in Valparaíso as well as the day-to-day life of scholars. The changes contributed to parallel transformations in scholars' accountability and practices. The new incentive mechanisms have both changed the profiles of the scholars and influenced the hierarchizing of their practices. These practices are currently tensioned by different regional and international networks leading to a process described by one interviewee as '*surfing between networks*' (Interviewee 21, 2019). In the following section, we pay special attention to some effects of these tensions on the networks and connections of scholars.

⁴⁶ The coefficient of variation shows how large the standard deviation is relative to the mean. It was calculated as follows: $\sigma/\mu \times 100$, whereby σ stands for the standard deviation and μ for the mean value.

⁴⁷ The decrease in publications per scholar from 1.6 between 2003 and 2007 to 1.2 between 2008-2011 is explained by the early expansion of staffing oriented by teaching rather than research outcomes.

Surfing between networks. Who are the peers?

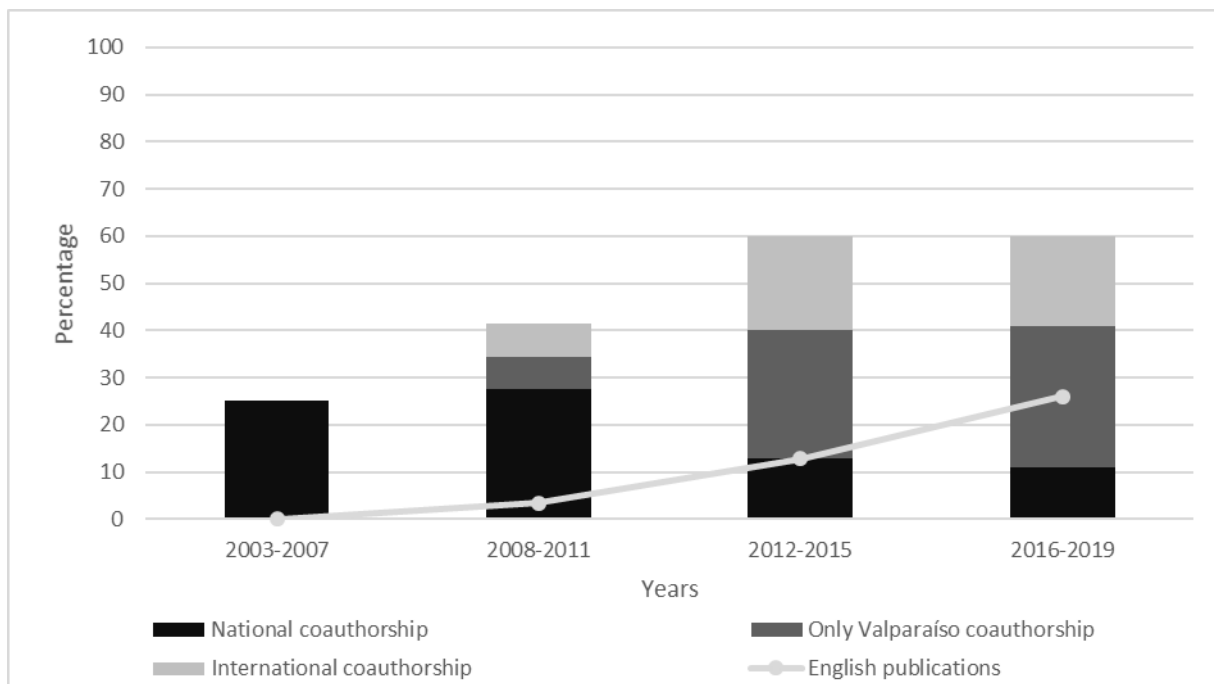
The increasing heterogeneity of the staff and the institutional pressures have triggered important changes in the reference networks for Valparaíso sociologists. Losing relevance of the (mostly national) early networks of the forebears was, to some extent, replaced by a renewed boost of national networks at the end of the first decade of the century. New initiatives, such as organizing a national network of sociology departments (Sociored) in 2008, resuming national conferences in 2011, re-founding the sociologists' professional association in 2012, and local efforts to networking across Valparaíso's departments (SocioValpo) in 2014 aimed at reinforcing national and local networks. These initiatives have had important impacts for national networks, such as re-engaging with Latin American ones⁴⁸. However, these initiatives do not seem to be able to compete with the strong institutional demands, which tend to privilege international networks. A new initiative to improve local associativity in one of the universities is very telling of this orientation. In the words of an interviewee:

These new [institutionally supported] research teams are very curious; international networks are a mandatory requirement to them. So, they aim to boost it [local associativity] while strengthening internationalization. And, to them, international won't mean Latin America. International means Europe or the US, and it's the same for Conicyt's university selection [based on publication rankings]. (Interviewee 17, 2019)

The internationalization of Valparaíso scholars has grown supported, in part, by these new institutional initiatives, and especially owing to the increasing international background of the scholars (as shown in figure 5-1). These new (more) internationalized staff, however, also developed local connections, which seems to highlight the importance of spatial localization, especially when these networks are involved in public engagement activities. In fact, renewed local and international connections are reflected in the co-authorship patterns of Valparaíso sociologists, as displayed in Figure 5-3.

⁴⁸ This re-engagement is reflected, for example, in the organization in Chile of the conference of the Latin American Sociological Association (ALAS 2013) co-organized by Sociored.

Figure 5-3. Percentage of coauthored papers



The stacked bars in figure 5-3 display the increasing percentage of co-authored publications of Valparaíso sociologists, with an increase from about a quarter between 2003 and 2007 to around 60% between 2012 and 2019. Locally co-authored publications and internationally co-authored ones account for most of the increase, while national associativity loses relative relevance. All international co-authors were either from the US, Europe or Latin America, and reflect in many cases individual trajectories. For its part, local co-authors were frequently scholars not working in sociology departments. For example, for the period 2016-2019, about 80% of the locally co-authored publications were co-authorships with scholars not working in the selected departments, most of which had other disciplinary backgrounds. This trend seems to echo the decline of disciplinary networks in favor of thematic ones. Some scholars reflected on this shift in their networks during the interviews, especially those working in multidisciplinary areas such as healthcare or gender studies. Interestingly, local, national, and international networks hardly overlap between them, with, for example, only 15% of the internationally co-authored publications were co-authored by other Valparaíso scholars. This trend depicts rather separate networks of co-authorship based mostly on scholars' trajectories and/or themes.

Notably, there is no significant difference in the type of publications between these co-authorship networks, with papers in internationally indexed journals gaining importance in all of them. For example, nearly half of the articles locally or internationally co-authored between 2016 and 2019 were published in those outlets (50% and 45% respectively). While this trend certainly echoed the institutional incentive structure, it has also reinforced the scholars' perception of hierarchized reference networks. The following quotations exemplify the different appraisals of these networks and the, sometimes conflictive, definition of scholarly peers:

[There are different kinds of collaboration] *for example, you can collaborate with scholars who work in your research themes and edit a special issue in a journal together (...) that makes a network beyond publishing an indexed paper, but a network interested in reaching other spaces to discuss, systematizing knowledge. That makes more sense to me than just submitting [an article to a journal]. There you have a discussion of ideas!* (Interviewee 19, 2019)

One of the main consequences for me is that I've had to weaken my networks, the groups with which I dialogue, and with which I constructed my sociological narrative to start discussing with audiences that, I suppose, are there on the basis of journals [impact] indicators (...) What I see is that there's a divorce between the university's goals and the actual research, I mean, between your actual peers, those who read you, those to whom your research make sense, and those productivity indicators that force you to look for other places. Those places have different epistemologies, which can be good, but the problem is that you're not going to be read, you don't have an impact there (...) to publish in certain journals I have to change the orientation of my papers (...) So, the requirement to do independent research is fulfilling a series of seemingly neutral indicators. But, of course, they are not neutral. In the end, they orient your research, frame your collaborations, the journals in which you publish, and so on (Interviewee 22, 2019)

The new colleagues are more oriented to international networks. They participate more frequently in LASA conferences [Latin American Studies Association] or ISA conferences [International Sociological Association] than in ALAS conferences [Latin American Sociology Association]. ALAS is peripheral to the international circuits (...) it is not very valued as a relevant scholarly space (Interviewee 17, 2019)

These tensions are especially salient in the choice of publication language. The line of figure 5-3 shows that, albeit most of the publications of Valparaíso sociologists continued to be in Spanish, the relative importance of English as a publication language has increased from 3% between 2008 and 2011 to around 13% between 2012 and 2015 and 26% in the last time period. Several interviewees reflected on the centrality of language in the differentiation of the networks. Expressions such as *'I don't speak English, and that is a limitation because it closes off some networks to me'* (Interviewee 17, 2019), or *'I don't publish in English, and that's a problem because the university demands English publications from me'* (Interviewee 22, 2019) reflect the difficulties of internationalization, while others such as *'I only have a few publications in Spanish. That hinders my impact at a national or local level'* (Interviewee 23, 2019) illustrate the trade-off that internationalization carries for local impact (see also the Helsinki Initiative, 2019).

Scholars, however, react to these conflictive orientations with a variety of practices very much in line with how they make sense of the scholarly work. Several interviewees reflected on how the conflicting orientations between local or international relevance and academic or social impact compel them to choose between the different spheres of influence. According to them, however, this positioning is never 'free' or absolutely owing to the hierarchized institutional demands. Interestingly, albeit most recognized these tensions in their own day-to-day practices, only a few actually described strategies to cope with them. These strategies aimed at re-combining the different institutional requirements (teaching, research, public engagement), and ranged from looking for 'economy-scale' strategies to

the merely instrumental use of international networks. The following quotations illustrate some of these varying reactions:

I think that's something that strengthens research here (...) we work around thematic clustering, and that cluster has a diffusion capacity. [For example,] we got a research grant (...) that we used to pay transportation and salaries to students who did the fieldwork. (...) we centered our efforts on their access to the fieldwork, to government actors, and so on (...) and that led to several dissertations. (Interviewee 22, 2019)

That allows us to somehow demonstrate [productivity] to the university (...) we can say 'look, we, from a critical stance, can fulfill the conventional indicators. We are scientifically productive (...) we can earn research grants' (...) but our aim is not reproducing this model. We aim at building alternative [research models] that go beyond the limits of the university. (...) I mean, when I'm writing a paper (...) I do so only because if I get that indicator [papers internationally indexed] I can get funding for my work, in that sense it's only instrumental for me (...) we realized that our strategy couldn't be only from the margins, because that puts us in a very vulnerable position (...) we should go into the conventional circuit, but always with the idea of earning [grants] to do another thing [than just publishing] (Interviewee 16, 2019)

It is the old extension thing. Somehow you should bring your findings into dialogue (...) You should publish [your results], but you should also exhibit them [your results] for public scrutiny so the people can say 'she is talking nonsense'; to show them, and enter into this dialogue (...) We need different ways to enter into this dialogue (...) joining expert panels or writing columns in the newspaper won't work, that is not understanding how politics works (Interviewee 23, 2019).

Internationalization trends and institutional requirements have certainly influenced scholars' day-to-day practices as illustrated in the transformations of their publication practices and networks. Nonetheless, albeit the shared institutional demands, these trends have also led to important differences between scholars resulting in a different positioning against the sociological endeavor. These developments question the straightforward trait of institutionally led internationalization while highlighting the renewed relevance that individual and organizational trajectories have in the becoming of scholarly communities.

Conclusion

The focus of this chapter was on the influence of scholars' trajectories and institutional demands on the practices and discourses of sociologists. In doing so, we have used Valparaíso (Chile) as a case study to illustrate the becoming of scholarly communities during the last fifteen or so years. As shown, internationalization trends have exerted a key influence on the practices and discourses of sociologists in that part of the world, they have diversified the fields of inquiry and approaches, the publishing practices, and have actually become a driving force for the day-to-day practices of many scholars. The relatively recent organization of university-based communities of sociologists in Valparaíso (since 2003) makes it an insightful case to study the entanglements between institutional transformations and scholars' trajectories and practices. We used a multi-method approach that included quantitative and qualitative methods to thoroughly describe these entanglements.

Our methodological design as a case study imposes limits on the generalizability of the findings. However, the worldwide reach of the pressures analyzed also makes it reasonable to consider that similar tensions have arisen in similar contexts across the globe. The highly international background of Valparaíso sociologists is largely influenced by national policies aiming at the international training of scholars. Similar initiatives have been put into practice in several countries from the so-called (semi-)periphery. Policy requirements such as returning to the country after training, as well as the (relatively) better off possibilities of university appointment, makes it reasonable to hypothesize that this situation is likely to occur across the (semi-)periphery of the world of science.

Our analysis illustrated the high impact of institutional demands on scholars' practices and discourses. The universities' new incentive structure, strongly influenced by national policies and international university rankings, is currently omnipresent in the practices of sociologists in Valparaíso. This structure has institutionalized the hierarchizing of scholarly tasks (i.e., teaching, research, public engagement) as well as scholars' networking and publishing. These elements influence the scholars' reflection on their practices and highlight the tensions emerging between disciplinary traditions. In our case, these tensions are reinforced by the internationalization of scholars' trajectories and the increasing diversity of meanings attached to their practices.

Interestingly, whereas our data seem to point to the decreasing relevance of the national sphere in terms of scholarly referents, networks, or publishing venues, parallel trends toward internationalization and 'localization' seem to be gaining ground. Our analysis of the scholars' publication outcomes uncovered that the importance of internationally oriented publishing networks grows beside (more) continentally or nationally oriented ones, while co-authorship patterns show the parallel growth of international and local associativity. This finding further illustrates the complexities of internationalization processes at a local level and elucidates the varying orientations of the scholars in that part of the world. Publication language gains special importance in this context and currently epitomizes the tensions and trade-offs of internationalization processes. While English has become the international *lingua franca* of science, regional (local, national, or continental) networks continue to rely mostly on their native languages. In this regard, publishing in a local language becomes key to securing the local relevance of scholarship (see also Helsinki Initiative, 2019).

From our standpoint, case studies like the one used in this chapter are key to understanding the current development of scholarly disciplines, especially in (semi-)peripheral places. They can help to understand how global disciplinary trends are embedded in scholarly communities across the world while highlighting the tensions and divergences of the internationalization processes. Moreover, multi-method analysis can also help to shed light on the mechanisms through which current index-based internationalization affects the course of the disciplines. As discussed, this influence is not as straightforward as it would seem, and it is necessarily mediated by the institutional framing and scholars' trajectories.

While internationalization might seem natural for some disciplines because of the 'universal' trait of their research objects, for social sciences disciplines this is not equally evident. Much controversy has emerged during the last fifty or so years about the global trait of the social sciences, their hyper-specialization, and the trade-offs that these moves imply for this type of knowledge. Whereas several scholars have stressed these tensions, national and international university rankings and science

administrators continue using internationally indexed papers as a shared measure to assess the quality and relevance of scholarship.

By way of example, the largely unanticipated social uprising and institutional crisis in Chile in October 2019, and the rather poor scholarly explanations of it, may well reflect some aspects of the trade-off of this index-based internationalization for social sciences disciplines. Pressures to periodic publishing in certain venues have resulted in an increase of internationally indexed papers (co-)authored by Chilean social scientists and their increasing thematic specialization (see Chapter Two). These trends have, in turn, led to the internationalization and hyper-specialization of scholarly communities, with the consequent trade-off for comprehensive models to understand broad social phenomena and/or of local relevance. When scholars are evaluated (mostly) by their contribution to global networks, they are compelled to resign or at least diminish their engagement beyond academe and sometimes walk away from research themes of (mostly) local relevance.

We do not oppose internationalization. We rather assert that the effects of its current form on scholarly traditions and communities require more attention, especially in social science disciplines. Multi-method approaches to scrutinize the local impact of current internationalization, as the study presented here, might be especially fruitful.

6

On data and methods

*Así como repetíamos antes a Marx, ahora estamos repitiendo los manuales de cómo hacer.*⁴⁹ (Interviewee 19, 2019)

Introduction

The epigraph that introduces this chapter comes from a scholar working in the sociology department of a university in Valparaíso who was interviewed for Chapter Five of this dissertation. This quotation, originally referring to sociologists' training, illustrates the key distinction between prescription and description in methodological reflection – in other words, between presenting the data and methods used as a design justified by relevant authors and texts and the description of the actual procedures used and issues that emerged during this process. In this chapter, I favor the second approach. Therefore, instead of presenting a detailed account of the data and methods used and the references that support those decisions, I have emphasized the methodological issues that arose during my research and the strategies used to deal with them. With this in mind, the following chapter is constructed as a kind of (self-)ethnographic narrative. The main sources used to write this chapter are my memos, emails, notebooks, and early drafts, omitting references to any papers and books, since these can be found in the respective method section of each of the chapters that make up the main body of this dissertation (Chapters Two to Five). This narrative strategy allows me to highlight the subjective elements related to my positionality, while also reflecting on the effect of the methodological decisions made during the course of the research. A cautionary note should be added, however, since I wrote this chapter at the end of my Ph.D. Although I used empirical sources to reconstruct the process, this has inevitably ended up appearing more straightforward than it actually was.

Framing the research and initial decisions

The functioning of scholarly communities is a topic I had been thinking about for a while. Before earning a scholarship and coming to Belgium, I worked for about ten years in Chilean universities. During those years, I not only observed transformations in universities and scholars, but was also involved in different studies aimed at depicting certain aspects of these transformations. For example, I studied interdisciplinary processes at a university organization and student practice level, as well as the teaching practices of a group of education studies' scholars. These different experiences made me aware of the importance of both disciplines and institutional frameworks as two distinct forces influencing scholars. Although my Ph.D. research proposal framed these as part of the scholars' socialization processes, relatively soon I refocused on scholarly practices and their transformations. About a year later, I started calling these processes internationalization.

Once I had decided to deal with these phenomena, the next question was about how to do so. Although I had some ideas derived mainly from a study I led in 2011 about sociology in Valparaíso (which is the basis for Chapter Six of this dissertation), the overwhelming amount of research I found led me to rethink certain assumptions. The folders containing the pdf files I downloaded during this period reveal that I read several theoretical reflections on Chilean and/or Latin American cases, as well

⁴⁹ Just like we used to repeat Marx, we now repeat how-to-do [viz. methodology] handbooks.

as scientometric descriptions and ‘evaluations’ and historical accounts of specific disciplines and universities. Noticeably, several of these papers stress the hierarchical traits of the world of science. This influenced me to frame Chile as (semi-)peripheral, as a way of highlighting both the global trait of science and its structured nature.

Inspired by reading these studies and experimenting with a kind of research that a few years later my supervisor would graphically describe as ‘thinking with data’, I started an exploratory phase looking for ways to depict scholarly communities in Chile. Most of my notes from these months address the problem of finding a way to depict these transformations while at the same time recognizing the historical trajectories of disciplinary communities. Sporadic notes on sampling issues also started to appear. My first strictly methodological decision probably emerged in this early phase. I decided to treat the publications included in international databases (such as WoS) not as an indicator of ‘good science’ (as several scholars seemed to do) but simply as a specific kind of publication. These early concerns were reflected in my notes through questions such as: How many scholarly journals were/are published in Chile and not included in international indexes? What role do scientific associations and conferences play in the evolution of scholarly communities? Can productivity be correlated with the organization of undergraduate and graduate programs at universities? Does the year of first publication in English [in WoS] change depending on the discipline?

These and other questions led me to collect information from several sources, which helped me frame the research question while providing contextual data. For example, with the help of the Latindex directory, university websites and the Chilean National Library website, I composed overviews of over 850 Chilean journals not listed in WoS. I also listed the undergraduate and graduate programs in Chilean universities based on national statistics and on the history of disciplines institutionalization in Chile, as well as a list of professional and scientific societies based on the Chilean National Register of Organizations. During this period, my notes were not systematic and I wrote a huge number of drafts (a new one almost every two weeks), reflecting my struggles with the English language as well as the lack of clarity on the matter.

During these months, I had regular monthly meetings with my supervisor. In these meetings, I presented him my drafts, which he always critiqued with ‘What does this mean?’ appearing repeatedly in the notes I took during our meetings. This continued until I presented him with a draft titled ‘Internationalization as communication’. In this draft, I outlined a hypothesis that would somehow guide further analyses – internationalization can be understood as communication processes between national (or local) and international networks. Although that draft was never finished, it helped me imagine a way of depicting the increasing international visibility of Chilean scholars while recognizing the trajectory of scholarly disciplines in Chile.

At that time, I visited Chile and carried out several exploratory interviews with the editors-in-chief of leading journals and with representatives from national scientific associations. Despite the fact that these interviews provided the initial empirical data for Chapter Five, they only made my research at that time more confused. This confusion, reinforced by a family crisis, was later reflected in several drafts that unsystematically combined quotations from journal editorials, interviews, and scientometric analyses. Despite the unsystematic nature of most of these analyzes, my notes from this period somehow helped me to disregard certain paths of investigation and refine the aim of my research.

My supervisor then helped me select the relevant information and to organize it in a ‘publishable’ way. From my notes on a meeting with him, the idea that I was dealing with different issues and they should be published as different papers appeared for the first time. This led me to face my first strictly

methodological dilemma, having to choose between a quantitative or qualitative approach. Aware of the potential of the different approaches and of their trade-offs, I decided to work (first) with quantitative data, given its ability to compare different disciplines over time.

A question about sources emerged from this dilemma. Despite the well-documented limitations and bias of Web of Science databases, I decided to use them because they currently represent the international sphere of science for many scholars and have a powerful influence on quality assessment. Seemingly technical questions then occupied my working hours for some months. Several Excel files with incomplete attempts to build a database reflect my efforts to answer some of the questions in my notebooks. Should I use the whole set of WoS databases or just the core collection? Which kind of documents should I use? What would be a reasonable time frame for the research? Should I work with individual years or with time periods? What should be the length of those time periods? How could I standardize the publication and citation data to compare between disciplines and time periods? Which kind of distinctions should/could I explore?

My own limitations solved some of these questions. For example, I am not an expert in every discipline, so it was beyond my capabilities to distinguish between approaches or topics within the disciplines. Others were solved on the basis of the databases' limits with, for example, WoS data for publications before 1975 being rather incomplete. More importantly, a third kind of issue forced me to make important decisions that would have an impact on the research's scope, such as including any kind of documents, using ten year periods, or using data at article and journal level. The decision to carry out a descriptive analysis was key and reflected the exploratory ambitions that guided the research during this phase.

After several attempts, I finally decided to retrieve all the papers from the WoS core collection (co-)authored by at least one scholar with an institutional address in Chile between 1976 and 2015 (121,451 papers). The decision to classify the data into ten year periods was a determining factor for the paper's ambitions. This move allowed me to identify general patterns but limited the opportunity to explain the impact of specific policies. In order to compare disciplines and time periods, I calculated the ratio of these papers to the total sum of papers per discipline and time period. In addition, I retrieved the total number of articles citing at least one of these papers and then calculated the ratio of these to the total sum of papers that cite other papers per discipline and per time period, no matter when these cited articles were published. This decision was a way of avoiding the problem of different citation practices among disciplines, but also involved trade-offs, making the interdisciplinary impact or calculation of the impact of specific authors or papers untraceable. On the other hand, to address changes at a journal level, I retrieved all the papers published in every Chilean journal since their inclusion in WoS (whether these papers were co-authored by Chilean scholars or not), as well as the articles citing those journals per journal and per decade.

Some of these results were presented at the 2017 Latin American Conference of Sociology. Looking for ways to adapt the presentation to the audience, I decided to frame the research by illustrating the multiple spheres involved in scholarly communication. I drew a map of both the national and international spheres that influence the communication practices of scholarly communities (e.g., universities, publishers, science policies, journals, databases, scholars, and so on). This map, initially drawn to illustrate the ecology of scholarly publishing, has accompanied my reflections on my office pin board since then and has actually helped guide my research⁵⁰.

⁵⁰ A picture of my office pin board is available in Annex 6.

Broadening the approach through a quantitative and qualitative lens

Once the scientometric analysis was finished, the next question was which journal to submit it to. This seemingly technical question revealed a methodological one, as it influenced the tone and focus of the arguments made. This paper was presented to a general sociology journal for evaluation. My notes do not include anything about the reasons for this decision. However, some of the 'answers for reviewers' I drafted after we received a 'major revision' decision reflected my interest in influencing sociological reflections on the topic. After one round of revision, this paper was accepted for publication in the same format as presented here in Chapter Two.

This chapter shows the important transformations in publication patterns across disciplines at both article and journal levels. These findings prompted me to follow my initial intuitions more closely and look for ways of observing transformations in national disciplinary communities, leading to their internationalization. The fundamental question was once again about the kind of data I should use. From my previous unsystematic discourse analysis of the journals, I had learned that the journals' editorials contained relevant information. So, I decided to look at these sources more closely. The outlines I drew up during this period show that this decision was aimed at depicting the trajectories of scholarly communities, without relying on the background of specific scholars, disciplines, universities, or scientific societies.

The next question that arose was once again a methodological one. Should I use a quantitative or qualitative approach? The first instruments I designed to systematize the data illustrate the doubts I had between approaches. However, both technical limitations such as the available data (or my access to it) and the emphasis on the subjective processes of the communities I wanted to focus on led me to choose a qualitative design based on the journals' discourse analysis. During my next visit to Chile, I collected the data. I checked each issue of the 47 Chilean journals included in the WoS core collection at the end of 2015. I downloaded the digitally available issues of these journals from official websites, while I consulted the non-digitalized issues at the National Library of Chile over almost a month, working every day. I searched each issue for relevant structural features, such as types of articles (translations, literature reviews, news items, and so on), the authors' institutional addresses, referencing styles, and publication language(s) as well as (more or less explicit) statements about the journal's geographical orientation and its community within editorials, chronicles, or letters to the editor. Alongside my own notes on the different journals' structural features and editorial policies, the final dataset contained 1,529 documents from the journals themselves (such as editorials, letters to the editor, news, and author guidelines).

The next question was how to approach the analysis. Again, a conference helped me. About a month after returning to Ghent, I presented the results of the scientometric analysis (Chapter Two) at a conference in Milan. There, a famous senior scholar strongly critiqued my approach because of its 'methodological nationalism'. Moreover, he asked a former Ph.D. student to send me her dissertation to show me how he thought the topic should be studied. Detailed comments on this dissertation in my notes are evidence of how profoundly this critique influenced my work and Chapter Three is my roundabout answer to it.

Regarding the technical procedures used to analyze the data, the first step I took was to digitalize and organize all the documents using Atlas.ti. Then, I close-read all the documents and coded them on an inductive basis. Due to the high degree of variability between the documents, I had to repeat this process twice. The end result was a set of 29 codes that allowed me to restructure the data in terms of time periods, themes and the journal's disciplinary coverage. Then, by means of double-entry tables (year/journal) per theme, I looked for variations and common elements between disciplines, journals, and years. The memos I wrote during this process show repeated revisions of some of the codes and

double-checking of the meaning of quotations in the original documents. These tables were also the basis for successive drafts of the final document (Chapter Three).

Writing this chapter was challenging, especially selecting the relevant distinctions used to read the data. To do so, a course on marginal(ized) intellectuals from the Doctoral Schools was key. Different distinctions emphasized during this course helped me read the data, with some phrases from my work even appearing in the final version of this chapter. Once finished, this paper was presented to two journals before being accepted for publication. The emails I exchanged with the co-authors (my supervisor and co-supervisor) after each rejection help reveal this paper's aim. The first rejection early on involved the editor asking us to write a theoretical section engaging with STS tradition. The arguments for not resubmitting the paper were based on my interest in maintaining the references, and then, the approach. Although the second rejection was very disappointing because of the poor quality of the evaluation carried out, the critiques on methodological aspects helped improving these explanations in the version accepted by the third journal.

The paper finally accepted for publication was a shortened version of this dissertation's Chapter Three, since the editor asked for it to focus on natural sciences. In both versions, this article reflects two very different forms of internationalization: a traditional one, depicted as 'nationalist' and an emergent one, characterized by the centrality of international indexes and databases and described as 'calculating'. Although the data was very useful for depicting the trajectories of internationalization, the memos I wrote during this process reflected some of my doubts about it. For example, some quotations had comments such as 'Is that really true?' or 'Why did the journal say that?'

These questions illustrated approach's perceived limits. I decided to carry out more interviews with the journals' editors-in-chief in order to both double-check some elements and write another paper based on those interviews. This idea was reinforced by comments from scholars with different backgrounds who read the draft of this paper. Two sent me emails raising questions about the actors involved in the story and argued that behind the journals were people their own perceptions and interests. Therefore, during my next trip to Chile, I conducted nine more interviews with the editors-in-chief of the journals.

Choosing a qualitative approach for the interviews was obvious to me. I had not only already carried out three interviews using this approach, but also this approach provides the kind of information I needed. Therefore, a new methodological question arose about how to compare these interviews with those conducted before. According to my notes, I divided this question into two parts – sampling methods and the interviews' thematic guidelines. Then, I designed a sampling strategy that stressed the important elements I found in the previous papers. I opted for three elements – disciplinary aim, sponsor and/or publisher, and language of publication. Regarding guidelines, I designed a list of themes covering the same topics dealt with in previous interviews (the history of the journal, perceived transformations in the world of publishing, the journal's goals and editorial strategies, the target audiences, and institutional couplings), as well as new elements derived from my analysis of the journals. Furthermore, the decision to write a paper using 'living sources' also brought with it a whole new set of questions on ethics. For example, although I used 'informed consent letters' in previous interviews, the phrasing of these letters was open to misinterpretation. Therefore, I rewrote the letter using a model from a prestigious university in Chile as a template.

Once again, the transcripts of the interviews were qualitatively analyzed using Atlas.ti. First, I used open coding to select and identify the interviewees' relevant ideas and phrases. By assigning codes to these selections, I was able to sort and structure the mass of raw data. Next, I organized this set of codes into double-entry tables (codes/interviewees), thereby comparing the different quotations and

interviewees. This procedure, repeated systematically in the following phases of the analysis, allowed me to keep track of the heterogeneity and variance of the data (including inconsistencies in the arguments and differences between interviewees). After two iterations of this inductive process, I classified the data into a set of twelve codes and grouped them into three code families. These code families and the data material were again linked to the broader design of the research. Using tables, I paid attention to the relevance of the features that oriented the sampling process. The final set of themes constructed through this process is the basis for how this paper is organized. The decision of choosing a journal to which to initially submit this paper was relatively easy, as I had actually written this paper with a journal in mind. However, after making some methodological clarifications as requested by the editor, the article was rejected and we had to look for another journal to submit it. Then, we adapted the paper and submitted it to an STS journal where it was rejected again. Finally, we decided to submit the paper to Library Sciences journal in which it was accepted. The different aim of the journals considered reflects the interdisciplinary potential of the topic.

The last chapter of the findings (Chapter Five) has a rather different origin. Whereas all the previous chapters used at comparison between disciplines as a key distinction, the last chapter focuses on only one discipline (sociology) and studies the changes in scholarly communities in a specific region of Chile (Valparaíso). The motivation for this paper did not come directly from the previous phases, but from the mapping strategy that broadly framed my research on my pin board.

Thus, my motivation to work on this paper was to address the connections between some of the elements highlighted in previous papers with the scholars' perceptions and university frameworks. Soon after, a set of methodological questions I wrote down in my notes helped me structure the paper. How could I assess the high level of variability between scholars and institutions? How big should/could my case study be? I soon realized that it was not possible to cover the same range of disciplines as in my previous papers and I started writing about an old unfinished paper on sociology in Valparaíso in my notes. Once I had decided to use the data from this paper to write the last chapter of my dissertation, several methodological issues came to the fore.

This time, however, the methodological questions were different from the previous ones. Whereas in (most of) the other phases I faced a decision about building the design from nothing, in this case I already had a collection of data from 2011 that limited the methods, sampling, and instruments to be used. I opted to design a case study using the same approaches used in my 2011 fieldwork (bibliometrics and interviews). Several decisions had to be made, however. For example, how could the list of authors for the bibliometric analysis be identified? Should all the scholars with contracts be included or only those who had been published? What about lecturers without permanent contracts? In other words, how should the scholars be defined, identified, and sampled?

Besides these sampling issues, the instruments also required consideration. The 2011 interviews were conducted using a thematic guideline that emphasized certain elements. A new methodological problem therefore arose – how to compare these interviews with the new ones carried out in 2019. Several comments on the topic in my notes illustrate my concerns with this issue and early drafts of the interview's themes reflect the fact that I framed the issue in a somewhat similar way to the interviews used in Chapter Four. I sketched out a thematic guideline for the interviews, covering the same topics addressed in 2011 (perception of the discipline, organizational environment, current scholarly practices, and scholarly communities) and including new concepts (such as internationalization) on top of that. Furthermore, I decided to repeat the interviews with two of the scholars interviewed in 2011 with a dual goal. Firstly, it was aimed at testing out the new guideline. The hypothesis was that if I got similar (or consistent) answers between 2011 and 2019, these would be indicative of the instruments' comparability. Secondly, this exercise was also aimed at identifying

changes in interviewee perception. This was especially insightful during the analysis phase. The differences between the interviews in 2011 and 2019 provided me with clues about the elements triggering changes in the scholars' perception.

Besides the decisions influenced by the 2011 fieldwork, I also faced other methodological issues related to sampling interviewees and the kind of analysis used. A recurrent topic in my notes from this period focused on a key question – which distinctions should guide the sampling method? In the 2011 fieldwork, this decision was irrelevant, since I asked all the scholars for interviews and interviewed everyone that accepted. Now however, the number of staff had increased and I faced the need for interviewee sampling. I decided to use twelve interviews to maintain the symmetry with the number of interviews from 2011, careful to equally represent genders and to sample scholars who work in different universities, and research on different themes and approaches based on the analysis of their publications (bibliometric analysis).

The final sampling design was made up of six interviews with forebears of the departments studied and 24 interviews with scholars working during 2011 and/or 2019 in those same departments. Despite the difficulties involved because of the closure of some of these departments, the high level of scholar mobility between Valparaiso's universities allowed me to interview scholars that had worked at those universities. Regarding the bibliometric analysis, I compiled a list of 44 scholars who work or worked at the departments involved and double-checked this list with the forebears and department heads. This list was made up of the authors of all the papers who had an institutional address at one of the departments, plus scholars identified by the forebears and/or department heads as working there (semi-)permanently. The list of publications was retrieved from international and regional databases (WoS, SciELO, Redalyc), Google Scholar, and their profiles on ResearchGate and Academia.edu. I compiled overviews of 424 publications. The figures used in Chapter Five, however, are based on the 230 documents that had the departments studied identified as their authors' affiliation. When available, I also used these sources to identify the educational trajectories of the scholars. In other cases, I used scholars' résumés or interviews.

Data analysis emphasized the case study element of this paper and was aimed at bringing the quantitative and qualitative data into dialogue. While the qualitative data were organized in the Atlas.ti environment, the quantitative material was analyzed using Excel. The analysis started from an open coding of the qualitative material, later refined by further coding processes. In all of the subsequent coding processes, the data was contrasted both between interviewees and with quantitative information, looking for inconsistencies, differences, and patterns. The resulting paper, presented here as Chapter Five, was submitted for evaluation and received a minor revision request from a journal addressing both higher education studies and the study of social aspects of science. This paper is currently accepted for publication in this journal.

Conclusion

This not-so-standard methodological reflection illustrates the path-dependency of the methods used and the emergent design that guided my Ph.D. research. It highlights the nuances of the research strategy of 'thinking with data'. As I hope is made clear in this chapter, far from neglecting the importance of literature and theoretical insights, this inductive approach aims to highlight the relevance of self-reflexivity in (social) science inquiry. Moreover, as other authors have proposed before, it highlights the importance of putting theoretical and empirical sources into dialogue without either constraining the findings to a theoretical framework or resigning theoretical ambitions to the data's contextual traits.

The wide variety of methods used – from quantitative approaches (bibliometrics and scientometrics) to qualitative ones (discourse analysis and interviews) – reflects the different research questions addressed in each of the chapters that make up this dissertation. Although the internationalization processes of science in Chile make up the backbone of this dissertation, their impact on and the connections between different actors, institutions, and networks are addressed through specific theoretical emphases and methodological strategies. As shown in this chapter, both technical restrictions and epistemological decisions constantly influenced the methodological design.

The mapping strategy (see Annex 6) that inspired several decisions throughout the research proved a useful tool for understanding complex social phenomena like the internationalization of science. It helped the research to go beyond the seemingly technical definitions of internationalization shared by many policymakers and science administrators, as well as to break with deterministic explanations of it (either in institutional or actors' terms). As is shown throughout this dissertation, internationalization depends largely on its ecological niche. Therefore, it is always worth questioning how this niche changes over time, which specific elements are involved, and if actors or institutions make sense of it in the same way.

Conclusion

This dissertation focuses on scholarly communication networks' internationalization processes, using Chile as a case study. The four chapters presenting the main findings of this dissertation address different aspects of these processes. While Chapters Two and Three put the internationalization processes into historical perspective, Chapters Four and Five analyze in detail some of the ways in which the current form of internationalization affects scholarly communities. As a whole, this dissertation problematizes the concept of internationalization, analyzes the tensions that emerge as a result of these processes, and brings the unequal world of science structure to the fore. It pays particular attention to the effects of international databases and indexes on the scholarly practices of authors and journal editors in this part of the world of science's (semi-)periphery.

Internationalization is far from a new concept in the world of science. Since the nineteenth century, several spaces and institutions have been set up to bridge the gap between national communities and to promote international collaboration. International conferences, scholarly societies, and journals have been key to these processes. Our analysis of the historical developments of Chilean journals (Chapter Three) illustrates the evolution of internationalization trends in these scholarly communities. Although the formation of international scholarly communities may appear to be the 'natural' consequence of science's universalist ambitions, it is shown that these were not part of a self-realizing program able to transform a plurality of heterogeneous scholarly communities into a unified global science system. On the contrary, the evolving functions attached to Chilean journals' internationalization – from emphasizing their impact on the country's development to aiming to improve their position within the rankings – reflect the fact that internationalization processes are not straightforward and actually depend on structural traits, such as the unequal distribution between dominant regions and the (semi-)periphery, as well as the networks' national and international couplings.

The rise of international databases and indexes during the second half of the twentieth century and their omnipresence now in the twenty-first century has influenced important aspects of internationalizing processes' transformations. Though contested, numerical representations of the world of science based on these instruments have not only led to new forms of knowledge but also to new kinds of interventions. Chapter Two illustrates some of the effects that both national and database policies have had on scholarly communities' publishing practices and on their international impact. The form of internationalization these tools have prompted has not only broadened the horizons of national scholarly communities, but has also altered the everyday world of many scholars. As we show in Chapter Five, internationalization pressures have often been translated into output requirements, especially publications and citations in WoS-indexed journals. Moreover, in important aspects, the journals' editorial changes described in Chapter Four response to the presumed requirements for inclusion in WoS and other databases. Today, it has become clear that internationalization depends on the acceptance of certain international standards in order to measure national or local accomplishments largely influenced by the image provided by these databases and indexes.

Although these trends have led to the homogenization of both publishing practices and their impact across scholarly disciplines (see Chapter Two), important differences can (still?) be observed. While internationalization has been self-evident in the natural sciences since the nineteenth century, given

the fact that their object – ‘nature’ in its different forms – transcends national boundaries, trends are different in the humanities and the social sciences, seeming to have a more diverse and contradictory process than that of natural sciences. The editorial change of WoS databases during the second half of the 2000s allowed for the indexation of several Chilean journals, and especially impacted on these disciplines. While this trend helped to strengthen the international visibility of several communities from the social sciences and humanities, in many cases it also led to apparently counterintuitive trends, such as reinforcing the importance of regional networks (see Chapter Two) or the journals’ ambitions for sociopolitical impact, as described in Chapter Four.

This relevant change in WoS editorial policy was probably motivated by the emergence of new competitors, such as SCOPUS, as well as the wide range of regional databases to index scholarship from the (semi-)periphery. These innovations were key to enhancing the visibility of regional (national or continental) networks. In the Chilean case, the Latin America based SciELO database was key to reinforcing continental networks (see Chapter Three), while indexing several regionally-oriented journals in WoS databases – especially between 2006 and 2009 – prompted their global visibility. This boost to regional networks could certainly have furthered the international visibility and impact of scientific work conducted in the (semi-)periphery. However, as quantitative data seems to show, the impact of scholarship from these parts of the world tends to remain systematically low (see Chapter Two).

Internationalization pressures, journal rankings and impact factors support a particular ‘citation consciousness’ that reproduces center-periphery differences. Both scholars and editors have learned to take the main scientific indexes – and the journal rankings they produce – into account (see Chapters Four and Five in particular). The selection and evaluation mechanisms embedded in WoS (and related instruments) are both institutionalized and interiorized. In this regard, many scholars and journals now tend to ‘play it safe’. As a result, regional scholarship risks becoming alienated from its own traditions. Supporting the development of regional niches is difficult when journals are evaluated in terms of their visibility in international databases. Similarly, when scholars are evaluated according to their contribution to global networks, they are compelled to resign or decrease their engagement beyond academe and researching topics of mostly local relevance.

This research’s methodological design limits the possibility of its findings being generalized. However, the worldwide reach of the pressures analyzed also means it is reasonable to assume that the same kind of tensions have arisen in similar contexts across the globe and to postulate that other scholarly communities in the semi-periphery are being confronted with similar challenges. National academic systems may certainly diverge on how they stimulate internationalization and may adopt different measures and incentives. Many different national varieties of internationalization policy currently exist. Understanding exactly how the ambitions of international science are articulated in different parts of the world seems to be highly relevant to understanding the evolution of the field of science. Detailed studies on the different aspects of internationalization processes can be useful to this enterprise and may contribute to going beyond merely technical descriptions or naïve representations that either celebrate or condemn current internationalization trends. With this in mind, we will now present some more general considerations about two key elements that may prove useful to this endeavor: the role of international databases and indexes and the complex structure of the web, made up of the practices, actors, and institutions involved in internationalization processes.

The coming of the indexes era: possibilities and pitfalls of this representation of science

Since the revolutionary launch of the Science Citation Index (SCI) in 1961, several indexes and databases have been created to either cover the social sciences and humanities (e.g., SSCI, A&HCI, and ERIH) and regional scholarship (e.g., SciELO, the Chinese Citation Index, and the African Citation

index) or simply to compete in the emerging market of scholarly indexation (e.g., SCOPUS). The sudden boom during the first decade of the twenty-first century consolidated an ecology of indexes, which has successfully delimited scholarly networks, for example, in terms of their geographical (international, continental and national) reach. Moreover, the clear demarcation inclusion in these databases provides has meant they have been eagerly adopted by many institutions as crucial for assessing scholarly outputs. Scholars, communities, journals and institutions worldwide are currently assessed based on their participation in these networks. These instruments have transformed the traditional criteria used to assess scholarship and the indexes' prestige and/or geographical reach has actually come to constitute an indexes ladder – from regional to international (global) – that exerts a high level of influence on the practices of journals, authors, and readers.

Regarding journals, the improved visibility these instruments provide them with is the first self-evident result. In addition, other aspects – such as the fact that inclusion in these databases usually brings with it the attribute of quality have also had an important impact on how these publishing venues function. Unsurprisingly, journals now collect these 'badges' or 'certification stamps' to demonstrate their quality to sponsors and, most importantly, to attract potential authors (and readers?) by, for example, showcasing them on the journal's website. For semi-peripheral journals, such as Chilean ones, the expected 'indexation path' starts with inclusion in regional databases (e.g., Redalyc and SCIELO) and then jump to SCOPUS and finally WoS. Although not all journals follow this path – and variations according to disciplines can be observed – this widespread representation of 'journal growth' illustrates the role of the ecology of indexes in the hierarchization of networks and the geographical delimitations they currently embody.

Both the institutionalization and internalization of the image of the world of science portrayed by this ecology of indexes have also influenced important author practices. The incentive structure based on this ladder of indexes influences the choice of journal that scholars decide to submit their articles to, and then, their acceptance of its language, format, thematic and disciplinary specialization. Publishing regularly has become mandatory for scholars (publish or perish), but not all publications count. Different instruments for scholarly management currently rely on the hierarchy provided by these databases and indexes. In the Chilean case, this hierarchy is reflected, for example, in CONICYT's evaluation criteria, university accreditation standards, or the monetary incentives per publication paid by many universities. Although there are differences between disciplines, all of these place the WoS (and sometimes the SCOPUS) journals at the top, followed relatively far behind by those only included in regional databases. The quality hallmark that indexation awards journals seems to extend automatically to the papers published in their pages and then to their authors. In this sense, adopting these mechanisms reinforces the unequal structure of the world of science and risks alienating local scholarly traditions in the semi-periphery.

Besides these and other changes in journal and author practices, the rise of this ecology of indexes has also affected traditional reader practices. According to WoS founder Eugene Garfield, the main motivation for creating the Science Citation Index was to aid bibliographical research, given the enormous amount of published texts. This concern makes sense today more than ever. Since the 1950s, the number of scholarly journals has rocketed and the number seems to be growing still. In this context, the ecology of indexes has gained importance by helping readers discriminate between sources. In important aspects, these instruments have positioned themselves as gatekeepers of authoritative science and guardians of scientific values. Moreover, the way these databases are organized has also allowed for new ways of surfing between papers and has helped to radically change bibliographic research, from manually going through entire journal issues to searching for single papers in electronic databases using keywords.

Certainly, these effects on key actors are illustrative of the current centrality of international databases and indexes. However, it is these indexes' particular focus on the connections between papers (citations) that arguably makes them the most important innovation in scholarly communication over the last fifty years or so. This emphasis has brought the traditional practice of referencing to the fore and has renewed its importance as the basis for a second layer of structuring, hierarchization within databases and indexes. While important research on scientific communication systems has been encouraged by this new numerical representation of the world of science, it has also affected scholarly practices themselves. The network of papers connected by citations and made available by these instruments allows for both the impact of the journal or article to be measured and to facilitate surfing between papers (either to cited or citing papers)⁵¹ for bibliographical research.

The combined effect of these uses has performative effects, prompting a particular citation consciousness that has tended to reinforce already dominant positions within the world of science. While journals have learnt to be attentive to citations, authors can now easily trace the impact of their research and readers have a basis for identifying the most influential scholarship and venues. This consciousness has affected important aspects of the scholarly communication system and, in a kind of recursive loop, contributes to reproducing the hierarchy. The visibility of citation links provided by these databases makes it easy for readers (and potential citers) to surf between papers that claim to be related. This new possibility reinforces the use of citation as a rhetorical tool while adding a new dimension to Merton's Mathew Effect, involving the differential visibility of papers regarding the citations they include. Furthermore, since several journal editors have included the likelihood of citation as a selection criterion, authors may tend to reproduce the hierarchy described by scientometric tools in their referencing practices, looking to meet with the presumed expectative of both editors and readers.

Though controversial, scientometric measures are now widely used by policymakers and science administrators as key evaluation criteria for scholars and they play a major role in international university rankings. Their defenders have argued that their proper use could provide a shared mechanism for academic accountability, while also allowing evaluators to avoid bias such as that produced by the existence of 'old boys' networks'. Critics, however, have denounced the reductionist and homogenizing traits of these measures, which are not suitable for depicting the variety of practices and outputs that scholarly work involves. Moreover, according to some critics, the lack of a general citation theory is a major pitfall for these measures, as it is not entirely clear what is being evaluated. Controversy aside, it is safe to argue that these databases and indexes have performative effects. In other words, stating that the specific representation of the world of science they support also plays a crucial role in how it functions.

In this sense, Besides the interesting possibilities for both research and management, it is important to pay scholarly and political attention to these instruments' performative effects. The renewed importance they have provided citations currently affects practices and values in science. Along with the previously mentioned influences on authors, editors and readers, they also seem to contribute to redefining ethics within the scholarly publishing world. In this sense, the emergence of new forms of scholarly malpractice such as 'salami publications', self-citations, 'predatory journals', and 'citation

⁵¹ There are certainly many reasons for referencing a paper. Despite the lack of a general theory of citation, most citation studies seem to conceive citations as recognition of influence (based on Merton's ideas about the reward system of science) or simply and pragmatically choose to focus on the connections they actually describe rather than the authors' motivations for using them. In any case, the number of citations a paper receives is currently associated with its usefulness or impact, thus providing a measure for the performance of papers, journals, institutions, or scholars.

cartels' can be interpreted as a result of the renewed publish or perish imperative, reinforced by the technical possibilities that scholarly databases and indexes have enabled. Paradoxically, these (mal)practices have reinforced the role of these instruments as a necessary shield against them, emphasizing the databases' and indexes' capacity to ensure 'good practices' through journal selection processes and periodical supervision of the journals' publishing practices.

As we have shown in this dissertation, seemingly technical instruments – such as scholarly databases and indexes – can exert an important influence on networks. Changes in these instruments' editorial policies have led to important changes in scholarly communities around the world. In this sense, it is worth paying attention to other technical aspects of scholarly communication. Many scholarly tasks such as indexation, bibliographical searches, reference management, and journal submissions currently rely on specialized software and platforms (e.g., WoS, SCOPUS, Google Scholar, Endnote, Mendeley, Editorial Manager, ScholarOne, and so on). Just as most of the (internationally indexed) journals are concentrated in a few editorial houses, only a few firms are behind most of these new software and/or platforms (e.g., Clarivate with WoS, Endnote, and ScholarOne, and Elsevier with SCOPUS, ScienceDirect, and Mendeley). It is difficult to predict how the commercial interest of these firms will affect their future decisions and how they could affect scholarship. However, if we take the important changes produced by the commercial interests of WoS into consideration, it seems wise to keep an eye on these instruments and their possible effects on scholarship and the communities that support it. In this sense, a better understanding of the processes involved in scholarly communication – such as internationalization – seems to be highly important.

Towards a complex understanding of internationalization

The rise of the nation-state in the eighteenth and nineteenth centuries was arguably one of modernity's main transformations. This new form of sociopolitical organization introduced frontiers defined either by politics and/or by war, replacing or reframing the old cultural foundations for territorial division such as language, religion, imperial or colonial ties, and ethnic groups. Albeit not monolithic or universal, this political reorganization of the world into equivalent units (nation-states) was the basis for developing situated institutions aimed at responding to modern social needs, such as the rational administration of territory, trade coordination, health and education provision, production of knowledge, and so on. The dominant secular forms of knowledge production – viz. science – gained importance in these nation-building processes and guided important aspects of these new social formations. Science certainly existed before the nation-state and its guiding distinctions and objects were hardly ever contained within the arbitrary limits of a state's sociopolitical borders. This new environment, however, provided the conditions for the emergence of two seemingly contradictory trends – the differentiation and consolidation of science as a global system for knowledge production and the emergence and/or reinforcement of local traditions supported by national spaces aimed at developing scholarship, such as universities, academies, publishing venues, societies, and conferences. In other words, the emergence of national spheres for science was inseparable from its counterpart, the international sphere. The historical developments of science are marked by important tensions between different geographical orientations, especially between national and international frames of reference.

The equivalency of national states in terms of their shared modern rationale did not mean, however, the rise of a world of equals. The so-called 'world of nations' that was consolidated after the political independence of American, Asian and African colonies reproduced and sometimes even reinforced the colonial structure. In many aspects, the colonial period laid out the foundations for the structuring of the world system. Modern global systems of trade, politics, or science largely depend on their

couplings with national and international institutions and actors, as well as with other systems that influence how they function and they tend to reproduce global social structuring for themselves. In the scientific system, structural inequalities such as those derived from the global distribution of resources and prestige usually match the core-periphery structure that result from how this sphere is organized. This structured trait of the world of science results in different relationships between the national and international sphere, depending on the national network's position within the structure. In this sense, although national and international spheres are intrinsically connected, the international sphere may play a different role and have a different meaning for scholarly communities, depending on their position within the global structure. For example, internationalization for communities in dominant positions – such as Germany or France during the nineteenth and at the beginning of the twentieth century or the US after World War II – usually meant their influence expanded. However, in peripheral and semi-peripheral communities – and as we have illustrated in the Chilean case – these processes often mean seizing knowledge for national social development or demonstrating the 'quality' of local scholarship.

These structured networks are supported by a series of actors and institutions with a local, national, continental, or global reach (e.g., universities, associations, scholars, funding agencies, and databases), which help connect them with broader social structures. Mirroring biological ecologies, the relationships between these actors and institutions vary, ranging from competition (e.g., between scholars, journals, or universities for funding or prestige) to multiple forms of collaboration (e.g., research or institutional partnerships or hyperlinks between databases). The specific relationships between these and their couplings with the global system of science are certainly historical and depend both on their position within the global structure and on the disciplinary cultures involved. In this light, internationalization is fueled (or hindered) by different orientations, including personal ambitions, national pride, government policies, and commercial interests. This multiplicity makes it difficult to understand internationalization processes driven by the universalist ethos of science. This scientific value though, which exists in the discourse of scholars and journals, is historically and disciplinary determined, with its meaning largely depending on actors' specific practices, the relationships between the different ecologies that underpin the networks, and their position within the global structures. This understanding of internationalization processes highlights their open-ended trait and questions the long-term effectiveness of institutionally-oriented internationalization.

The technification of scientific structuring based on scientometric instruments over the last few decades has certainly influenced the practices and orientations of scholarly relevant actors and institutions. By giving them a numeric measure, this powerful representation of scholarly networks has reified the actors' and institutions' position within the networks. These instruments have helped reinforce the networks' structure and has provided a direction for the internationalization vector, from the periphery to the center. The widespread adoption of this representation of science by institutions and actors coupled with networks also affects science's reward system and helps reframe internationalization as a goal on its own. Internationally published and quality scholarship have become quasi-synonyms for several actors and institutions, especially in the (semi-)periphery of the world of science. This conceptual entwinement – and the way of measuring it through the number of papers published in internationally indexed journals, the number of citations within these databases, or the inclusion of authors and editors from the scholarly core in journals – has reinforced the idea of science as a homogeneous system that is exclusively structured by quality. This neglects the effect of local traditions and narrows down internationalization processes to a quantitative achievement that conceals important aspects of these processes' social traits.

Contrary to its widespread and seemingly shared representation, internationalization is not a neutral concept that can be accurately defined by technical descriptions. As our analyses show, internationalization is not a synonym for the gradual extension of scholarly communities and their predominant socio-geographical imaginaries. Nor is it a synonym for the formation of a single worldwide community of scientists with a shared set of normative and cognitive presuppositions. These processes remain characterized by struggles, conflicts, and confrontations. National communities and traditions are certainly embedded within broader global settings. However, this has not eradicated the national sphere. Internationalization involves a series of complex social processes with different actors and institutions involved at local, national, continental, and global levels. Seemingly technical instruments – such as international databases and indexes, national university accreditation systems, or institutional rankings – have acquired a crucial position in the development of scholarship and the communities that support it. The performative effects of these instruments have not only demonstrated the current salience of sociotechnical assemblages, but also invite us to reflect critically on the multiple aspects and consequences that the encounter between scholarly traditions, interests, and hierarchies has for both situated scholarly communities and the world of science itself. A comprehensive understanding of internationalization that considers these elements is needed to assess current trends within the scientific field critically. In this sense, the hybrid approach proposed here may be useful, not only to help understand situated scholarly communities, but also to shed light from a different angle on recent global trends, such as the rise of China as a scientific power or the spread of so-called predatory journals. In this light, further areas of research, as well as policy recommendations, can be made.

Further areas of research and policy recommendations

This dissertation analyzes scholarly communities using a novel approach that focuses on the multilevel processes involved in network internationalization. Its focus on the in-between processes that connect national and international spheres highlights interesting possibilities for comprehensive models to research scholarly communities, considering the interconnected relationships between local and global spheres. Our efforts to provide a hybrid approach to this kind of research are largely based on inductive findings. Therefore, both the limited capacity of generalization of this kind of reflection and its empirically-grounded orientation highlight the need for more detailed studies on scientific communities across the world. Comparative studies between disciplines and communities – especially from the (semi-)periphery – can also prove useful for contrasting empirical findings and for advancing a sound theoretical model.

Similarly, the multilevel focus of this research highlights the importance of the intricate couplings of the scientific system with other social spheres such as education, economy, politics, and religion. Research on these couplings could shed more light on related aspects of internationalization and provide fresh insights to better understand the coming into being of the global world. In education, for example, research on how the disciplines' internationalization trends match, discuss, or prevent professions' internationalization processes may be useful for understanding how higher education systems function, especially if we analyze the consequences of these couplings against the broad context of the higher education market in the national and international spheres. Exploring these and other connections through the lens of the practices (e.g., those connecting science and politics) could bring a breath of fresh air to understand how systemic limits are managed at a local level, while also keeping an eye on processes with a global scope, such as transformations in research management and the current strategic importance of knowledge for world politics.

This study's focus on the semi-periphery is an important feature of the proposed research program. Just as the seemingly technical and often neglected aspects of scholarly communication – such as

scholarly databases and indexes – can reveal important network aspects, the focus on non-central communities can shed light on important – though neglected – aspects of the world of science. As illustrated in this dissertation, in important aspects, the (semi-)peripheries of the web/world of science currently embody the scholarly values of universalism and communism. Internationalization pressures have transformed these into key places in which to observe encounters between scholarly traditions. The semi-peripheries have a specific role to play in how the world of science is structured. However, they can also play an important part in preserving diversity within the world of science and then encouraging the emergence of counteracting ideas and/or research programs. In this light, research on these places can be useful, not just for those communities' development but also for the field of science itself. To accomplish these goals, however, these research efforts should avoid reproducing the epistemic and organizational hierarchies imposed by the structure of the world system, such as those expressed through the rigid association between indexed publications and quality scholarship. The homogenization trends supported in these entangled hierarchies risk alienating these communities from their own traditions. Maintaining the diversity of scholarly traditions is, from this standpoint, a key goal for scholarly systems in the semi-peripheries, requiring the full commitment of the actors involved.

From the communication networks perspective, two processes are crucial to maintaining this heterogeneity – institutional scholars' résumé evaluation mechanisms to apply for research grants and/or positions and the chain of decisions that lead both scholars to select which journal to publish in and journal editors to set up an editorial criteria. These two processes are certainly connected and both remit partially to science's reward mechanisms. However, given the different actors and institutions involved in these processes, it would be misleading to assume that changes in one of them automatically trigger consistent transformations in the other. In this sense, securing the diversity of traditions within the world of science would imply intervening at different levels, accompanied by transformations in neighboring systems such as higher education. In the Chilean case, two orientations may be useful to leading these transformations: decentralizing funding mechanisms and reinforcing regional (national and continental) networks.

Important transformations are now taking place in Chilean science policies. In January 2020, the national agency CONICYT was replaced by ANID (the National Agency for Research and Development), set up as a result of the newly created Ministry of Science, Technology, Knowledge, and Innovation. This new institutional structure for science aims to increase science's administration autonomy by assembling different instruments, mainly from the Ministries of Economy and Education. This new structure, however, replicates the centralist structure of CONICYT. Although a special office has now been created to boost regional research centers, the administration and funding continue anchored in the capital, Santiago. Local traditions in science are supported by specific practices derived from local couplings of the scientific system. In this sense, decentralized spaces could increase funding mechanism sensibility to local practices and interests, while also facilitating the relationship with related policies, for example with university's renewed emphasis on public engagement. However, to be effective, this and other efforts of this type (e.g., funding research groups instead of individuals) would need alternative observation mechanisms to complement those based on the image of the world of science as portrayed by international databases and indexes.

Recent changes in the evaluation of résumés in the early stages of Chilean scholars' careers (post-doctorate positions and junior scholars' research grants) have included criteria that go beyond evaluating the number of internationally indexed publications. Of course, we will need more time to evaluate the effects of this policy change introduced in 2019 which, despite its interesting orientation, risks consolidating the core-periphery structure by adding a new career rung to the internationalization ladder. Chilean scientific policies' high level of dependency on international

databases and indexes is problematic in this sense. The influence of this representation on actors' and institutions' practices tends to reinforce the world's core-periphery scholarly structures and then jeopardizes maintaining and/or developing regional traditions. In this light, it makes sense to have instruments that enable a (more) comprehensive portrayal of scholarly networks at both a continental and national level. These instruments are key to monitoring scholarly trends and to enhancing the interaction between scientific policies and related fields, such as higher education or economic development.

Databases certainly help provide system accountability. In spite of the efforts of international databases to increase their coverage and the role of continental instruments such as SCieLO or Redalyc, the lack of a comprehensive database of Chilean output makes it difficult to monitor local trends. Creating these kinds of instruments would not only be useful for academic and managerial purposes, but would also facilitate the use of alternative criteria to assess scholarly output besides the global citations within WoS or SCOPUS. Reinforcing regional communication networks in such a way is likely to influence the practices of authors, readers, and editors. Apart from the fact that this transformation would probably rapidly influence authors' selection of the journals to which they submit their papers, in the medium-term, this is likely to influence scholars' reading and citation practices and provide alternative measures for journal impact for editors.

Besides these important issues relating to scholarly output visibility, it is also important to consider accessibility to scholarly communication and its relationship with other related spheres, such as the publishing market. Several initiatives to enhance open access policies have been discussed worldwide since the Budapest Declaration in 1999. European countries seem to have reached a consensus on privileging the 'gold route'⁵² for open access based on APC mechanisms. However, the transference of publishing costs to authors (and the institutions that sponsor them) that this implies seems to threaten the goal of preserving diversity within the world of science. In fact, this mechanism most likely reinforces the already unequal structure of science, echoing world system inequalities. Chile and Latin America have had a long tradition of open access publishing supported by SCieLO databases. The new policies put forward by ANID (formerly CONICYT) – such as striving for a 'green route' to open access by organizing a repository for the publications funded by this body – seem to reinforce this commitment. This interesting initiative may certainly contribute to spreading information and to scholar accountability. However, the evolution of this policy into a 'golden route' on the basis of APC (as projected in the second stage of this initiative) seems to be more difficult and less desirable (from a strengthening regional network standpoint). To reinforce regional networks, it seems that the focus on (largely neglected) alternative initiatives in the region, stressing non-profit models (e.g., AmeliCA⁵³), is more promising.

Internationalization pressures have undoubtedly transformed scholarly communities around the world. In this sense, striving to maintain diversity within the world of science does not mean maintaining ancient scholarly traditions for their own sake. In spite of the value these preservation efforts may have, our argument is for securing opportunities in which to express the diversity of communities around the world today. Communities from the (semi-)periphery have internationalized in different ways. In the Chilean case, for example, several international cooperation initiatives – especially the scholarship program for Ph.D. training abroad – have encouraged the encounter of

⁵² The green and gold routes are models that provide open access to the articles published. While the green route consists of making versions of the papers available in institutional repositories (usually after the embargo period), the so-called gold route aims to provide open access through either institutionally funded journals or by paying Article Processing Charges (APC) to the publisher.

⁵³ See <http://amelica.org/>

traditions and approaches. Reinforcing regional networks can help secure these internationalized networks expression, as well as helping to enhance the sensibility of scholarly systems to both local and global phenomena.

Recent crises – such as the 2019 social uprising in Chile and the Covid19 global pandemic in 2020 – have brought the role of scholarly systems to the fore. On one hand, the institutional crisis and social uprising in October 2019 highlighted some of the tradeoffs of the current Chilean internationalization model. This crisis will likely influence research topics and approaches of scholars, journal editors, and research committees, especially in the social sciences and humanities. On the other hand, the Covid19 crisis has also exerted important pressure on scholarly systems. In Chile, for example, important instruments used for allocating funding are now orientated towards the pandemic. These scenarios – and their effects on the institutions and actors that underpin scholarly networks – are testing the capacity of these ecologies to influence the systems' orientation towards local or global crises and invite us to reflect critically on the current meaning of academic freedom, its possibilities of expression, and its relational trait in-between the local and global spheres of science.

References

- Abbott, A. (2001) *Chaos of disciplines*. Chicago & London: Chicago University Press.
- Aksnes, D., Frølich, N. & Slipersæter, S. (2008) Science Policy and the Driving Forces behind the Internationalisation of Science: The Case of Norway. *Science and Public Policy*. 35(6): 445–457.
- Aksnes, D., Langfeldt, L. & Wouters, P. (2019) Citations, citation indicators, and research quality: An overview of basic concepts and theories. *Sage Open*. 9(1): 1-17.
- Alatas, S. (1974) The captive mind and creative development. *International Social Science Journal*. 36(4): 691-699.
- Alatas, S. (2003) Academic dependency and the global division of labour in the social sciences. *Current Sociology*. 51(6): 599–613.
- Archambault, E. & Larivière, V. (2009) History of the journal impact factor: Contingencies and consequences. *Scientometrics*. 79(3): 635–649.
- Auranen, O. & Nieminen, M. (2010) University research funding and publication performance – An international comparison. *Research Policy*. 39(6): 822-834.
- Baecker, D. (2010) A Systems Primer on Universities. *Soziale Systeme*. 16: 356-367.
- Baldwin, M. (2015) *Making “Nature”: The History of a Scientific Journal*. Chicago: University of Chicago Press.
- Barandiaran, J. (2015) Reaching for the stars? Astronomy and growth in Chile. *Minerva*. 53(2): 141-164.
- Barros, A. & Brunner, J.J. (1988) *La sociología en Chile: instituciones y practicantes*. Santiago de Chile: FLACSO.
- Bazerman, C. (1988) *Shaping Written Knowledge: The Genre and Activity of the Experimental Article in Science*. Madison: University of Wisconsin Press.
- Beck, U. & Willms, J. (2004) *Conversations with Ulrich Beck*. Cambridge: Polity Press.
- Beigel, F. (2006) Vida, muerte y resurrección de las ‘Teorías de la Dependencia’. In CLACSO (ed.) *Crítica y teoría en el pensamiento social latinoamericano*. Buenos Aires: CLACSO, 287-326.
- Beigel, F. (2009) La Flacso chilena y la regionalización de las ciencias sociales en América Latina (1957-1973). *Revista Mexicana de Sociología*. 71(2): 319-349.
- Beigel, F. (ed.) (2016) *The politics of academic autonomy in Latin America*. London: Ashgate.
- Beigel, F. & Sorá, G. (2019) Arduous Institutionalization in Argentina’s SSH: Expansion, Asymmetries and Segmented Circuits of Recognition. In Fleck, C., Duller, M. & Karády, V. (eds.) *Shaping Human Sciences Disciplines. Institutional Developments in Europe and Beyond*. London & New York: Palgrave Macmillan, 327-360.
- Biagioli, M. & Lippman, A. (2020) *Gaming the metrics: Misconduct and manipulation in academic research*. Cambridge and London: MIT Press.

- Bianco, M., Gras, N. & Sutz, J. (2016) Academic evaluation: Universal instrument? Tool for development? *Minerva*. 54(4): 399-421.
- Biddle, J. (2007) Lessons from the Vioxx debacle: What the privatization of science can teach us about social epistemology. *Social Epistemology*. 21(1): 21-39.
- Blanco, A. (2005) La Asociación Latinoamericana de Sociología: una historia de sus primeros congresos. *Sociologías*. 7(14): 22-49.
- Bloch, C., Graversen, E.K. & Pedersen, H.S. (2014) Competitive research grants and their impact on career performance. *Minerva*. 52(1): 77-96.
- Bloor, D. (2004) Sociology of scientific knowledge. In Niiniluoto, I., Sintonen, M. & Wolen-Ski, J. (eds.) *Handbook of epistemology*. Dordrecht: Springer, 919-962.
- Bogner, A., Littig, B. & Menz, W. (2009) Introduction: Expert interviews – An introduction to a new methodological debate. In Bogner, A., Littig, B. & Menz, W. (eds.) *Interviewing Experts*. London: Palgrave Macmillan, 1-13.
- Bordons, M. & Gómez, I. (2004) Towards a single language in science? A Spanish view. *Serials*. 17(2): 189-195.
- Bourdieu, P. (1975) The specificity of the scientific field and the social conditions of the progress of reason. *Social Science Information*. 14(6): 19-47.
- Bourdieu, P. (1991) The peculiar history of scientific reason. *Sociological Forum*. 6(1): 3-26.
- Bourliaguet, B. (2016) A Weberian approach to the ethos of science. *Theory of Science*. 38(1): 113-128.
- Brown, C. (2001) The e-volution of preprints in the scholarly communication of physicists and astronomers. *Journal of the American Society for Information Science and Technology* 52: 187–200.
- Braun, V., Clarke, V., Hayfield, N. & Terry, G. (2018) Thematic Analysis. In Liamputtong, P. (ed.) *Handbook of Research Methods in Health Social Sciences*. Singapore: Springer, 1-18.
- Brunner, J.J. (1988) *El caso de la sociología en Chile: Formación de una disciplina*. Santiago de Chile: FLACSO.
- Burawoy, M. (2005) For public sociology. *American Sociological Review*. 70(1): 4-28.
- Callon, M. (2010). Performativity, misfires and politics. *Journal of Cultural Economy* 3(2): 163-169.
- Cetto, A.M. & Alonso-Gamboa, J.O. (1998) Scientific periodicals in Latin America and the Caribbean: A global perspective. *Interciencia* 23(2): 84–93.
- Chavarro, D. (2017) *Universalism and particularism: Explaining the emergence and development of regional indexing systems*, Ph.D. Thesis. SPRU – University of Sussex.
- Choi, S. (2012) Core-periphery, new clusters, or rising stars? International scientific collaboration among ‘advanced’ countries in the era of globalization. *Scientometrics* 90(1): 25-41.
- Collazo-Reyes, F. (2014) Growth of the number of indexed journals of Latin America and the Caribbean: The effect on the impact of each country. *Scientometrics* 98(1): 197–209.

Collazo-Reyes, F., Luna-Morales, M.E. & Luna-Morales, E. (2017) Change in the publishing regime in Latin America: From a local to universal journal. *Archivos de investigación Médica/Archives of Medical Research* (1970–2014). *Scientometrics*. 110(2): 695–709.

CONICYT (2013) Estudio de formación y desarrollo de capital humano. https://www.conicyt.cl/beccasconicyt/files/2015/04/201410141003140.INF_FINAL_FORMACION_DSL_LO_K_HUMANO.pdf (Last accessed 07 July 2020).

CONICYT (2020) Grupos de estudio CONICYT. Criterios de evaluación. www.conicyt.cl/fondecyt/grupos-de-estudios/ (Last accessed 07 July 2020).

Crawford, E. (1992) *Nationalism and Internationalism in Science, 1880-1939*. Cambridge: Cambridge University Press.

Csiszar A. (2018) *The scientific journal. Authorship and the politics of knowledge in the nineteenth century*. Chicago: University of Chicago Press.

Dahler-Larsen, P. (2014) Constitutive effects of performance indicators: Getting beyond unintended consequences. *Public Management Review*. 16(7): 969-986.

Daston, L. (ed.) (2000) *Biographies of scientific objects*. Chicago: University of Chicago Press.

De Oliveira, K., Degani-Carneiro, F., da Silva, N. & Marafon, G. (2015) Evaluation systems of scientific journals in Latin America. In Alperin, J.P. & Fischman, G. (eds.) *Made in Latin America. Open Access, Scholarly Journals, and Regional Innovations*. Buenos Aires: CLACSO, 61-74.

De Solla Price, D. (1965) Networks of scientific papers. *Science*. 149: 510-515.

De Swaan, A. (2001) *Words of the World*. Cambridge: Polity Press.

De Wit, H. (2020) Internationalization of Higher Education. The Need for a More Ethical and Qualitative Approach. *Journal of International Students*. 10(1): i-iv.

Debat, H. & Babini, D. (2019) Plan S in Latin America: A precautionary note. *PeerJ Preprints*. doi:10.7287/peerj.preprints.27834v2.

Delgado, J. (2014) Scientific journals of universities of Chile, Colombia, and Venezuela: Actors and roles. *Education Policy Analysis Archives*. 22(34): 1–22.

Delvenne, P. & Kreimer, P. (2017) World-system analysis 2.0. Globalized science in centers and peripheries. In Tyfield, D., Lave, R., Randalls, S. & Thorpe, C. (eds) *The Routledge handbook of the political economy of science*. London: Routledge, 390-404.

Di Bitetti, M.S. & Ferreras, J.A. (2017) Publish (in English) or perish: The effect on citation rate of using languages other than English in scientific publications. *Ambio*. 46(1): 121-127.

Domingos, V. & Neri, H. (2019) *Sociology in Brazil. A Brief Institutional and Intellectual History*. London & New York: Palgrave Macmillan.

Donoso, A. (2016) Estudiar sociología en dictadura. Algunas preguntas sobre los procesos de transmisión disciplinar en tiempos de crisis. *Proceedings of IX Jornadas de Sociología UNLP*, Argentina.

Drori, G.S., Meyer, J., Ramirez, F. & Schofer, E. (2003) *Science in the Modern World Polity: Institutionalization and Globalization*. Stanford: Stanford University Press.

- Dussel, E. (1994) *1492: El encubrimiento del otro: Hacia el origen del 'mito de la modernidad'*. La Paz: Plural Editores.
- Engels, F. (1975) Letter to Conrad Schmidt, 27 October 1890. In *Marx-Engels selected correspondence*. Moscow: Progress Publishers, 402.
- Engels, T.C., Ossenblok, T.L. & Spruyt, E.H. (2012) Changing publication patterns in the social sciences and humanities, 2000–2009. *Scientometrics*. 93(2): 373-390.
- Escobar, L., Eguiguren, J. & Sánchez, R. (2012) Aranceles de Referencia de la Educación Superior: Estado Actual, Metodología de Cálculo y Desafíos. https://www.dipres.gob.cl/598/articles-98100_doc_pdf.pdf (Last accessed 07 July 2020).
- Espeland, W.N. & Sauder, M. (2007) Rankings and reactivity: How public measures recreate social worlds. *American Journal of Sociology*. 113(1): 1-40.
- Espeland, W. & Sauder, M. (2016) *Engines of Anxiety: Academic Rankings, Reputation, and Accountability*. New York: Russell Sage Foundation Press.
- Falleto, E. (1998) Los años 60 y el tema de la dependencia. *Estudios Avanzados*. 12(33): 109-117.
- Farías, F. (2004) La sociología chilena en la década de los 90. *Cinta de Moebio*. 19: 55-66.
- Feyerabend, P. (1973) *Against method*. London: New Left Books.
- Fleck, C., Duller, M. & Karády, V. (2019) *Shaping Human Sciences Disciplines. Institutional Developments in Europe and Beyond*. London & New York: Palgrave Macmillan.
- Fourcade, M. (2009) *Economists and Societies*. Princeton: Princeton University Press.
- Fourcade, M. & Healy, K. (2007) Moral views of market society. *Annual Review of Sociology*. 33: 285-311.
- Frank, D. & Meyer, J. (2007) University expansion and the knowledge society. *Theory and Society*. 36: 287-311.
- Fuchs, C. (2004) Science as a self-organizing meta-information system. In Dobronravova, I. & Horfkirchner, W. (eds.) *Science of self-organization and self-organization of science*. Kiev: Abris, 126-199.
- Fuenzalida, E. (1984) Institutionalisation of research in Chile's universities: 1953-1967. In Garrett, R. (ed.) *Education and Development*. New York: St. Martin Press, 55-122.
- Fukuyama, F. (2017) *State Building: Governance and World Order in the 21st Century*. London: Profile Books.
- Garfield, E. (1955) Citation indexes for science. *Science*. 122: 108-111.
- Garfield, E. (1984) Latin American research. Part 1. Where it is published and how often it is cited. *Current Contents*. 19: 3-8.
- Garfield, E. (1988) From citation indexes to informetrics: Is the tail now wagging the dog? *Libri*. 48(2): 67-80.
- Garretón, M.A. (2005) Social Sciences and society in Chile: institutionalization, breakdown and rebirth in Chile. *Social Science Information*. 44: 359-409.

- Gazni, A. (2015) Globalization of national journals: Investigating the growth of international authorship. *Learned Publishing*. 28(3): 195–204.
- Germani, G. (1971) *Política y sociedad en una época de transición: de la sociedad tradicional a la sociedad de masas*. Buenos Aires: Paidós.
- Gingras, Y. (2016) *Bibliometrics and Research Evaluation: Uses and Abuses*. Cambridge: MIT Press.
- Glaser, B., & Strauss, A. (1967) *The Discovery of Grounded Theory: Strategies for Qualitative Research*. New York: Routledge.
- Golinski, J. (2012) Is it time to forget science? Reflections on singular science and its history. *Osiris*. 27: 19-36.
- Gómez, J. & Sandoval, M. (2004) *Más allá del oficio de sociólogo: Nuevas identidades, prácticas y competencias en el campo profesional*. Santiago de Chile: Ediciones Universidad Católica Silva Henríquez.
- González-Alcaide, G., Park, J., Huamaní, C. & Ramos, J.M. (2017) Dominance and leadership in research activities: Collaboration between countries of differing human development is reflected through authorship order and designation as corresponding authors in scientific publications. *PLOS One*. 12(8): e0182513.
- Graham, L., Lepenies, W. & Weingart, P. (1983) *Functions and uses of disciplinary histories*. Dordrecht: Reidel.
- Grosfoguel, R. (2007) The epistemic decolonial turn. *Cultural Studies*. 21(2-3): 211-223.
- Harding, S. (2006) *Science and social inequality. Feminist and postcolonial issues*. Chicago: University of Illinois Press.
- Heilbron, J., Guilhot, N. & Jeanpierre, L. (2008) Toward a transnational history of the social sciences. *Journal of the History of the Behavioral Sciences*. 44(2): 146-160.
- Heilbron, J. (2014) The social sciences as an emerging global field. *Current Sociology*. 62(5): 685-703.
- Heilbron, J., Bedecarré, M. & Timans, R. (2017) European journals in the social sciences and humanities. *Serendipities*. 2(1): 33-49.
- Heilbron, J., Sorá, G. & Boncourt, T. (eds.) (2018) *The Social and Human Sciences in Global Power Relations*. Basingstoke: Palgrave Macmillan.
- Helsinki Initiative (2019) Helsinki Initiative on Multilingualism in Scholarly Communication. Helsinki: Federation of Finnish Learned Societies, Committee for Public Information, Finnish Association for Scholarly Publishing, Universities Norway & European Network for Research Evaluation in the Social Sciences and the Humanities. <https://doi.org/10.6084/m9.figshare.7887059>
- Hessels, L., Franssen, T., Scholten, W. & de Rijcke, S. (2019) Variation in Valuation: How Research Groups Accumulate Credibility in Four Epistemic Cultures. *Minerva*. 57(2): 127–149.
- Hicks, D., Wouters, P., Waltman, L. de Rijcke, S. & Rafols, I. (2015) Bibliometrics: The Leiden Manifesto for research metrics. *Nature*. 520: 429-431.
- Hirschauer, S. (2004) Peer Review Verfahren auf dem Prüfstand. *Zeitschrift für Soziologie*. 33(1): 62-83.

- Hollinger, D.A. (1990) Free Enterprise and Free Inquiry: The Emergence of Laissez-Faire Communitarianism in the Ideology of Science in the United States. *New Literary History*. 21(4): 897-919.
- Hwang, K. (2008) International collaboration in multi-layered center-periphery in the globalization of science and technology. *Science, Technology & Human Values*. 33(1): 101-133.
- Jasanoff, S., Markle, G., Petersen, J. & Pinch, T. (eds.) (1995) *Handbook of science and technology studies (first edition)*. London, California and New Delhi: Sage.
- Kaltenbrunner, W. (2018) Situated knowledge production, international impact: Changing publishing practices in a German engineering department. *Minerva*. 56: 283-303.
- Knorr-Cetina, K. (1982) Scientific communities or transepistemic arenas of research? A critique of quasi-economic models of science. *Social Studies of Science*. 12(1): 101-130.
- Knorr-Cetina, K. (1991) Merton's sociology of science: The first and the last sociology of science? *Contemporary Sociology*. 20(4): 522-526.
- Knorr-Cetina, K. (1998) *Epistemic cultures. How sciences make knowledge*. Cambridge: Harvard University Press.
- Krauskopft, M. & Pessot, R. (1980) Estudio preliminar sobre publicaciones y productividad científica en Chile. *Archivos de Biología y Medicina Experimental*. 13: 195-208.
- Kreimer, P. (2019) *Science and Society in Latin America: Peripheral Modernities*. New York: Routledge.
- Kreuder-Sonnen, K. (2016) From transnationalism to Olympic internationalism: Polish medical experts and international scientific exchange, 1885-1939. *Contemporary European History*. 25(2): 207-231.
- Krohn, W., Küppers, G. & Nowotny, H. (eds.) (1990) *Selforganization. Portrait of a scientific revolution*. Dordrecht: Springer.
- Krohn, W. & Küppers, G. (1990) The selforganization of science – Outline of a theoretical model. In Krohn, W., Küppers, G. & Nowotny, H. (eds.) *Selforganization. Portrait of a scientific revolution*. Dordrecht: Springer, 208-222.
- Kuhn, T. (1962) *The structure of the scientific revolutions*. Chicago: University of Chicago Press.
- Kurzman, C. (2017) Scholarly attention and the limited internationalization of US social science. *International Sociology*. 32(6): 775-795.
- Lakatos, I. (1971) History of science and its rational reconstructions. In Buck, R. & Cohen, R. (eds.) *PSA 1970. In memory of Rudolf Carnap. Proceedings of the 1970 biennial meeting Philosophy of Science Association*. Dordrecht: Springer, 91-136.
- Larivière, V., Haustein, S. & Mongeon, P. (2015) The oligopoly of academic publishers in the digital era. *PLoS ONE*. 10 doi.org/10.1371/journal.pone.0127502.
- Latour, B. (2005) *Reassembling the social – An introduction to Actor-Network-Theory*. Oxford: Oxford University Press.
- Latour, B & Woolgar, S. (1986) *Laboratory life. The construction of scientific facts*. Princeton: Princeton University Press.
- Lenartowicz, M. (2015) The nature of the university. *Higher Education*. 69: 947-961.

- Lepenies, W. (1985). *Die drei Kulturen. Soziologie zwischen Literatur und Wissenschaft*. München: Fischer.
- Levine, D. (1995) *Visions on the sociological tradition*. Chicago: University of Chicago Press.
- Leydesdorff, L. & Persson, O. (2010) Mapping the geography of science: Distribution patterns and networks of relations among cities and institutes. *Journal of the American Society for Information Science and Technology*. 61(8): 1622-1634.
- Leydesdorff, L. & Milojević, S. (2015) Scientometrics. In Wright, J. (ed.) *International encyclopedia of the social & behavioral sciences (Second Edition)*. Amsterdam: Elsevier, 322-327.
- Liu, W. (2017) The changing role of non-English papers in scholarly communication: Evidence from Web of Science's three journal citation indexes. *Learned Publishing*. 30(2): 115-123.
- Livingstone, D. (2003) *Putting science in its place. Geographies of scientific knowledge*. Chicago: Chicago University Press.
- López-Navarro, I., Moreno, A.I., Quintanilla, M.Á. y Rey-Rocha, J. (2015). Why do I publish research articles in English instead of my own language? Differences in Spanish researchers' motivations across scientific domains. *Scientometrics*. 103(3): 939–976.
- Luhmann, N. (1995) *Social systems*. California: Stanford University Press.
- Luhmann, N. (1996) *La ciencia de la sociedad*. México: Anthropos.
- Manheim, K. (1936) *Ideology and utopia*. New York: Routledge.
- Meneghini, R., Packer, A.L. & Nassi-Calo, L. (2008) Articles by Latin American authors in prestigious journals have fewer citations. *PLOS One* 3(11): e3804.
- Merton, R. (1938) Science, technology and society in the seventeenth century England. *Osiris* 4: 360-632.
- Merton, R. (1973) *The sociology of science. Theoretical and empirical investigations*. Chicago: Chicago University Press.
- Mignolo, W. (2000) *Local histories/Global designs. Coloniality, subaltern knowledges and border thinking*. Princeton: Princeton University Press.
- Miguel, S., Chinchilla-Rodríguez, Z. & de Moya-Anegón, F. (2011) Open Access and SCOPUS: A new approach to scientific visibility from the standpoint of access. *Journal of the American Society for Information Science and Technology*. 62(6): 1130–1145.
- Milanovic, B. (2016) *Global Inequality: A New Approach for the Age of Globalization*. Cambridge: Harvard University Press.
- MINEDUC (1981) *Decreto con Fuerza de Ley N° 1. Fija normas sobre universidades*. Santiago de Chile: Ministry of Education.
- MINEDUC (2005) *Act 20027*. <https://www.leychile.cl/Navegar?idNorma=239034> (Last accessed 07 July 2020).
- MINEDUC (2006) *Act 20129*. <https://www.leychile.cl/Navegar?idNorma=255323> (Last accessed 07 July 2020).

- MINEDUC (2017) *Act 20043*. <https://www.leychile.cl/Navegar?idNorma=1110266> (Last accessed 07 July 2020).
- Mingers, J. & Leydesdorff, L. (2015) A review of theory and practice in scientometrics. *European Journal of Operational Research*. 246: 1-19.
- Mosbah-Natanson, S. & Gingras, Y. (2014) The globalization of social sciences? Evidence from a quantitative analysis of 30 years of production, collaboration and citations in the social sciences (1980–2009). *Current Sociology*. 62(5): 626-646.
- Münch, R. (2014) *Academic Capitalism: Universities in the Global Struggle for Excellence*. New York: Routledge.
- Nalimov, V. & Mulcjenko, B. (1971) *Measurement of science: Study of the development of science as an information process*. Washington: Foreign Technology Division.
- Needham, J. (1954) *Science and civilisation in China*. Cambridge: Cambridge University Press.
- Nicolaisen, J. (2007) Citation Analysis. *Annual Review of Information Science and Technology*. 41: 609-641.
- O'Brien, T.L. (2012) Change in academic coauthorship, 1953–2003. *Science, Technology, & Human Values*. 37(3): 210-234.
- Ollion, E. & Abbott, A. (2016) French connections: The reception of French sociologists in the USA (1970-2012). *European Journal of Sociology*. 57(2): 331-372.
- Olszen, M. (2015) Neoliberal competition in higher education today: Research, accountability and impact. *British Journal of Sociology of Education*. 37(1): 129–148.
- Olvera, M. (2004) Una contribución a la historia disciplinar. La fundación de la Escuela Nacional de Ciencias Políticas y Sociales. *Sociológica*. 19(55): 49-78.
- Ossenblok, T.L., Verleysen, F.T. & Engels, T.C. (2014) Coauthorship of journal articles and book chapters in the social sciences and humanities (2000–2010). *Journal of the Association for Information Science and Technology*. 65(5): 882-897.
- Paasi, A. (2015) Academic capitalism and the geopolitics of knowledge. In Agnew J., Mamadouh V., Secor, A.J. & Sharp, J. (eds.) *The Wiley Blackwell Companion to Political Geography*. Chichester: Wiley-Blackwell, 509-523.
- Packer, A. (2009) The SciELO open access: A gold way from the south. *Canadian Journal of Higher Education*. 39(3): 111–26.
- Parada, J. & Hoyl, C. (1970) Investigando la investigación. *Revista Médica de Chile*. 98: 527-532.
- Paz, A.M. (2017) La docencia reflexiva en la enseñanza de la sociología. *Teoría e Cultura*. 12(1): 95-111.
- Pontille, D. & Torny, D. (2015) From manuscript evaluation to article valuation: The changing technologies of journal peer review. *Human Studies*. 38(1): 57-79.
- Portes, A. (2004) La sociología en el continente: convergencias pretéritas y una nueva agenda de alcance medio. *Revista Mexicana de Sociología*. 66(3): 447-483.
- Quijano, A. (2000) Coloniality of power, ethnocentrism, and Latin America. *NEPANTLA*. 1(3): 533-580.

- Randeraad, N. (2011) The International Statistical Congress (1853—1876): Knowledge transfers and their limits. *European History Quarterly*. 41(1): 50-65.
- Rangel, A. (2003) A (strong?) voice from the south: Latin American sociology today. *Current Sociology* 51(1): 51-72.
- Rheinberger, H-J. (2010) *On historicizing epistemology*. California: Stanford University Press.
- Rostan, M. & Höhle, E. (2014) The International Mobility of Faculty. In Huang, F., Finkelstein, M. & Rostan, M. (eds.) *The Internationalization of the Academy, The Changing Academy – The Changing Academic Profession in International Comparative Perspective 10*. Dordrecht: Springer, 79-104.
- Rostow, W. (1960) *The Stages of Economic Growth. A Non-Communist Manifesto*. Cambridge: Cambridge University Press.
- Rousseau, R. (2018) The F-measure for research priority. *Journal of Data and Information Science*. 3(1): 1-18.
- Rushforth, A. & de Rijcke, S. (2015) Accounting for impact? The Journal Impact Factor and the making of biomedical research in the Netherlands. *Minerva*. 53(2): 117-139.
- Santos, J. (2012) Tiranía del paper. Imposición institucional de un tipo discursivo. *Revista Chilena de Literatura*. (82): 197-217.
- Schofer, E. (1999) Science associations in the international sphere, 1875-1990: The rationalization of science and the scientization of society. In Boli, J. & Thomas, G.M. (eds.) *Constructing World Culture: International Nongovernmental Organizations Since 1875*. Stanford: Stanford University Press, 249-266.
- Shapin, S. (1992) Discipline and bounding: The history and sociology of science as seen through the externalism-internalism debate. *History of Science*. 30(4): 333-369.
- Simbürger, E. (2010) Critique and sociology: towards a new understanding of teaching as an integral part of sociological work. *Enhancing Learning in the Social Sciences*. 3(1): 1-31.
- Solovey, M. (2013) *Shaky Foundations: The Politics-Patronage-Social Science Nexus in Cold War America*. New Brunswick: Rutgers University Press.
- Sorokin, P. (2017) *Social and cultural dynamics. A study of change in major systems of art, truth, ethics, law, and social relationships*. London & New York: Routledge.
- Steinmetz, G. (2017). Field theory and interdisciplinarity: history and sociology in Germany and France during the Twentieth Century. *Comparative Studies in Society and History*. 59(2): 477-514.
- Stichweh, R. (1992) The sociology of scientific disciplines: On the genesis and stability of the disciplinary structure of modern science. *Science in Context*. 5(1): 3-15.
- Stichweh, R. (1996) Science in the system of world society. *Social Science Information*. 35(2): 327-340.
- Stigler, G. (1965) The intellectual and the marketplace. *The Kansas Journal of Sociology*. 1(2): 69-77.
- Stiglitz, J.E. (2002) *Globalization and its discontents*. New York: Norton.
- Stöckelová, T. Immutable mobiles derailed: STS, geopolitics, and research assessment. *Science, Technology, & Human Values*. 37(2): 286–311.

- Tavares-dos-Santos, J. & Baumgarten, M. (2005) Latin American sociology's contribution to sociological imagination: analysis, criticism, and social commitment. *Sociologias*. 14: 178-243.
- Testa, J. (2011) The globalization of Web of Science: 2005-2010. Available in <http://wokinfo.com/media/pdf/globalwos-essay> (Last accessed 07 July 2020).
- Tyfield, D., Lave, R., Randalls, S. & Thorpe, C. (2017) *The Routledge handbook of the political economy of science*. London: Routledge.
- Vanderstraeten, R. (2010) Scientific communication: Sociology journals and publication practices. *Sociology*. 44(3): 559-576.
- Vanderstraeten, R. (2011) Scholarly communication in education journals. *Social Science History*. 35: 109-130.
- Vanderstraeten, R., & Eykens, J. (2018). Communalism and Internationalism: Publication norms and structures in international social science. *Serendipities*. 3(1): 14-28.
- Vanderstraeten, R. & Vandermoere, F. (2015) Disciplined by the discipline: A social-epistemic fingerprint of the history of science. *Science in Context*. 28(2): 195-214.
- Vessuri, H. (1987) The social study of science in Latin America. *Social Studies of Science* 17(3): 519–554.
- Wallerstein, I. (1974) The rise and future demise of the capitalist system: Concepts for comparative analysis. *Comparative Studies in Society and History*. 16(4): 387-515.
- Wallerstein, I (2004) *World-Systems analysis*. Durham: Duke University Press.
- Wang, J., Veugelers, R. & Stephan, P. (2017) Bias against novelty in science: A cautionary tale for users of bibliometric indicators. *Research Policy*. 46(8): 1416-1436.
- Whitley, R. & Gläser, J. (eds.) (2007) *The Changing Governance of the Sciences. The Advent of Research Evaluation Systems*. Dordrecht: Springer.
- Wulf, S. (2013) The Revista Médica project: Medical journals as instruments of German foreign cultural policy towards Latin America, 1920-1938. *História, Ciências, Saúde*. 20(1): 181-201.
- Wyatt, S., Milojević, S., Park, H. & Leydesdorff, L. (2017) Intellectual and practical contributions of scientometrics to STS. In Felt, U., Fouché, R., Miller, C. & Smith-Doerr, L. (eds.) *The handbook of science and technology studies (fourth edition)*. Cambridge and London: MIT Press, 87-112.
- Wyatt, S. & Balmer, B. (2007) What and where is the middle in science and technology studies? *Science, Technology & Human Values*. 32(6): 619-626.
- Zelnio, R. (2012) Identifying the core-periphery structure of science. *Scientometrics*. 91: 601-615.

Annexes

Annex 1. List of Chilean journals included in Web of Science at the end of 2015

Name of the journal	Starting year- (inclusion in WoS databases)	Disciplinary area
Revista Médica de Chile	1872 (1972)	Sciences
Revista Chilena de Historia Natural	1897 (1985)	Sciences
Atenea. Revista de Artes, Ciencia y Literatura	1924 (2008)	Art & Humanities
Chilean Journal of Agricultural Research (formerly Agricultura Técnica, and Boletín de Sanidad Vegetal)	1941 (2007)	Sciences
Revista Musical Chilena	1945 (2007)	Art & Humanities
Revista de Biología Marina y Oceanografía	1948 (2007)	Sciences
Journal of the Chilean Chemical Society (formerly Boletín de la Sociedad Chilena de Química)	1949 (1986)	Sciences
Teología y Vida	1960 (2007)	Art & Humanities
Gayana	1961 (2008)	Sciences
Gayana. Botánica	1961 (2008)	Sciences
Historia	1961 (2007)	Art & Humanities
RLA. Revista de Lingüística Teórica y Aplicada	1963 (2008)	Art & Humanities / Social Sciences
Biological Research (formerly Archivos de Biología y Medicina Experimentales)	1964 (1965)	Sciences
Estudios Filológicos	1964 (1982)	Art & Humanities / Social Sciences
Revista Signos	1967 (2006)	Art & Humanities
Archivos de Medicina Veterinaria	1969 (1983)	Sciences
EURE (formerly Cuadernos de Desarrollo Urbano Regionales)	1970 (2000)	Social Sciences
Latin American Journal of Aquatic Research (formerly Investigaciones Marinas)	1970 (2008)	Sciences
Magallania (formerly Serie Ciencias Humanas del Instituto de la Patagonia)	1970 (2007)	Social Sciences
Revista Chilena de Literatura	1970 (1984)	Art & Humanities
Taller de Letras	1971 (2008)	Art & humanities
Chungará. Revista de Antropología Chilena	1972 (2005)	Social Sciences
Estudios Atacameños	1973 (2008)	Art & Humanities
Estudios de Economía	1973 (2007)	Social Sciences
Andean Geology (formerly Revista Geológica de Chile)	1974 (1993)	Sciences
Ciencia e Investigación Agraria	1974 (2007)	Sciences
Revista Chilena de Derecho	1974 (2011)	Social Sciences
Revista de Geografía Norte Grande	1974 (2009)	Sciences / Social Sciences
Bosque	1975 (2009)	Sciences
Acta Literaria	1975 (2008)	Art & Humanities
CEPAL Review	1976 (2007)	Social Sciences
Revista de Ciencia Política	1979 (2007)	Social Sciences
ARQ	1980 (2003)	Art & Humanities
International Journal of Morphology (formerly Revista Chilena de Anatomía, and Anatomía Normal)	1982 (2008)	Sciences
Terapia Psicológica	1982 (2009)	Social Sciences
Revista Chilena de Infectología	1984 (2007)	Sciences
Alpha. Revista de Artes, Letras y Filosofía	1985 (2007)	Art & Humanities
Boletín del Museo Chileno de Arte Precolombino	1985 (2012)	Art & Humanities
ONOMAZEIN	1996 (2008)	Art & Humanities / Social Sciences
Revista 180	1996 (2007)	Art & Humanities
Electronic Journal of Biotechnology	1998 (2002)	Sciences
Maderas. Ciencia y Tecnología	1998 (2007)	Sciences
Acta Bioethica	2000 (2007)	Sciences / Social Sciences
Anales de Literatura Chilena	2000 (2008)	Art & Humanities
Journal of Soil Science and Plant Nutrition (formerly Revista de la Ciencia del Suelo y Nutrición Vegetal)	2000 (2007)	Sciences
Boletín Latinoamericano y del Caribe de Plantas Medicinales y Aromáticas	2002 (2008)	Sciences
Revista de la Construcción	2002 (2007)	Sciences

Annex 2. Full references to primary sources used in Chapter 3

- ALPHA-REV.ARTES.LET (1985) Presentación. Alpha. Revista de artes, letras y filosofía. 1(1):5.
- ALPHA-REV.ARTES.LET (1994) Presentación. Alpha. Revista de artes, letras y filosofía. 10:3-4.
- ALPHA-REV.ARTES.LET (2005) Presentación. Alpha. Revista de artes, letras y filosofía. 21:5-6.
- ATENEA-CONCEPC (1924) Editorial. Atenea. Revista de Artes, Ciencia y Literatura 1(1).
- ATENEA-CONCEPC (1933) Cien números. Atenea. Revista de Artes, Ciencia y Literatura 10(100):157-161.
- ATENEA-CONCEPC (2014) Presentación. Atenea. Revista de Artes, Ciencia y Literatura 510.
- ANALES.MNCH (1891) Prologo. Anales del Museo Nacional de Chile. Segunda sección: Botánica.
- ANALES.ING.CHILE (1891) Conferencia dada en el Instituto de Ingenieros, el 25 de Noviembre de 1890, sobre la industria del Fierro. Anales del Instituto de Ingenieros de Chile 11:465-486.
- ARCH.BIOL.MED.EXP (1970) Instrucciones a los autores. Archivos de Biología y Medicina Experimental 7(12).
- ARCH.BIOL.MED.EXP (1980) Estudio preliminar sobre publicaciones y productividad científica en Chile. Archivos de biología y medicina experimental 13:195-208.
- ARCH.BIOL.MED.EXP (1991) Acta del simposio sobre retorno de científicos. Archivos de Biología y Medicina Experimental 24:443-448.
- ARCH.BIOL.MED.EXP (1992) Establecimiento y desarrollo de los programas de doctorado en ciencias. Archivos de Biología y Medicina Experimental 25:43-56.
- ARCH.MED.VET (2004) Editorial. Archivos de Medicina Veterinaria 36(2):103.
- ARCH.MED.VET (2011) Editorial. Archivos de Medicina Veterinaria. 43(1).
- BIOL.RES (1998) Farewell from the editor. Biological Research. 31:323-324.
- BIOL.RES (2008) Mejorando la gestión editorial. Biological Research. 41(1):5.
- CIENC.INVESTIG.AGRAR (1974) Sin título. Ciencia e Investigación Agraria. 1(1):5.
- CHIL.J.AGR.RES (1971) Normas de publicación. Agricultura Técnica. 31(4).
- CHUNGARA (1972) Un año más del Museo Arqueológico San Miguel de Azapa. Chungará. Revista de Antropología Chilena. 1-2:7-9.
- CHUNGARA (2005) Editorial. Chungará. Revista de Antropología Chilena. 37(1):4.
- ESTUD.ATACAMENOS (1973) Editorial. Estudios Atacameños. 1(1):5-6.
- ESTUD.ATACAMENOS (1984) Presentación. Estudios Atacameños. 7:7.
- ESTUD.ECON (2013) Forty years of Estudios de Economía. Estudios de Economía. 40(2):131-132.
- INT.J.MORPHOL (1999) Editorial. International Journal of Morphology 17(2).

BOL.SOC.CHIL.QUIM (1970) Editorial. Boletín de la Sociedad Chilena de Química. 16(1).

BOL.SOC.CHIL.QUIM (1981) Editorial. Boletín de la Sociedad Chilena de Química. 26(2).

BOL.SOC.CHIL.QUIM (1985) International collaboration and postgraduate training. Boletín de la Sociedad Chilena de Química. 30(1):1-2.

BOL.SOC.CHIL.QUIM (1985a) Editorial. Boletín de la Sociedad Chilena de Química. 30(3)101:1.3.

BOL.SOC.CHIL.QUIM (1988) Desarrollo de la investigación química en Chile. Indicadores Epistemométricos. Boletín de la Sociedad Chilena de Química. 33(4):157-162.

BOL.SOC.CHIL.QUIM (1994) La red latinoamericana de química. Boletín de la Sociedad Chilena de Química. 40:117-118.

BOL.SOC.CHIL.QUIM (2002) Editorial. Boletín de la Sociedad Chilena de Química. 47(3).

BOL.SOC.CHIL.QUIM (1953) En busca del equilibrio. Boletín de la Sociedad Chilena de Química. 4(1):3-5.

BOL.SOC.CHIL.QUIM (1972) Acto Inaugural. Discurso del presidente de la comisión organizadora Dr. Mario Suwalsky. Boletín de la Sociedad Chilena de Química. 17(1):11-13.

INV.MARINAS (1985) Conmemoración de los 30 años. Investigaciones Marinas. 13(1):21-34.

REV.BIOL.MAR.OCEANOLOG (1948) Palabras preliminares. Revista de Biología Marina y Oceanografía. 1(1):3-4.

REV.BIOL.MAR.OCEANOLOG (1955) Consideraciones generales para la organización de las actividades oceanográficas Revista de Biología Marina y Oceanografía 5(1-3):68-84.

REV.CIENC.POLIT-SANT (1979) Revista de Ciencia Política. 1(1):3.

REV.CH.HIST.GEO (1911) Summary. Revista Chilena de Historia y Geografía. 1(1).

REV.CHIL.DERECH-PUCC (1974) Editorial. Revista Chilena de Derecho. 1:5-6

REV.CHIL.DERECH-PUCC (2007) Editorial. Los nuevos desafíos de la Revista Chilena de Derecho. Revista Chilena de Derecho 34(2):199-200.

REV.CHIL.HIST.NAT (1900) Los musgos colectados por la expedición Antártica belga en el Estrecho de Magallanes i Tierra del Fuego. Extractados de la Revue Bryologique. Revista Chilena de Historia Natural. 4(7):101-106.

REV.CHIL.HIST.NAT (1901) Las enfermedades de las plantas de cultivo en Chile. Lijera reseña sobre algunas de las publicaciones de la Estación de patología vegetal de Chile. Revista Chilena de Historia Natural 5(5-6):111-116.

REV.CHIL.HIST.NAT (1901a) Sobre el estado actual del estudio de Botánica en Chile. Revista Chilena de Historia Natural 5(5-6):120-124.

REV.CHIL.HIST.NAT (1901b) Lijera reseña sobre la historia natural del estado de Paraná i de otros importantes estados de la República del Brasil. Revista Chilena de Historia Natural 5(9):195-201.

REV.CHIL.HIST.NAT (1904) Las especies chilenas del viaje del buque de S.M.B. 'Challenger', extractadas i adicionadas con varias notas. Revista Chilena de Historia Natural 8(1-2):127-129.

REV.CHIL.HIST.NAT (1990) Investigación básica en ciencias naturales: la necesidad de medir su impacto en, y para, los países en desarrollo. Revista Chilena de Historia Natural. 63:145-148.

REV.CHIL.LIT (2012) El espacio de las humanidades. Revista Chilena de Literatura. 82:5-6.

REV.CHIL.LIT (2013) Palabras del Director. Revista Chilena de Literatura. 84.

REV.MED.CHILE (1872) Prospecto. Revista Médica de Chile. 1(1):1-4.

REV.MED.CHILE (1875) Sobre la organización de los estudios de medicina en Alemania por Francisco Puelma Tupper. Revista Médica de Chile. 3(7-8):257-287.

REV.MED.CHILE (1882) Crónicas. Revista Médica de Chile 9(1):26-33.

REV.MED.CHILE (1891) Revista Médica de Chile. 19(6-7).

REV.MED.CHILE (1910) Revista extranjera. Revista Médica de Chile. 38(9).

REV.MED.CHILE (1915) Crónicas. Revista Médica de Chile 43(10):332-334.

REV.MED.CHILE (1920) Viaje por Estados Unidos. Crónicas médicas. Revista Médica de Chile. 48(10):603-608.

REV.MED.CHILE (1970) Investigando la investigación. Revista Médica de Chile. 98:527-532.

REV.MED.CHILE (1972) Editorial. Revista Médica de Chile. 100(8):1178.

REV.MED.CHILE (1982) Estudio sobre la investigación biomédica en el decenio 1967-1976. Revista Médica de Chile. 110:149-158.

REV.MED.CHILE (2001) La Revista Médica de Chile en una biblioteca de ciencias en la Internet. Revista Médica de Chile. 129:131-132

REV.MUSIC.CHIL (1947) Madurez de la música del nuevo mundo. Revista Musical Chilena. 3(24):27-33.

REV.MUSIC.CHIL (1992) Editorial. Revista Musical Chilena. 46(177):11.

REV.MUSIC.CHIL (1993) Crónica. Congresos. Revista Musical Chilena. 47(179):121-126.

REV.MUSIC.CHIL (2008) Política editorial. Revista Musical Chilena 62(209).

TEOL.VIDA (1973) Presentación. Teología y Vida 14(4):227-228.

TEOL.VIDA (1982) Sin título. Teología y Vida 23.

TEOL.VIDA (1995) Presentación. Teología y Vida. 36(3):153-154.

TER.PSICOL (2003) Editorial. Terapia Psicológica. 21(1):3.

TER.PSICOL (2012) Editorial. Terapia Psicológica 30(3).

Annex 3. Original quotations in Spanish (Chapter 4)

Desde el momento en que la revista pasa a indexarse en estos clubes o cosas internacionales de ciencia, te tienes que regir a eso, entonces, ¿qué es lo tenemos que publicar? Lo novedoso para la ciencia. Porque mucha gente a veces dicen o escriben, 'tengo un artículo que es una cosa que desarrollé y es más de interés nacional', entonces eso lo quiere publicar en esta revista nacional. Yo creo que se ha perdido contexto hoy día (...) de hecho hoy día un artículo que nos llegue, que se refiera mucho a un tema que es muy puntual y local, no cabe, nosotros rechazamos, porque es de importancia local no más. (Interviewee 4, STM journal)

Pero para Scopus y WoS, estar en Scielo es como la plataforma natural para saltar a ellos, porque en el fondo me aseguras calidad al final. Y nosotros por ejemplo como revista no tenemos una relación directa con Scopus, ni con WOS, sino que a través de la publicación de los archivos en Scielo ellos los rescatan. (Interviewee 5, SSH journal)

nosotros nunca postulamos a Scielo u otra de esas cosas, y toda la gente que postulaba nos contaba de lo largo que era y de lo complicado que era, pero del minuto en que entramos a Thompson, Scielo nos invitó directamente, nos pidió que entremos, entonces ya todos los demás cayeron y directamente empezamos, sin haber postulado nunca a nada. (Interviewee 12, SSH journal)

Ahora, para Chile se puso una cuestión terrible, porque hoy día los chilenos 'ah no, si no es Q1 o Q2 no, vale callampa' (...) Ellos no mandan (...) pero sí que publican sus tesis, cuando sacan un tesis doctorado me lo mandan para acá. Ahora, en otros países no, publicar con nosotros para ellos es súper importante, si tú miras los peruanos, los colombianos, los ecuatorianos. Y México entró en esta misma espiral que nosotros. Que les pagan el incentivo, entonces están publicando mucho los mexicanos, mucho, mucho, porque todos sus estudiantes de los programas de posgrado tienen que tener revistas. Entonces todas las tesis de posgrado están llegando aquí (Interviewee 6, STM journal)

Yo creo que la revista científica hoy día implica más, una cosa de evaluación externa y estatus, intelectual y académico, del grupo de gente más que la instalación de un determinado tipo de pensamiento. (...) Hay presión también de la universidad por indexar las revistas (...) esto va de la manito con todos los indicadores de evaluación que a ti te ponen de acreditación. Y del mercado de la educación superior finalmente. (Interviewee 9, SSH journal)

Cuando yo estoy rechazando el 80 % de los artículos que me llegan es porque estoy buscando una calidad, para que esa calidad que yo, con mis criterios, lo veo, ojalá se cite. Porque cuando el factor de impacto no crece, uno dice, chuta, no lo estoy haciendo tan bien. (Interviewee 4, STM journal)

permitir que hayan papers en español, no todos, pero permitir que alguno que otro buen paper sea publicado en español ayuda más que perjudicar para esto, para la difusión en otros ámbitos, seguramente ese paper no va a ser tremendamente citado en otras cosas, pero sí va a ser discutido en debates domésticos, y eso está bien. Mantener esa pata no es malo (Interviewee 12, SSH journal)

Y yo tengo contactos y pertenezco a este comité International, y eso cada cierto tiempo sale ese tema, todo el mundo de acuerdo en, toda la gente que participa, digamos, son muchas revistas, 15 revistas a nivel mundial, están totalmente de acuerdo en que el índice de impacto no es una medida crítica. Entonces para qué nos vamos a preocupar de cosas que no son bien críticas, mucho más críticos en la oportunidad de publicación de la revista y que no caiga al nivel de generar en la revista (Interviewee 7, STM journal)

yo me voy a los papers que tienen 0 citas, el año 2016, por WoS o Scopus, a los del año 2017, los de 0 citas, y yo digo, ¿por qué no los están citando? ¿Por qué no me han citado esas temáticas? Y algunos de ellos se da que las figuras son de muy mala calidad. Y en otros, yo rescaté las palabras claves de los papers menos citados (...) entonces ahí yo puedo buscar la frecuencia de las palabras, entre otras cosas. Ahí busco las frecuencias de las palabras, entonces yo veo cuáles son las frecuencias o yo puedo buscar las keywords más frecuentes de los papers que no son citadas. Entonces estas keywords no las tengo que usar, porque así no me van a encontrar. (Interviewee 10, STM journal)

me da mucha decepción, desilusión cuando sale el factor de impacto y verme tan abajo, porque yo quisiera más que nadie que estuviéramos un poco más alto. Pero qué hago, ¿boto todos estos artículos que yo sé que se hacen con dificultad en los países latinos? Hay países que les cuesta sacar artículos. Hay un esfuerzo detrás, para qué te digo Cuba, por ejemplo, Venezuela, los colegas publican en condiciones muy difíciles. Entonces yo creo que hay que darle, todavía, yo soy de los viejos, entonces todavía creo que hay que ayudarlos. Hay que apoyar ese trabajo. Alguien tiene que apoyarlo! (Interviewee 6, STM journal)

¿Te fijas? nosotros en la revista ingresó en ISI, ese es el que genera ese aumento entonces ahí (...) aquí tratamos de publicar más, porque empezó a llegar mucho, y dijimos 'oye, están llegando tantas que vamos a tener que publicar más', pero después uno empieza a darse cuenta que no es la estrategia, porque con tus pocas citas, mientras más publicas...el denominador es más grande y se empieza a diluir, entonces ya, pegamos unos ajustes, no sólo por eso, por distintas razones fuimos ajustando. En algunos años publicamos menos porque las cosas se nos han puesto más difíciles no más. Por ejemplo, aquí nosotros publicamos más porque publicamos en una edición especial, pero después aquí publicamos un poco menos porque empezamos ya, empezamos a cobrar. (...) Estaba llegando mucho. (Interviewee 4, STM journal)

temáticamente tratamos de estar en temas también más transversales y mundiales (...) este número va a ser con los europeos, básicamente europeos (...) Entonces, nuestra política está clara, o sea, ese número va a hacer con los gringos y el otro con europeos, y por lo tanto, allá vamos. Somos una revista cada vez que pretende ser más del mundo, y esos monográficos pretenden mostrar eso también. No, nuestro proyecto está claro en ese sentido, yo creo. (Interviewee 8, SSH journal)

lo que está sucediendo, es que los académicos asiáticos especialmente, están ávidos de publicar, y a nosotros siempre nos llegan solicitudes de Ucrania, Afganistán, Pakistán, India, China, etc. (...) Entonces una forma de filtrarlo, es que ellos entiendan que esos temas también tienen que ser con respecto a latinoamérica, porque nuestra revista va directamente a latinoamérica. (Interviewee 5, SSH journal)

estás condenando a tus propios autores porque ellos no están recibiendo citas, y tu revista no está recibiendo esas citas tampoco (...) la gente está encantada. Imagínate que, o sea, no les importa que yo le apruebe a alguien un paper para el primer número del 2020, porque sabe que posiblemente en dos meses más ya va a estar en el aire, y puede distribuirlo, puede subir a ResearchGate. (Interviewee 8, SSH journal)

Annex 4. List of sociology departments in Chilean universities

Year	University ⁵⁴	City	Administration (public / private)
1958	Universidad de Chile	Santiago	Public
1959	Pontificia Universidad Católica de Chile	Santiago	Private
1965 (Re-opened in 1993)	Universidad de Concepción	Concepción	Private
1989	Universidad Academia del Humanismo Cristiano	Santiago	Private
1990	Universidad La República	Santiago	Private
1991	Universidad Arcis	Santiago	Private
1991	Universidad Arturo Prat	Iquique	Public
1992	Universidad La Frontera	Temuco	Public
1998	Universidad Alberto Hurtado	Santiago	Private
2001	Universidad Central	Santiago	Private
2001	Universidad Católica Cardenal Raúl Silva Henríquez	Santiago	Private
2002	Universidad Diego Portales	Santiago	Private
2003	Universidad Arcis	Valparaíso	Private
2003	Universidad de Playa Ancha	Valparaíso	Public
2003	Universidad de Valparaíso	Valparaíso	Public
2003	Universidad de Viña del Mar	Viña del Mar	Private
2006	Universidad Central	Antofagasta	Private
2006	Universidad Central	La Serena	Private
2008	Universidad Católica de Temuco	Temuco	Private
2010	Universidad Andrés Bello	Santiago	Private
2011	Universidad Andrés Bello	Viña del Mar	Private
2012	Universidad Católica del Maule	Talca	Private
2012	Universidad Mayor	Santiago	Private

⁵⁴ We also found entries for sociology programs in the databases from the Education Ministry at *Instituto Profesional del Valle Central* (2002, La Serena), *Universidad Autónoma* (2003, Talca), *Universidad Arcis* (2009, Concepción), *Universidad Santo Tomás* (2012, Santiago), and *Universidad Los Leones* (2020, Santiago). However, we did not find evidence that these programs were actually organized and that students could enrol into them.

Annex 5. Original quotations in Spanish (Chapter 5)

Es la oportunidad de formar sociólogos de la forma en que tu crees deben ser formados (Interviewee 2, 2011)

Entonces ahí mis redes fueron muy importantes, especialmente para atraer otros académicos de renombre a este proyecto (Interviewee 6, 2011)

recurrimos a nuestra experiencia para formar nuestros estudiantes, digamos, pensando en nuestra experiencia internacional, y se dan, unos piensan en Inglaterra, otros en Estados Unidos o en Alemania (...) yo lo noto en las conversaciones, en las publicaciones, los temas, los referentes, en los artículos (interviewee 13, 2019)

de pronto empecé a sentir que mi rollo [tema de investigación] como que no andaba, como que no tenía rendimientos por decirlo así, es rara la sensación, que los proyectos no iban a salir en esa área, que no era un espacio que estaba siendo como reforzado acá en Chile, y que yo sentí también que al mismo tiempo que preguntas que en la comunidad académica en la que yo había estado esos tres, cuatro años en [Universidad de formación doctoral], allá las preguntas son muy históricas, históricas en el sentido que si uno hace un estudio de algo, de no sé, la emergencia de qué sé yo, haces el estudio como de la emergencia en un campo (...) Acá como que no anda, desde la sociología, sobre todo la sociología histórica en ese sentido no se usa, la sociología acá tiende a estudiar gente que está viva. (Interviewee 18, 2019)

En América Latina la sociología [nombre del enfoque] no, no tiene ningún tipo de recepción, yo con varios colegas que hicieron el doctorado conmigo, en las universidades [Nombre del país] que se dedican más o menos a este tipo de paradigma, yo con mis colegas, con varios colegas intentamos montar varias veces líneas de trabajo, equipos de trabajo, programas de estudio acá, y nos fue imposible. (Interviewee 15, 2019)

eso es algo que le pasa también a la sociología emergente, ¿no?, la sociología del deporte, la sociología alimentaria, la sociología de las emociones, la sociología del cuerpo, que nos hemos dado cuenta que son fundamentales en el desarrollo de cualquier sociedad y que la sociología institucional o convencional había dejado fuera porque lo que había hecho casi históricamente había sido pura sociología política, si Chile lo que hizo fundamentalmente fue sociología política y algo de sociología económica (...) que creo que es una barrera simbólica, ¿no?, simbólica, teórica o epistémica, y luego también hay una barrera práctica, que es que cuando tu quieres acceder a estos fondos, ¿no?, los que te leen, los que te evalúan (...) son los que provienen de este circuito convencional. (Interviewee 16, 2019)

Cuando entré a sociología lo hice porque pensé que la ciencia social podía servir para modificar la sociedad, y aún creo eso. (...) Ahora creo que para tener efecto, tiene que estar basado en conocimiento científico, y por eso es importante la teoría, porque cuando se comenten errores teóricos como creo que se cometieron en las corrientes de izquierda, eso tiene consecuencias en la acción también. (Interviewee 3, 2011)

Claro que es problemático, porque te saca del medio porque tienes que cumplir con parámetros internacionales y no motivaciones o puntos nacionales. (Interviewee 25, 2019)

no es esta generación que participó del golpe, que traía como toda esta impronta de la sociología latinoamericana del 60'. Eso, yo creo que hay una generación de la sociología chilena que está en extinción yo digo, que es la que ha ido con esta, los que vienen de la década del 60'-70' (...) entonces esta generación (...) sus compromisos políticos son mucho más acotados, que es también de los tiempos, entonces hay más militancia feminista o más ambientalista, o qué sé yo (Interviewee 17, 2019)

la acción y la reflexión tienen que ser procesos que tienen que ir a la par, o sea, no se trata de que volvamos (...) a la universidad de los setenta, que es puro activismo, no, no, no, no, ni tampoco queremos ser ratones de biblioteca, en mi visión ¿no?, sino que ambas cosas tienen que ir completamente en diálogo y caminando ambas juntas. (Interviewee 16, 2019)

jugar en términos de acreditación quiere decir jugar en términos de esos indicadores en la universidad hoy, en acreditación te piden retención, ahora te piden dos partes, te piden, está la parte de retención, progresión, cantidad de ejemplares en biblioteca, cantidad de profes con posgrado, generación de todas esas cuestiones, y son puros indicadores, aprobación de asignaturas, nivel de conformidad de los estudiantes con los profes, todas son estadísticas. Y la universidad ha instalado progresivamente sistemas de generación centralizadas a esas estadísticas, que se meten en los planes anuales, en los planes operativos de las carreras. (Interviewee 18, 2019)

Yo tengo bastante con mi investigación y la docencia. Además no me gusta mucho eso (Interviewee 8, 2011)

Es garrote y zanahoria. Entonces yo creo que es como que el garrote, el yugo va por la docencia, pero el incentivo, todos los premios, toda la fama, el reconocimiento viene por la publicación. (Interviewee 23, 2019)

ese año en esa postulación mi currículum recibe un puntaje que era casi el máximo! y al año siguiente (...) el mismo currículum, igual, pasó a tener el mínimo puntaje (...) yo siempre había publicado en revistas [país editorial] que no estaban indexadas en ninguna parte, y ahí empezó de frentón el tema que tú mencionabas antes, de las ISI, Scopus. (Interviewee 14, 2019)

al principio, mirábamos un currículum donde, no estábamos tan, o sea, nos interesaba la experticia. Por supuesto que tuviera doctorado o magíster, pero interesaba más la experticia temática, los años de docencia, pero sin este condicionamiento, esta exigencia de la productividad, como criterio decisor. Puede que a uno de repente le interesara más que fuera más acorde con el perfil de la carrera un determinado currículum, porque, lo consideraba como un mejor docente, con más vínculos con la región o sus proyectos. Pero eso dejó de ser determinante, entonces, efectivamente ese currículum podía perder frente a otro que tenía más publicaciones. (Interviewee 19, 2019)

ahora esos núcleos de investigación es curioso, porque estos núcleos de investigación parten en sus exigencias que tengas redes internacionales, se potencia lo internacional, y lo internacional no es América Latina en general para ellos, lo internacional es el concepto de Europa, Estados Unidos, eso es lo internacional, o eso es lo que se espera. Bueno, la misma selección de las universidades que tienen Becas Chile ¿o no? (Interviewee 17, 2019)

por ejemplo, con pares que trabajan en tus mismas líneas de [temáticas de investigación], se empieza a dar una articulación y se edita un número específico en una revista (...) ahí hay una red que no solo

para indexar o poner el paper, sino una red que le interesa ir sistematizando el conocimiento que hay, la investigación, ponerla en otros espacios de discusión y eso para mí ya empieza a tener más sentido que uno solo llenando, terminando el artículo. Hay una revisión del artículo, hay una discusión de las ideas! (Interviewee 19, 2019)

yo creo esa es una de las consecuencias principales que he visto, es que he tenido que debilitar mis redes de pertenencia donde tengo los grupos con los que dialogo y en torno a los cuales además he construido mi narrativa sociológica, para empezar a discutir con unas audiencias que no conozco, que supongo que están ahí, a partir de indicadores de revistas (...) lo que yo veo es que por una parte hay un divorcio en la universidad entre las metas que ellos quieren y la dificultad para alimentar tus economías de escala y tus mecanismos reales de investigación, es decir, los grupos reales a los que perteneces, a los que te leen, a los que les hace sentido lo que estás escribiendo, y entonces estos indicadores de productividad te obligan a ir a buscar en otros espacios, que son espacios con otras epistemologías, que podría estar súper bueno decir 'mira, ábrete', el problema es que son espacios donde no te van a leer, donde no generas impacto (...) Entonces yo para meter un artículo en ciertas revistas tengo que cambiar también la orientación de ciertos ámbitos (...) La condición en cierta forma, la condición para poder desarrollar investigación autónoma, es que tú cumples con una serie de indicadores teóricamente neutros, que no lo son, por supuesto, que terminan orientando tu investigación, terminan delimitando cuál es tu capacidad de asociarte o no con ciertos grupos de investigación, terminan obligándote a postular papers a ciertas revistas y no a otras, etc. (Interviewee 22, 2019)

los colegas nuevos están más vinculados a las redes internacionales, a LASA, ISA, es más frecuente que participen en ese tipo de eventos que ALAS, no, ALAS es algo muy periférico en relación a los circuitos (...) no es una instancia valorada, yo creo, como un espacio académico donde se frecuente o donde se dé relevancia. (Interviewee 17, 2019)

yo no sé inglés, no hablo inglés, no escribo inglés, entonces ese es una barrera a las redes, evidentemente. (Interviewee 17, 2019)

nunca he publicado en inglés. Una de las presiones que tengo de la universidad es que tengo que tener un indicador de publicación en revistas anglosajonas (Interviewee 22, 2019)

yo creo un problema que yo tengo es que no he publicado nada en castellano digamos, muy poco, ese es mi problema, entonces me cuesta más a veces relacionarme acá en Chile o Valparaíso (Interviewee 23, 2019)

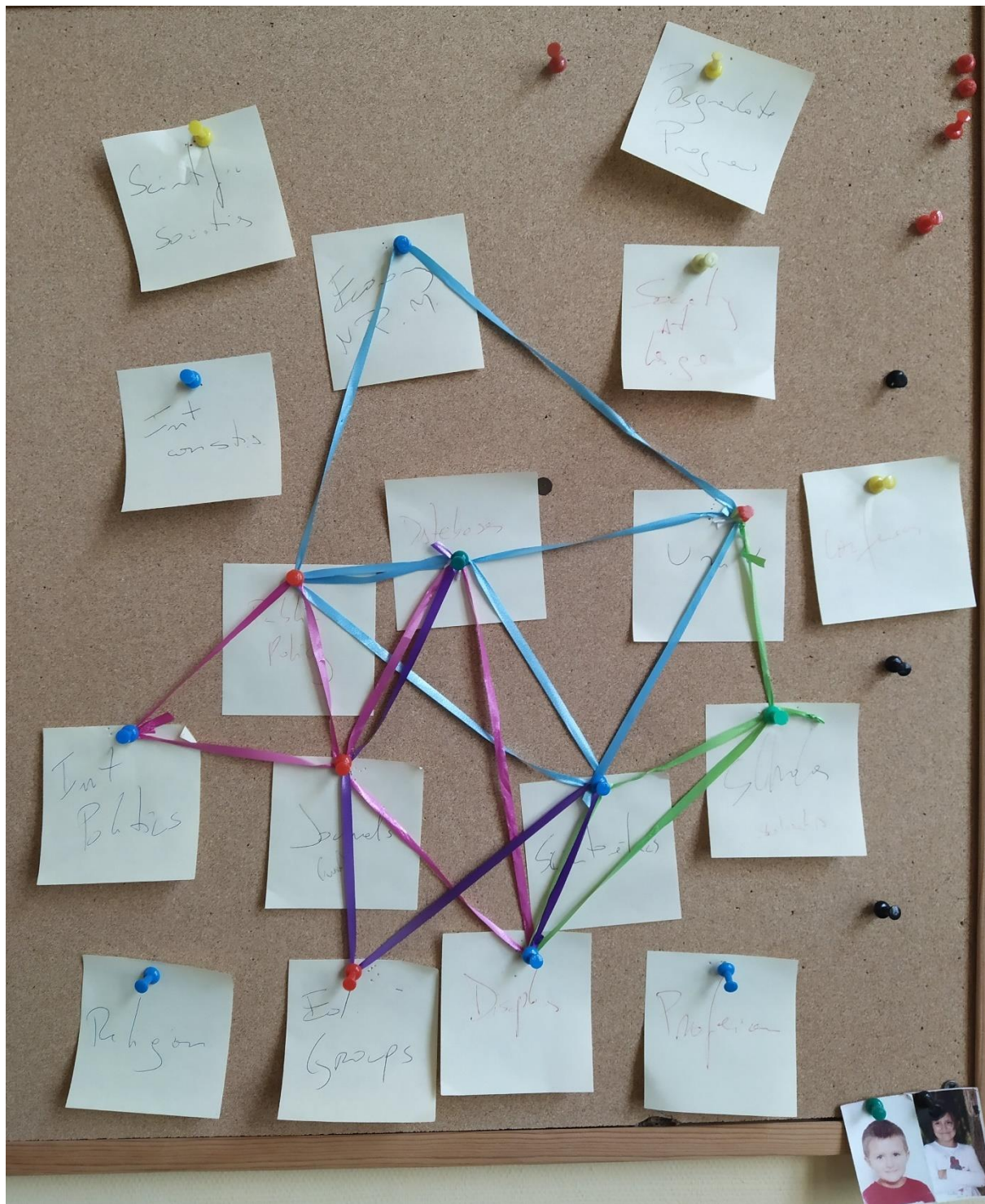
yo creo que esa es una de las cosas que le da fuerza a la investigación en la escuela (...) uno se aterriza en torno a un núcleo y ese núcleo se hace visible, y que ese núcleo tiene capacidad de irradiación. Entonces nosotros levantamos un proyecto con un fondo que nos ganamos (...) y se fueron íntegramente a pagarle micro y lucas al bolsillo a los estudiantes para que ellos hicieran terreno como locos, punto (...) nosotros pusimos todo nuestro capital en hacer que los cabros pudieran entrar en escuelas, investigar, meterlos en mesas de trabajo públicas, etc. (...) y eso da lugar a siete memorias. (Interviewee 22, 2019)

Eso nos permitía de alguna forma decirle a esa universidad convencional que esperaba de nosotros que incrementáramos su nivel de productividad etcétera, etcétera. Decirle "Mire nosotros con una visión crítica podemos efectivamente hacer y dar cumplimiento con los objetivos indicadores

convencionales si somos productivos científicamente, accedemos a estos fondos y nos ganamos estos fondos” (...) pero el sentido de nuestra investigación, de nuestro quehacer universitario no es reproducir ese modelo, sino que buscar o construir alternativas que vayan más allá. (...) o sea, yo escribo un paper (...) solamente porque en la medida en que yo consiga ese indicador puedo conseguir el otro indicador de financiamiento y a su vez con ese financiamiento yo puedo sustentar mi trabajo, por eso te digo que solamente tiene una función práctica instrumental (...) nos dimos cuenta que la estrategia de sobrevivencia del espacio no podía ser exclusivamente desde el margen porque nos ponía en una situación de mucha vulnerabilidad (...) entonces teníamos que entrar en el circuito convencional de la competencia, pero con la idea de que íbamos a competir deseando ganar para hacer otra cosa. (Interviewee 16, 2019)

la cuestión vieja de la extensión, que tú tienes que, de alguna manera, poner en diálogo tus descubrimientos (...) tienes que publicarlo, pero también para exponerte, para que la gente te diga 'está hablando puras leseras', para mostrar la cuestión, y para entrar en ese diálogo. (...) hay que vincularse de otras formas (...) quién cree que escribiendo columnas de opinión o que si te invitan a una mesa de expertos te van a pescar en algo. O sea, yo creo que es como ya, está bueno para el ego, pero en el fondo eso es como no entender cómo funciona la política. (Interviewee 23, 2019)

Annex 6. Photo of my office pin board⁵⁵



⁵⁵ This picture shows the mapping strategy that guided (in part) the research. While each post-it represents an actor, system or institution involved in the internationalization process (e.g., journals, scholars, universities, databases, science policies, disciplines), the strings represent the connections addressed in each chapter of the dissertation.

Annex 7. List of papers published

1. **Koch, T.** & Vanderstraeten, R. (2019) Internationalizing a national scientific community? Changes in publication and citation practices in Chile, 1976-2015. *Current Sociology*. 67 (5), 723-741.

In this paper, Tomás Koch designed the data-collection, compiled and cleaned the datasets, and performed the analyses. He also contributed to drafting the paper, submitted it, and maintained communication with the editor. Raf Vanderstraeten contributed to the analyses of the data and the drafting of the paper.

2. **Koch, T.**, Vanderstraeten, R. & Ayala, R. (2021) Making science international. Chilean journals and communities in the world of science. *Social Studies of Science*. 51(1):121-138

Tomás Koch designed the data-collection, did the archival study, compiled and cleaned the datasets and performed the analyses. He contributed to drafting the paper, submitted it and maintained communication with the editor. Raf Vanderstraeten contributed to the analyses of the data and the drafting of the paper. Ricardo Ayala contributed to the analyses of the data, structuring and drafting the paper.

3. **Koch, T.** & Vanderstraeten, R. Journal editors facing scientific indexes: Internationalization pressures in the semi-periphery of the world of science. Accepted for publication in *Learned Publishing*.

Tomás Koch designed the data-collection phase, did the interviews, performed the analyses, contributed to drafting the paper, submitted it and maintained communication with the editor. Raf Vanderstraeten contributed to the drafting of the paper.

4. **Koch, T.**, Blanco, G. & Ayala, R. (2021) Scholarly communities at the crossroads: Internationalizing sociological networks in Valparaíso, Chile (2003-2019). *Minerva*. 59, 99–122

In this paper, Tomás Koch designed the data-collection phases (2011 and 2019), did all the interviews, compiled the datasets, performed the analyses, contributed to drafting the paper, submitted it and maintained communication with the editor. Gustavo Blanco contributed to the design of the data-collection (2011), the analyses of the data and the drafting of the paper. Ricardo Ayala contributed to the drafting of the paper.