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Pablo Antonio Lillo Cea

The World-Class Ordination

A Field Theory Approach to the Study of Global
University Rankings

Summary:

Världsklassordinationen

Ett fältteoriperspektiv på studiet av globala universitetsrankningar



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Dissertation presented at Uppsala University to be publicly examined in Sal IX, Universitetshuset (Biskopsgatan 3, 753 10 Uppsala), Uppsala, Friday, 22 March 2024 at 13:15 for the degree of Doctor of Philosophy. The examination will be conducted in English. Faculty examiner: Professor Yves Gingras (Department of History, Université du Québec à Montréal; Observatoire des sciences et des technologies).

Abstract

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Using Pierre Bourdieu's field theory, this thesis explores the idea of a "world-class university" by analysing the narratives and dynamics that shape this classification in the context of global university rankings. It uses a combination of methods, including historical studies, bibliometrics, multiple correspondence analysis, and social network analysis to examine the socio-historical factors determining world-class status in higher education.

The research reinterprets the rise and evolution of global university rankings, framing it as a process of field formation. Influential entities like the IREG Observatory and the Center for World-Class Universities have been instrumental in fostering a global discourse that encourages competition among higher education institutions, leading to the establishment of a worldwide system for evaluating academic excellence.

A comparative analysis of institutions, nations, and regions based on ranking results over two decades spotlights the enduring dominance of U.S. and U.K. institutions amidst the rising presence of Chinese. Focusing on 2022 data from the Academic Ranking of World Universities, QS World University Ranking, and Times Higher Education World University Ranking using Multiple Correspondence Analysis. It finds that prestige, heavily influenced by private reputation surveys, outweighs performance or internationalisation metrics in these rankings. The analysis also reveals a contrast between international recruitment and a domestic orientation, with English-speaking institutions attracting more international students and faculty. A dichotomy in scientific recognition emerges, opposing older institutions with award-winning alumni and staff to younger universities excelling in citations per faculty. Euclidean clustering supports these findings, identifying distinct groups of institutions, such as domestically focused Asian institutions and well-rounded Anglo-Saxon universities.

Lastly, the thesis examines patterns of academic collaboration using social network analysis, with a focus on Swedish, English, and German higher education institutions. It observes a shift in partnerships from American to Asian counterparts, indicating Asia's ascending role in the global academic landscape and reflecting changes in global university rankings. Overall, this study enhances our comprehension of higher education from a global perspective, uncovering the pervasive dominance of the Anglo-Saxon educational model in university evaluations, where the quantification of reputation is misrecognised as academic excellence.

Keywords: sociology of education, globalisation, field theory, universities, higher education, rankings

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Table of Contents

PREFACE.....	9
ABBREVIATIONS	11
CHAPTER 1	
THE WORLD-CLASS UNIVERSITY.....	13
1.1 From the Nation to the Globe: The Multi-Scalar Positioning of the University.....	15
Globalisation in Higher Education as a Recent Development	17
The World-Class University and Globalisation	20
1.2 Global University Rankings: Perspectives and Debates	24
1.3 Aim and Research Questions	28
Emergence and Legitimation	28
World-Class Competition and Rankings	29
Structure Analysis	29
Regional Focus	29
1.4 Outline of the Dissertation	30
CHAPTER 2	
A GLOBAL FIELD APPROACH TO HIGHER EDUCATION	33
2.1 Three Main Strands of Research	34
World Systems Theory	34
Neo-Institutionalism	37
Field Theory.....	39
2.2 Field Theory Foundations	41
Symbolic Violence, Higher Education, and the Field of Power	42
Global Fields	43
2.3 Implementation Summary.....	45
CHAPTER 3	
RESEARCH DESIGN	49
3.1 Field Formation	50
3.2 Field Structure.....	51
Mapping out the Field.....	51
Research Collaboration Patterns	53
3.3 Obstacles and Solutions.....	54

CHAPTER 4	
LET THERE BE WORLD-CLASS: ON THE FORMATION OF A GLOBAL SUB-FIELD OF UNIVERSITIES	55
4.1 The Formation of a Global Sub-Field of Universities.....	56
The Idea of the (World-Class) University	58
The Rise of Global Institutions.....	59
In Sum	72
4.2 The World-Class University in Scientific Publications.....	72
General Overview.....	73
The World-Class University in the Web of Science	76
4.3 Concluding Remarks.....	83
CHAPTER 5	
THE GOSPEL OF RANKINGS: PRINCIPLES OF VISION AND DIVISION.....	85
5.1 Sorting the Wheat from the Chaff.....	86
Candidate Selection.....	86
Candidate Evaluation	88
5.2 The Ordination.....	91
Geographic Coverage.....	91
Institutional Composition	106
5.3 Concluding Remarks.....	110
CHAPTER 6	
FROM CHAOS TO COSMOS: THE CONSTRUCTION OF A GLOBAL SUB-FIELD OF UNIVERSITIES	113
6.1 Sample Population, Data Selection, and Variable Re-Coding	114
Variables Retained for Analysis	115
Recoding of Active Variables	116
6.2 Multiple Correspondence Analysis.....	117
Interpretation of Axes	117
Cloud of Individuals.....	125
Supplementary Variables	132
6.3 Euclidean Clustering	137
First Cluster: Global Low-Performers	138
Second Cluster: Western Oriented Low-Performers.....	139
Third Cluster: Domestic Oriented Mid-Performers.....	141
Fourth Cluster: Balanced Mid-Performers	142
Fifth Cluster: Domestically-Oriented Asian Institutions with Stronger Research Focus	144
Sixth Cluster: Anglo-Saxon Mid-Performers	145
Seventh Cluster: Global Top-Performers	147
6.4 Concluding Remarks.....	149

CHAPTER 7	
AFTER THEIR LIKENESS? THE INNER STRUCTURE OF REGIONAL SUBSPACES	151
7.1 Geographical Subspaces.....	152
Internal Structures	154
CSA and MCA Comparison	158
7.2 Geopolitical Subspaces	161
Internal Structures	163
CSA and MCA Comparison	168
7.3 Concluding Remarks	170
CHAPTER 8	
CHRONICLES OF COLLABORATION: EUROPEAN RESEARCH PARTNERSHIPS IN THE WAKE OF GLOBAL UNIVERSITY RANKINGS	173
8.1 General Results	176
8.2 Collaborations by Region and Country	178
Sweden	178
England.....	183
Germany	188
Summary of Major Trends	191
8.3 Collaborations by Institution.....	192
Swedish STEMM Collaboration Networks.....	193
Swedish SSH Collaboration Networks.....	203
8.4 Concluding Remarks	212
CHAPTER 9	
CONCLUSIONS.....	215
Global Field Formation.....	215
The Structure of the Field	218
SAMMANFATTNING: VÄRLDSKLASSORDINATIONEN	223
SUMMARY: THE WORLD-CLASS ORDINATION	231
APPENDICES.....	239
Appendix A: Universities selected for the MCA and their labels.....	239
Appendix B: Detailed Statistics for MCA	241
Appendix C: Cosine similarity, axes from MCA and CSA	245
REFERENCES	247

Preface

The origins of this thesis harken back to the beginnings of my experience as an international student in 2016. Although I was aware of global university rankings and the label of “world-class universities”, they didn’t majorly sway my educational choices at the time. Yet, I noticed for many of my peers and even for some university administrators, these rankings held significant weight and meaning. I soon found myself bewildered by the notion of assessing a university as a single entity. This seemed counterintuitive, perhaps even an improbable task, considering their multifaceted nature and division into diverse faculties, each with its unique disciplinary focuses, traditions, and practices. And so I wondered whether a university is labelled “world-class” primarily because of its high ranking, or if it achieves a high ranking as a result of being perceived as “world-class” right from the outset.

The title, “The World-Class Ordination”, is a deliberate play on the dual meaning of the last word. On the one hand, *ordination* refers to the process of arranging or ordering entities in a particular sequence or hierarchy. This aspect of the term directly relates to how universities are ranked globally, with the rankings effectively ordering institutions based on a set of predetermined criteria. On the other hand, the religious connotation of *ordination*, the process of conferring holy orders or a sacred sanction, metaphorically resonates with how universities are perceived in association with their high ranking and “world-class” status. This ordination elevates them to a status akin to an almost sanctified class within the academic community. By being ranked, and especially by being ranked highly, these institutions are ordained; they are recognised as superior, distinguished not just by their placement in a list but also by the objectified acknowledgement of their excellence.

As a PhD student at one of these highly ranked institutions, I held a unique position of both participating in and critically examining the ranking system. My experiences and observations within this “world-class” environment deeply informed my perspective. Building on this foundation, my investigation into global university rankings and the “world-class” label has led me to adopt a more critical stance. Although I’m aware that by writing about these rankings and using their data for my empirical analyses, I engage in a dialogue that ultimately lends some degree of legitimacy to these benchmarking tools, this involvement is unavoidable. Nonetheless, I’m confident that by introducing a field theory perspective into the discussion, a broader audience will be able to see rankings beyond the purely objective, technical metrics of academic excellence they tend to be portrayed as.

Finally, this thesis would not have been possible without the participation and continuous support of many. I am deeply grateful to several individuals whose guidance and encouragement have been indispensable. Foremost, I'm profoundly thankful to my beloved wife, Sofia, the catalyst for my move to Sweden and a pillar of unwavering, loving support. Alongside her, I owe a debt of gratitude to her parents. Abelardo, her father, has been instrumental in introducing me to the world of academia and research, while the memory of Zaida, her mother, whom we sadly lost in 2018, remains a cherished one for her kindness and warmth during my initial years in Sweden.

Significant gratitude is reserved for my supervisors, Mikael Börjesson and Emil Bertilsson. Their invaluable guidance and support were not only crucial in refining my work but also in opening doors to enriching experiences. It was through them that I've had the privilege of connecting with experts like Johan Heilbron, Brigitte Le Roux, Philippe Bonnet, and Frédéric Lebaron. Their insightful feedback at various stages of my project has been immensely helpful. My supervisors also facilitated my participation in workshops and conferences in Uppsala, Stanford, Paris, Bonn, and beyond, where I gained invaluable insights and reflections from countless colleagues.

The editors of this thesis series, Ylva Bergström, Esbjörn Larsson, and Donald Broady, deserve special thanks for their critical comments during the later stages of my work. Acknowledgement is also due to those who contributed during my ten, fifty, and ninety per cent seminars. Yann Renisio not only offered valuable advice but also introduced me to R and Git, now essential tools in my workflow. Thierry Rossier has kept me engaged in numerous research opportunities, and Lucas Page Pereira offered strategic advice on structuring my thesis.

I extend my thanks to my close friend and office partner, Nubin Ciziri, for enriching theoretical discussions that greatly enhanced my analyses. Gratitude is also owed to Christin Mays for her guidance in navigating life as a doctoral student, André Bryntesson for his always insightful questions, Anna Soloveva for sharing her statistical expertise and challenging me to argue for some of my methodological choices, Lisa Backman and Astrid Collsiö for their collaboration in studying network analysis, Lynn Koh and Laura Giorio for their assistance in performing network analysis, Aifric Doherty for her meticulous proofreading of the text, and Johan Boberg for helping me during the thesis printing process. To all my colleagues who have supported me in various ways, your contributions have been integral to my journey.

Last but not least, I want to thank my parents and sister, to whom I dedicate this work. Their unfaltering love and constant support bridged the physical distance between us.

Uppsala, February 2024
Pablo Antonio Lillo Cea

Abbreviations

ARWU	Academic Ranking of World Universities (Shanghai Ranking)
CSA	Class-Specific Multiple Correspondence Analysis
EBSCO	Elton B. Stephens CO
EHEA	European Higher Education Area
ERA	European Research Area
EU	European Union
HEI	Higher Education Institution
IAU	International Association of Universities
IGO	International Governmental Organisation
IREG	International Ranking Expert Group Observatory
LCC	Largest Connected Component
MCA	Multiple Correspondence Analysis
QS	Quacquarelli Symonds World University Ranking
SNA	Social Network Analysis
SSH	Social Sciences and Humanities
STEMM	Science, Technology, Engineering, Mathematics and Medicine
THE	Times Higher Education World University Ranking
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WCU	World-Class University
WoS	Web of Science
WHED	World Higher Education Database

The World-Class University

In 2003, Philip Altbach, the founding director of the Center for International Higher Education (1994) and a former Professor of Higher Education at Boston College (1994–2013), noticed an emerging global trend: the surging desire among multiple nations to build “world-class universities”.¹ Despite the widespread use of the term, its definition remained unclear. Altbach then took on the task of delimiting the scope of the notion, suggesting that this class of institutions stood apart from the rest mainly by their subscription to the values and norms practised and observed by elite institutions in the United States and major Western European countries. This geographical link insinuated the existence of relatively few world-class universities, relegated to very specific regions of the globe. Considering these implications, Altbach warned against hasty attempts to emulate this model without the necessary infrastructure, cautioning that it could harm a country’s education system should it not possess the financial and educational resources necessary to embark on such a project. Notwithstanding his efforts, Altbach ended his piece by acknowledging the term’s lingering ambiguity, which he attributed to the lack of a universal metric for academic excellence.

Interestingly, the Academic Ranking of World Universities (ARWU, commonly known as the Shanghai Ranking) also debuted in 2003. This pioneering effort sought to order universities on a global list of institutions according to their performance as measured against a universally acceptable excellence standard for the first time in history. From then on, ARWU’s successful experience transformed the global landscape of higher education, turning the practice of ranking universities across the globe into an annual tradition.

Over the past two decades, global university rankings have gained a firm foothold in higher education, growing considerably in number, wielding important influence in the national spheres of higher education, and attracting attention from a wide audience including journalists, policy-makers, and the scientific community.² As of 2024, twenty-one years on from the inaugural iteration of ARWU, the International Ranking Expert Group Observatory (IREG)—a non-profit association comprising ranking organisations, universities, and other stake-

¹ Philip Altbach, ‘The Costs and Benefits of World-Class Universities’, *International Higher Education* 33 (2003): 5–8.

² Jelena Brankovic, ‘How Rankings Produce Competition: The Case of Global University Rankings’, *Zeitschrift für Soziologie* 47, no. 4 (2018): 270–288.

holders in higher education—recognises 15 unique global university rankings.³ All in all, these developments have, to some extent, echoed Altbach’s proposition, offering a tangible solution to the semantic conundrum by making the label “world-class” in higher education synonymous with high-ranking positions.

But the rise and expansion of global university rankings has not been without its detractors. Multiple voices have raised concerns over the effects and methodologies associated with these metrics. Critics have argued that university rankings often oversimplify the multidimensional nature of a university’s value, potentially leading to skewed priorities in academia.⁴ Others also emphasise probable methodological biases that may favour certain disciplines or geographic regions over others.⁵ Furthermore, there are concerns about the undue pressures these rankings place on universities and scholars, which might divert resources and attention away from holistic educational and research-related goals in favour of optimising rank-centric metrics.⁶

Largely undeterred by these critiques, however, the popularity of global university rankings remains undeniable. Regardless of the objections, they have become a pivotal force in shaping educational decisions, with university leaders and applicants alike viewing them as valid and meaningful markers of world-class status.⁷ The sustained prominence of these rankings in a climate of permanent contestation has been termed a “paradox”⁸ and appears to be significantly influenced by how rankings advocates engage with their critics, establishing a conversation that reinforces the legitimacy of these evaluations.⁹ Originating from a diverse range of standpoints, the critiques afford proponents a broad canvas to formulate varied retorts regarding the meaning and scope of the world-class university and global university rankings.

Focusing too much on defining what a world-class university is, however, risks overlooking the fact that this label does not derive from the inherent logic of

³ See <https://ireg-observatory.org/en/initiatives/ireg-inventory-of-international-rankings/>.

⁴ David D. Dill & Maarja Soo, ‘Academic Quality, League Tables, and Public Policy: A Cross-National Analysis of University Ranking Systems’, *Higher Education* 49, no. 4 (2005): 495–533; Wendy Nelson Espeland & Mitchell L. Stevens, ‘Commensuration as a Social Process’, *Annual Review of Sociology* 24, no. 1 (1998): 313–343; Theodor Leiber, ‘University Governance and Rankings. The Ambivalent Role of Rankings for Autonomy, Accountability and Competition’ 39, no. 3–4 (2017): 30–51.

⁵ James Mittelman, *Implausible Dream: The World-Class University and Repurposing Higher Education*, Book Collections on Project MUSE (Princeton University Press, 2018).

⁶ Patrick Baert & Alan Shipman, ‘University under Siege?’, *European Societies* 7, no. 1 (2005): 157–185; Cris Shore & Susan Wright, ‘Audit Culture Revisited: Rankings, Ratings, and the Reassembling of Society’, *Current Anthropology* 56, no. 3 (2015): 421–444.

⁷ Elizabeth Hazelkorn, *Rankings and the Reshaping of Higher Education: The Battle for World-Class Excellence*, 2nd ed. (New York: Palgrave Macmillan, 2015); Jesus Rodriguez-Pomeda & Fernando Casani, ‘Legitimizing the World-Class University Concept through the Discourse of Elite Universities’ Presidents’, *Higher Education Research & Development* 35, no. 6 (2016): 1–15.

⁸ Tuukka Kaidesoja, ‘A Theoretical Framework for Explaining the Paradox of University Rankings’, *Social Science Information* 61, no. 1 (2022): 128–153.

⁹ Julian Hamann & Leopold Ringel, ‘The Discursive Resilience of University Rankings’, *Higher Education*, 2023.

university systems. Therefore, when trying to understand what this label means it is crucial to step back and ask two fundamental questions: why and how do we distinguish certain universities as world-class institutions in the first place? By asking these questions, I seek to reframe the issues surrounding the emergence and usage of the notion of world-class universities and its connection to global university rankings as a social matter, rather than a purely linguistic one. Adopting a sociological perspective entails a departure from normative approaches by emphasising the need to examine who wields power to assign meaning to this classification, how their authority has been legitimised and exercised, and what symbolic relationships emerge through this distinction process. This alternative approach shifts the focus from discussing the semantics of the label to understanding the social and historical context of its development and current use.

With these questions at its core, this study investigates the origins and evolution of classifications created by global university rankings and their relationship to the notion of a world-class university, as well as the structure of the symbolic order of institutions and nations resulting from these evaluations. In this introductory chapter, I begin by discussing how universities play a role on multiple scales, namely, national, international, transnational, and global. Then, I turn to present an overview of the most relevant literature on the topic of global university rankings. I conclude by introducing the research questions guiding this study and describing the organisation of this thesis.

1.1 From the Nation to the Globe: The Multi-Scalar Positioning of the University

For centuries, universities have been pivotal in shaping societal structures, cultures, and intellectual paradigms across epochs and regions. This long-standing influence is evident when we trace the origins of the university as an institution back to the ancient and medieval periods. For instance, the University of al-Qarawiyyin, founded in 859 C.E. in Fez, Morocco, is considered by many as the world's oldest continuously operating institution of higher learning, playing a crucial role in the intellectual and cultural development of the Islamic world.¹⁰ Similarly, the University of Bologna, established in 1088 in Italy, is often regarded as the first university in the sense of a higher learning institute in the Western world. Its model of academic autonomy and student-organised structure significantly influenced the development of the Western university system.¹¹ Furthermore, during the medieval period, the University of Paris emerged as a major

¹⁰ A. L. Tibawi, 'Review of Jami' al-Qarawiyyin: Al-Masjid Wa'l-Jami'ah Bi Madinat Fas (Mausu'ah Li-Tarikhaha al-Mi'mari Wa'l-Fikri). Al Qaraouiyyine: La Mosquée-Université de Fès (Histoire Architecturale et Intellectuelle)', *Arab Studies Quarterly* 2, no. 3 (1980): 286–288.

¹¹ Antonio García y García, 'The Faculties of Law', in *A History of the University in Europe: Volume 1, Universities in the Middle Ages*, ed. Hilde de Ridder-Symoens (Cambridge: Cambridge University Press, 1992), 388–408.

centre of learning in Europe, attracting scholars from across the continent. Its scholastic method and theological teachings not only shaped religious thought but also laid the groundwork for modern scientific and philosophical inquiry.¹²

As we approach more recent centuries, the impact of universities continued to evolve in response to changing social, political, and intellectual conditions. The founding of the Humboldt University of Berlin in 1810 is often credited with shifting the conception of higher education in Germany, promoting teaching, research, and academic freedom. We must keep in mind however that recent scholarship indicates that this narrative, particularly due to the influence of Wilhelm von Humboldt, was largely constructed in the early twentieth century, reflecting evolving academic and societal needs rather than originating from the university's inception.¹³ Similarly, the transformation of the Royal University of San Felipe into the University of Chile during the early stages of an independent national system of higher education exemplifies the university's role in the nation-building process.¹⁴

Nevertheless, while specific universities may differ in their historical trajectories, cultural backgrounds, funding policies, recruitment strategies, governance structures, and other relevant aspects, these institutions share features and principles that allow us to approach them as embodiments of a more abstract idea of *the University*.¹⁵ In addition to its commitment to the advancement of knowledge by way of research and teaching, one notably enduring attribute of the University is that, at least in some capacity, its activities have historically spread across geographical borders.

Certainly, higher education is a global phenomenon; we can trace it through time and space, i.e., throughout history and in different regions of the world. However, contrary to the premise that universities have *always* been *global*,¹⁶ I argue that an examination of these higher education institutions in their historical context challenges this conclusion. This assertion becomes even more apparent when considering the conflation of the terms *global*, *transnational*, and *international* typically found in related literature. To assume a trans-historical perspective—that is, to ignore the contextualised meaning of these concepts—imposes a reductionist as well as normative reading of the most recent developments affecting higher education institutions in the world.

¹² Ian P. Wei, *Intellectual Culture in Medieval Paris: Theologians and the University, c.1100–1330* (Cambridge: Cambridge University Press, 2012), 121–123.

¹³ Johan Östling, 'The Swansong of the Mandarins: Humboldt's Idea of the University in Early Post-War Germany', *Modern Intellectual History* 13, no. 2 (2015): 415–416.

¹⁴ Rolando Mellafe, Antonia Rebolledo, & Mario Cárdenas, *Historia de La Universidad de Chile* (Santiago: Ediciones de la Universidad de Chile, 1992), 63–73.

¹⁵ Michael Peters & Ronald Barnett, 'Introduction: The Very Idea of The University', in *The Idea of the University: A Reader*, ed. Michael Peters & Ronald Barnett, vol. 1 (New York: Peter Lang Publishing, 2018), xiii–xxxiii.

¹⁶ Philip Altbach, 'Comparative Perspectives on Higher Education for the Twenty-First Century', *Higher Education Policy* 11, no. 4 (1998): 347.

Globalisation in Higher Education as a Recent Development

Mediaeval universities were diverse communities made up of individuals from various regions who grouped themselves based on language and birthplace, forming units known as *nations*. Nevertheless, while the University consisted of people from multiple nations, this doesn't automatically imply that universities have *always* been *international* institutions—let alone *global*—in the current understanding of the concept. In the medieval period, a formalised system of nations, which is necessary for understanding international relations as we do today, did not yet exist. Instead, the use of the term “nation” varied significantly, ranging from differentiating between countries to separating the main regions¹⁷ and even neighbouring cities within the same country as distinct national units.¹⁸

In his analysis of the origin and spread of nationalism, Benedict Anderson clearly explains how the modern conception of nations only dates back to the end of the eighteenth century, arising from a climate of institutionalisation of national differentiation.¹⁹ Along similar lines, historian of ideas Sverker Sörlin notes that the *international* takes its current meaning and function from the peak of nationalism during the nineteenth and twentieth centuries.²⁰ In this period, the University served a seemingly paradoxical double function throughout the emergence and consolidation of nation-states by nurturing the formation of national identities while at the same time becoming the articulating node for the organisation of scientific conferences and associations between the incipient nation-states. Based on these remarks, *international*, in its most restricted sense, denotes a relationship between a set of nations conceived of as bureaucratic bodies, that is, as nation-states.

When referring to a *nation* as a geographical territory rather than as a synecdoche for its governing bureaucracy, the concept of *transnational* seems more fitting. This term is often used to describe cross-border activities conducted by individuals or institutions other than nation-states. Consequently, the difference between the concepts of international and transnational is one of focus. Thus, an international approach would emphasise attention to activities involving more than one nation-state, while a transnational approach would highlight the leading role of non-nation-state actors in activities across geographical borders. In this context, one could argue that universities have *always* been transnational or have had varying degrees of transnational focus on their multiple operations, but then again, one should be aware of what “national” means at each given point in history.

¹⁷ Some universities, like Uppsala University, have kept and adapted this tradition, using the label “nations” to identify a set of student-run organisations named after the main regions of the country.

¹⁸ Aleksander Gieysztor, ‘Management and Resources’, in *A History of the University in Europe: Vol. I. Universities in the Middle Ages.*, ed. Hilde de Ridder-Symoens (Cambridge: Cambridge University Press, 1992), 110.

¹⁹ Benedict Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism*, Revised Edition (London and New York: Verso, 1983), 11–12.

²⁰ Sverker Sörlin, *De lärdaas republik. Om vetenskapens internationella tendenser* (Malmö: Liber-Hermods, 1994), 199–202.

Now, the term *globalisation* alludes in general to “the processes by which more people across large distances become connected in more and different ways”.²¹ More specifically, sociologist Saskia Sassen argues that this notion designates a complex and dynamic set of partial, specific, unstable, and powerful conditions that shape the world that we live in today.²² Contrary to spontaneous understandings, *global* does not necessarily imply a mechanical, automatic encompassing of the entire world. Instead, it designates specific conditions and possibilities that operate within, between, and across sub-nationally localised settings with varying degrees of focus on the cross-border nature of such conditions and possibilities.²³

Along these lines, in the context of higher education, globalisation refers to the changes and adaptations that higher education institutions have undergone in response to the demands of a *global* economy, particularly in the production and transfer of knowledge. Such transformations include the strengthening of existing as well as the integration of new international and transnational practices and processes associated with the production and circulation of knowledge. In addition, they also entail the rise of partial, specific, unstable, and yet powerful epoch-making conditions that do not fit the definitions of the international and the transnational already discussed.

Concerning this latter set of activities, Sassen distinguishes between explicit and implicit global practices.²⁴ Explicit global practices refer to those activities overtly oriented towards a global space, despite occurring within local boundaries. Implicit global practices, on the other hand, refer to activities that are sub-nationally localised and may not have a direct global impact on their own; however, they become active nodes in the development of globalisation because they establish transboundary networks as a necessary basis for their operations.

After the end of World War II and most notably since the 1980s, it has become progressively more common for universities to strive to play a relevant role on a global stage. From a political perspective, certain supra-national entities, like the European Union, have invested significantly in the integration of the geographical space they govern.²⁵ Currently, a rising number of nation-states and institutions are concerned with implementing public policies and strategies that foster a widening geographical focus regarding recruitment and collaboration.²⁶ At the same time, transnationally mobile students have more than doubled over

²¹ Frank J. Lechner & John Boli, eds., ‘General Introduction’, in *The Globalization Reader*, 5th ed. (Oxford: John Wiley & Sons, 2015), 2.

²² Saskia Sassen, ‘How to Theorize Globalization: A Comment’, *Globalizations* 18, no. 5 (2021): 792–793.

²³ Global here and throughout the text is used in its geographical meaning as discussed in the introductory chapter of this dissertation.

²⁴ Saskia Sassen, *A Sociology of Globalization* (New York: W.W. Norton, 2007), 5–6.

²⁵ A clear example can be found in the implementation of the Bologna Process and the creation of a European Higher Education Area and a European Research Area.

²⁶ Giorgio Marinoni, *Internationalization of Higher Education: An Evolving Landscape Locally and Globally*, IAU 5th Global Survey (Berlin: DUZ Academic Publishers, 2019).

the past ten years;²⁷ a phenomenon partially explained by the increase in strategies deployed by institutions to attract transnational talent and the growing interest on the side of students for gaining or reconverting educational assets through their partaking in the cross-boundary practices massified by the implementation of pro-globalisation reforms.

Therefore, while universities still operate primarily on a national level regarding their recruitment, governance, and funding,²⁸ they also function as trans-boundary entities, facilitating the exchange of ideas and the movement of students and staff across borders. In later years there has been an increase in investments concerning activities that promote knowledge transfer, physical mobility, and collaboration as well as competition between universities and nation-states.²⁹ As a result, universities today occupy a unique position as national, international, transnational, and global entities. While as institutions most of their practices may primarily fall under Sassen's definition of implicitly global, there are also organisations surrounding them such as the International Association of Universities (IAU), IREG Observatory, UNESCO, and of course global university rankings, that embody very well the category of explicit global practices.

In summary, the internationalisation, transnationalisation and globalisation of the University are concepts that set the focus on three different, although interrelated, types of practices and processes, namely: cross-border activities carried out between multiple nation-states, cross-border activities carried out by other agents across multiple national territories, and activities sub-nationally localised more or less explicitly oriented toward the implementation of large-scale cross-border practices and processes. Appending the expression *global* to the University then sets the focus on an amalgamation of activities that have surfaced in the spheres of higher education across the world over the last fifty years mediated by the adoption of a more explicit global outlook in line with the constitution of a global knowledge economy.³⁰ This approach is not just about enhancing international collaboration or engaging in transnational phenomena; it also involves establishing global standards expected to apply universally.³¹ This outlook is reflected in the extensive adoption of global strategies and, especially, in the emergence of explicitly global instances that hold powerful sway over university systems across the world. As suggested, among these instances, both the construction of an idea of a world-class university and the introduction of global university rankings stand out as particularly influential phenomena.

²⁷ Data available at <http://data.uis.unesco.org>.

²⁸ Lars Engwall, 'The Internationalisation of Higher Education', *European Review* 24, no. 2 (2016): 223.

²⁹ Ulrich Teichler, 'The Changing Debate on Internationalisation of Higher Education', *Higher Education* 48, no. 1 (2004): 9, 22–23.

³⁰ Simon Marginson, 'The Knowledge Economy and Higher Education: A System for Regulating the Value of Knowledge', *Higher Education Management and Policy* 21, no. 1 (2009): 39–53.

³¹ An interesting problem in the context of global university rankings is the lack of uniformity; instead of one standard, there are 15 different recognised global university rankings, reflecting the diverse and competing interpretations of what constitutes excellence in global higher education.

The World-Class University and Globalisation

By the 1980s, during the post-war expansion of the higher education market and with the growing influence of the United States in a globalising world economy, the term “world-class university” had reportedly been in use already for at least a decade.³² Stock and Lambert, both researchers in the field of business and marketing, studied the qualifier *world-class* as a feature of company logistics and management, specifying that it refers to the efforts carried out by vendors to set up a *quality standard* for the products or services they offer based on the expectations of consumers.³³

Evidence shows that the efforts to create a standardised comparison between higher education institutions globally have indeed been taken on by global university rankings.³⁴ However, there are inconsistencies concerning the specific rankings and tiers that are presumed to be indicative of this denomination. Often, a given actor claiming world-class status for a specific university might highlight the ranking results that better support their statement, conveniently neglecting others that could set the ground for questions (e.g., a given university would claim to be among the top 100 institutions in the world by displaying their position only in those rankings reflecting that reality, conveniently ignoring other metrics where the same university could be ranked consistently below that tier).

In a more recent attempt to solve the definition issue, the *International Encyclopedia of Higher Education Systems and Institutions* included an entry in 2016 that attempted to institutionalise an official definition for the term “World-Class Universities”. In collaboration with Jamil Salmi—one of the main figures behind the foundation of the IREG Observatory—, Philip Altbach revisited and enriched the definition sketched out in 2003. These authors characterised this class of universities as institutions operating “at the cutting edge of intellectual and scientific development, *as recognised by the global rankings*”.³⁵ According to Altbach and Salmi, the “superiority” of a world-class university derives from three main factors: (1) a high concentration of talent, (2) ample economic and educational resources, and (3) governance that promotes values such as leadership, autonomy, and academic freedom.³⁶

On a curious note, the authors interpret the alignment of the world-class university standard with the models represented by Oxbridge and Ivy League insti-

³² Michael Batty, ‘World Class Universities, World Class Research: What Does It All Mean?’, *Environment and Planning B: Planning and Design* 30 (2003): 1–2.

³³ James Stock & Douglas Lambert, ‘Becoming a “World Class” Company with Logistics Service Quality’, *The International Journal of Logistics Management* 3, no. 1 (1992): 73–81.

³⁴ Rosemary Deem, Ka Ho Mok, & Lisa Lucas, ‘Transforming Higher Education in Whose Image? Exploring the Concept of the “World-Class” University in Europe and Asia’, *Higher Education Policy* 21, no. 1 (2008): 85.

³⁵ Jamil Salmi & Philip Altbach, ‘World-Class Universities’, in *The International Encyclopedia of Higher Education Systems and Institutions*, ed. Pedro Nuno Teixeira & Jung Cheol Shin (Dordrecht: Springer, 2020).

³⁶ Most of this definition aligns with Jamil Salmi, *The Challenge of Establishing World-Class Universities* (Washington: The World Bank, 2009), 3–7.

tutions as a result of these institutions’ “own volition” or “incremental progress”—a feat that they deem unattainable for other institutions under current conditions.

Finally, in establishing the path to achieve world-classness, they conclude that a universal blueprint cannot exist due to the conspicuous variations in national contexts and institutional models, adding a cautionary note that adopting this specific model might not be advisable for all nations.

A critical reading of the entry leaves the reader grappling with relevant unresolved questions. Most strikingly, identifying the world-class university label with leading American and British institutions as an almost spontaneous coincidence or natural outcome appears unconvincing and neglects the prospect that a more satisfactory explanation might be found in a socio-historical study of global university rankings’ origins. Furthermore, while acknowledging the formidable challenges inherent in cross-comparing universities worldwide, because of divergent national contexts and institutional frameworks, the authors cast doubt on the very standardised evaluations underpinning global university rankings. The scepticism introduced by the concluding passage undermines the foundational premise of the definition they aim to set forth.

All in all, although the precise definition of “world-class university” remains elusive, the changes in university systems associated with the popularisation of this term coupled with the implementation of global university rankings have sparked a global competition for achieving world-class status. As suggested above, tracing the term’s development can offer valuable insights. In doing so, it is crucial to consider three main interconnected forces underlying these shifts in higher education: the massification and expansion of university systems, the growing number of classifications in higher education, and globalisation trends in the same sector.

Expansion and Classification

Universities have long been subjected to various forms of comparison and classification. From administrative distinctions based on private or public ownership to more subjective groupings emphasising specific functions or perceived prestige, the divisions to which these institutions are subject are numerous. Evidence suggests that these classifications tend to multiply during times of university system expansion.

For instance, in the mid-1800s, the *Flagship University* model was implemented in the United States during a period of growth in higher education.³⁷ These universities played a crucial role in the formation and consolidation of the emerging nation-state, catalysing economic development and promising people an opportunity for social mobility.

³⁷ John Aubrey Douglass, *The New Flagship University: Changing the Paradigm from Global Ranking to National Relevancy* (Palgrave Macmillan, 2016), 31ff.

Later, during a new wave of expansion after World War II, Martin Trow focused on the United States and a handful of European powers to highlight the distinction between *Elite* and *Mass Higher Education Institutions*.³⁸ The elite higher education institutions, known for having traditionally served powerful social minorities, encountered new competition for public funding, which came from the mass higher education institutions established to serve the broader population. This new conflict increased the heteronomy of both types of universities, making them more susceptible to externally motivated reforms in the wake of market-driven policy trends.³⁹

During the 1970s a more formal classification was instituted by the Carnegie Foundation for the Advancement of Teaching—again, in the United States. To enable comparative studies between different types of universities in a growingly complex system of higher education, six general categories of institutions, including sets of sub-categories, were recognised owing to some of their features such as the type of degrees and credentials they offered. As of today, this classification distinguishes between Doctorate-granting Universities, Master’s Colleges and Universities, Baccalaureate Colleges, Associates Colleges, Special Focus Institutions, Tribal Colleges, and others that do not fit into the previous groups.⁴⁰

A similar tendency of multiplication of classifications can be noted during a period of system expansion in Sweden. According to the accounts of Ola Agevall and Gunnar Olofsson in their study of the history of the academic profession in the country, the restructuring of the educational system during the late 1970s resulted in the establishment of new higher education institutions, whose specific focuses produced new institutional categories generally corresponding with those presented by Trow.⁴¹

On the southern side of the globe, the neoliberal experiment conducted under the civic-military dictatorship in Chile between 1973 and 1989, reshaped the educational system by introducing a set of market-driven policies. These reforms led to a significant increase in the number and type of universities. Besides the already existing divide between public and private institutions, the deregulation of the higher education sector introduced in the 1980s allowed for the creation of a new kind of private university. To distinguish themselves from these new institutions, already existing public and private universities began to be known as *traditional universities* (“universidades tradicionales”) to symbolise and secure their prestige.⁴² Similar groups of universities can be found in other countries as

³⁸ Martin Trow, “Elite Higher Education”: An Endangered Species?, *Minerva* 14 (1976): 355–376.

³⁹ Trow, 375.

⁴⁰ For more information on this classification visit <https://carnegieclassifications.acenet.edu/>.

⁴¹ Ola Agevall & Gunnar Olofsson, ‘Den högre utbildningens professionella fält’, in *Det professionella landskapets framväxt*, ed. Thomas Brante, Kerstin Svensson, & Lennart G. Svensson (Lund: Studentlitteratur, 2019), 120–128.

⁴² José Joaquín Brunner, ‘Medio siglo de transformaciones de la educación chilena: Un estado del arte’, in *La educación superior de Chile: Transformación, desarrollo y crisis*, ed. Andrés Bernasconi (Santiago: Ediciones Universidad Católica de Chile, 2015), 24–26.

well. The Ivy League in the United States and the Russel Group in the United Kingdom are the most notable examples.

Expansion through Globalisation

Now, as indicated before, the “world-class university” emerged in connection to the new conditions introduced by the globalisation of the world knowledge economy. More accessible ways of transportation in addition to the revaluation of cosmopolitanism toward and after the end of the Cold War meant that universities available to students and scholars had multiplied.

The spontaneous understanding of the concept of globalisation entails the assumption of the existence of a common and standardised set of rules applicable across the global space. Based on this assumption, the creation of tools to inform decisions regarding investments in higher education in the context of a burgeoning global economy began to receive growing attention.

As a self-fulfilled prophecy, through this process, those global rules became tangible while obscuring the large degree of variation relating to the local contexts of each university. The actors setting the standard have had the most to win from this competition since universities would be placed on a continuum where one extreme indicates a better reflection of those standards and the other a worse reflection of them. Setting these standards increased competition, creating the possibility for hierarchies to change over time.

In contrast with all the previous classification examples, the world-class university classification has never been clear-cut. This denomination is not an administrative or formal classification. By its association with ranking results, it tends to be presented as a technical denomination, which aims to reflect not a subjective perception of prestige, but rather a more objective performance measure.

The first attempts to measure excellence in higher education at a global scale were carried out in the late 1990s by scholars from Shanghai Jiao Tong University at the indirect request of the Chinese government.⁴³ The goal was to determine which Chinese institutions were in the best position to receive the extra funding needed to achieve world-class status. To find this out, the evaluators decided to take leading American universities as their baseline for what world-class should look like. The results of this comparison were published in 2001, followed two years later by a list comparing universities all over the world.⁴⁴

A few years later, after the First International Conference on World-Class Universities took place, a collection of essays was published in the form of a book, providing an in-depth analysis of the increasing prominence of “the world-class

⁴³ These events are further discussed in Chapter 4.

⁴⁴ Alex Usher, ‘A Short Global History of Rankings’, in *Global Rankings and the Geopolitics of Higher Education: Understanding the Influence and Impact of Rankings on Higher Education, Policy and Society*, ed. Elizabeth Hazelkorn, International Studies in Higher Education (London and New York: Routledge, 2017), 37.

university” around the globe.⁴⁵ Rather than discussing the choice of “world-class” instead of other similar terms (top-tier, top-ranked, elite, world-acclaimed, etc.), the co-authors contributing to this volume attempted to fill in the empty meaning of this class of institutions by focusing on three main topics: characteristics, evaluation, and the construction of a world-class institution.

One main argument present throughout the work is the assumption that subjective perceptions of status are not enough to grant a world-class designation to a university, which justifies the demand for a quantifiable and measurable excellence standard. The centrality of this argument simultaneously explains and is explained by the participation of co-authors directly involved in ranking production, including both editors of the volume. Other contributions outside the book have been made in this same direction, openly suggesting that the use of rankings to define the meaning of world-class in higher education would reduce the imprecision of the denomination.⁴⁶

In summary, the evolution of the university from a localised institution to a global entity has been a complex process marked by significant historical, cultural, and socio-economic transformations. As the concept of the university expanded from the local to the globe, it has continuously adapted to and reflected the changing dynamics of society, from the ancient universities of al-Qarawiyyin and Bologna to the more recent globalised institutions. The concept of globalisation in higher education, while not new, has become increasingly pertinent in recent years, shaping universities into national, international, transnational, and global entities, each with distinct characteristics and challenges. The internationalisation, transnationalisation, and globalisation of universities are not merely terminological distinctions but represent different scales and scopes of cross-border activities and ambitions. The introduction of global university rankings and the aspiration to become a world-class university have further complicated this landscape, introducing new standards and competitive pressures. These developments have led to a diverse array of classifications and rankings, reflecting the complex and often contested nature of higher education excellence.

1.2 Global University Rankings: Perspectives and Debates

As stated before, global university rankings have gained popularity not only among university leaders and students but also among researchers. Various studies have emerged, focusing on diverse questions related to the practices and processes asso-

⁴⁵ Nian Cai Liu & Jan Sadlak, *World-Class University and Ranking: Aiming Beyond Status* (Bucharest: UNESCO-CEPES, 2007).

⁴⁶ Jeroen Huisman, ‘World-Class Universities’, *Higher Education Policy* 21, no. 1 (2008): 1–4.

ciated with these benchmarking tools. Research on global university rankings can be analytically divided into three main categories: texts advocating for this type of rankings, text discussing their underlying methodologies, and texts addressing the effects of rankings. Next, I provide an overview of these studies.⁴⁷

The first group consists of works advocating for rankings as a guide in establishing world-class universities. These practice-oriented texts tend to appeal directly to national governments and higher education institutions, emphasising the importance of striving for global competitiveness.⁴⁸ Funding appears as a central topic in this strand of literature, and the process of developing a world-class university is often linked to the adoption of market-driven policies, such as the introduction of tuition fees.⁴⁹

The second group of studies engage in varying degrees of detail with the methodologies underlying the creation of rankings. Taking on the task of providing answers to the fierce criticism directed towards the suitability of rankings for objectively classifying universities worldwide, this section of the literature seeks to salvage institutionalised benchmarking practices by delivering formulas to overcome their shortcomings.⁵⁰ Similarly to the previous group, these texts are often written from the perspective of policymaking, rarely offering exhaustive passages discussing the social embeddedness of ranking practices, let alone analysing the underpinnings of their relationship to the category of the world-class university which is often taken for granted.

Within this group of texts, there's also a second type of publication in which scholars aim their darts at the methodologies that underpin these rankings, often stating the need for a more careful examination.⁵¹ This literature contends that these methodologies often fall short of the meticulousness and rigour expected from scholarly research.⁵² In this line of literature, there's a prevailing sentiment

⁴⁷ Parts of this section are based on Mikael Börjesson & Pablo Lillo Cea, 'World Class Universities, Rankings and the Global Space of International Students', in *World Class Universities: A Contested Concept*, ed. Sharon Rider et al. (Singapore: Springer, 2020), 141–170.

⁴⁸ Philip Altbach, ed., *Leadership for World-Class Universities: Challenges for Developing Countries* (New York: Routledge, 2011).

⁴⁹ Examples are: Philip Altbach & Jamil Salmi, *The Road to Academic Excellence: The Making of World-Class Research Universities* (Washington: The World Bank, 2011); Osama Tayeb, Adnan Zahed, & Ritzen Jozef, eds., *Becoming a World-Class University* (New York: Springer, 2016); Nian Cai Liu & Ying Cheng, eds., *Paths to a World-Class University* (Rotterdam: Sense Publishers, 2011).

⁵⁰ Examples are: Kaycheng Soh, 'World University Rankings: What Is in for Top Ten East Asian Universities?', *New Horizons in Education* 60, no. 2 (2012): 36–51; Benoit Millot, 'International Rankings: Universities vs. Higher Education Systems', *International Journal of Educational Development* 40 (2015): 156–165; Jung Cheol Shin, Robert K. Toutkoushian, & Ulrich Teichler, eds., *University Rankings* (London: Springer, 2011); Kevin Downing & Fraide Ganotice, eds., *World University Rankings and the Future of Higher Education* (IGI Global, 2017).

⁵¹ Simon Marginson, 'University Rankings and Social Science', *European Journal of Education* 49, no. 1 (2014): 45–59.

⁵² Gary Barron, 'The Berlin Principles on Ranking Higher Education Institutions: Limitations, Legitimacy, and Value Conflict', *Higher Education*, no. 73 (2017): 317–333; Ingemund Hägg & Linda Wedlin, 'Standards for Quality? A Critical Appraisal of the Berlin Principles for International

that these rankings are inclined to oversimplify intricate concepts like “quality of teaching” or “research performance”.⁵³ These simplifications cause rankings to serve as an inaccurate proxy for quality at best,⁵⁴ calling into question the meaning of their evaluations.

Furthermore, there’s a growing demand for transparency in ranking systems. Often, the underlying data, indicators, and metrics are shrouded in ambiguity and are not accessible to the public, leading many to question their credibility.⁵⁵ Without going any further, other than the plethora of diverging indicators that each ranking uses to perform their evaluations, one cannot find clear reasons behind the attribution of specific weights to each score. Another critical area of discussion is the validity and reliability of the ranking methodologies themselves. There’s a consensus among many that the methods employed are over-simplistic and potentially misleading.⁵⁶ Especially contentious is the use of surveys, as seen in systems like the QS and the Times Higher Education world university rankings. Critics argue that such tools often suffer from inconsistencies and might not always be reliable or even valid indicators of institutional quality.⁵⁷

The third and last group of literature comprises critical publications discussing the effects of global university rankings. These texts typically underscore that these rankings are far from being the passive evaluative instruments they tend to be portrayed as. Instead, evidence shows that they play a proactive role in moulding the behaviours and priorities of the institutions they assess.⁵⁸ This line of reasoning suggests that while aiming to merely assess quality in higher education, rankings end up widening existing inequalities among institutions and individu-

Rankings of Universities’, *Higher Education* 73, no. 2 (2013): 317–333; Jill Johnes, ‘University Rankings: What Do They Really Show?’, *Scientometrics* 115, no. 1 (2018): 585–606; Ulrich Schmoch, ‘The Informative Value of International University Rankings: Some Methodological Remarks’, in *Incentives and Performance: Governance of Research Organizations*, ed. Isabell M. Welpe et al. (Cham: Springer International Publishing, 2015), 141–154; Don F. Westerheijden, ‘Global University Rankings, an Alternative and Their Impacts’, in *The Palgrave International Handbook of Higher Education Policy and Governance*, ed. Jeroen Huisman et al. (London: Palgrave Macmillan UK, 2015), 417–436.

⁵³ Espeland & Stevens, ‘Commensuration as a Social Process’.

⁵⁴ Elizabeth Gadd, ‘University Rankings Need a Rethink’, *Nature* 587, no. 7835 (2020): 523.

⁵⁵ Marie-Laure Bougnol & Jose H. Dulá, ‘Technical Pitfalls in University Rankings’, *Higher Education* 69, no. 5 (May 2015): 859–866; M. K. Surappa, ‘World University Rankings and Subject Ranking in Engineering and Technology (2015–2016): A Case for Greater Transparency’, *Current Science* 111, no. 3 (2016): 461–464.

⁵⁶ Leiber, ‘University Governance and Rankings. The Ambivalent Role of Rankings for Autonomy, Accountability and Competition’; Schmoch, ‘The Informative Value of International University Rankings’.

⁵⁷ Dill & Soo, ‘Academic Quality, League Tables, and Public Policy’.

⁵⁸ Hyunsik Chun & Michael Sauder, ‘The Power in Managing Numbers: Changing Interdependencies and the Rise of Ranking Expertise’, *Higher Education*, February 2022; Wendy Nelson Espeland & Michael Sauder, ‘Rankings and Reactivity: How Public Measures Recreate Social Worlds’, *American Journal of Sociology* 113, no. 1 (2007): 1–40; Hazelkorn, *Rankings and the Reshaping of Higher Education: The Battle for World-Class Excellence*; Alex Johnson, ‘The Destruction of the Holistic Approach to Admissions: The Pernicious Effects of Ranking’, *Indiana Law Journal* 81, no. 1 (2006); Linda Wedlin, ‘Going Global: Rankings as Rhetorical Devices to Construct an International Field of Management Education’, *Management Learning* 42, no. 2 (2011): 199–218.

als. Evidence shows how certain students are excluded from accessing elite institutions due to the high cost of tuition fees⁵⁹ as well as how rankings foster the concentration of research funding resources in the hands of a select few.⁶⁰ Consequently, they spur institutions into a rat race, often encouraging them to take opportunistic measures to improve or keep their ranking positions, such as the adoption of market-driven policies.⁶¹ Some institutions even resort to data manipulation to ascend the ranks⁶² actions which sceptics argue deviate them from the true essence and purpose of higher education institutions.⁶³

Adding another layer to this criticism, there's a growing concern about the pervasive erosion of scholarly autonomy in the wake of ranking pressures. By superimposing an external metric system on the internal rhythm and ethos of academia, rankings introduce rigid, sometimes alien accountability mechanisms.⁶⁴ This rigidity alters the conventional academic power relations to the detriment of academic freedom.⁶⁵ With economic factors often driving these quantitative measures, the essence of the academic endeavour, many believe, is under siege.⁶⁶

All told the most outstanding critiques reveal that rankings legitimise inequality between institutions and individuals, fostering the adoption of market-driven policies at the expense of traditional academic values and damaging academic freedom in the process, all in the name of an evaluation system whose rules are unclear and questionable. Thus presented, these critiques seem scattered; and, indeed, if one inspects the traditions and approaches deployed in each contribution, one finds that they don't engage consistently with one theoretical background. Instead, the conceptual toolboxes informing these studies span from neo-institutionalism and world-system theory to more technical and statistical formulations, among others.

These criticisms, while varied, share common threads. I posit that these observations—from the inadvertent amplification of inequalities and opportunistic behaviours to the unintended consequences on scholarly autonomy and concerns over methodologies—can be integrated into a cohesive framework. It is here that

⁵⁹ James Chu, 'Cameras of Merit or Engines of Inequality? College Ranking Systems and the Enrollment of Disadvantaged Students', *American Journal of Sociology* 126, no. 6 (2021): 1307–1346.

⁶⁰ Mittelman, *Implausible Dream: The World-Class University and Repurposing Higher Education*; Richard Münch, 'Academic Capitalism', in *Oxford Research Encyclopedia of Politics*, 2016.

⁶¹ Deem, Mok, & Lucas, 'Transforming Higher Education in Whose Image? Exploring the Concept of the "World-Class" University in Europe and Asia'; Emma Sabzalieva, 'The Policy Challenges of Creating a World-Class University Outside the Global "Core"', *European Journal of Higher Education* 7, no. 4 (2017): 424–439.

⁶² Darren Bush & Jessica Peterson, 'Jukin' the Stats: The Gaming of Law School Rankings and How to Stop It', *Connecticut Law Review* 45, no. 4 (2013): 1236–1280.

⁶³ Mario Biagioli et al., 'Academic Misconduct, Misrepresentation and Gaming: A Reassessment', *Research Policy*, Academic Misconduct, Misrepresentation, and Gaming, 48, no. 2 (2019): 401–413.

⁶⁴ Yves Gingras, *Bibliometrics and Research Evaluation: Uses and Abuses* (Cambridge: MIT Press, 2016); Juan Pablo Pardo-Guerra, *The Quantified Scholar: How Research Evaluations Transformed the British Social Sciences* (Columbia University Press, 2022).

⁶⁵ Shore & Wright, 'Audit Culture Revisited'.

⁶⁶ Baert and Shipman, 'University under Siege?'; Olof Hallonsten, 'Stop Evaluating Science: A Historical-Sociological Argument', *Social Science Information* 60, no. 1 (2021): 7–26.

field theory, as formulated by Pierre Bourdieu and collaborators, comes to the fore. With its nuanced, encompassing, and integrative lens, this theory offers a wide array of interrelated concepts that, when implemented, reveal the connections between these critiques.

1.3 Aim and Research Questions

In this study, my overarching aim is to explain *why and how certain universities are classified as world-class institutions* by studying *what symbolic relationships stem from this distinction process*. Unlike some previous studies that take a more normative approach to the matter, I will follow a sociological approach focusing on the investigation of who wields the power to enact this classification, how that authority has been exerted and legitimised, and, with particular emphasis, what systems of symbolic relations between institutions and nations result from the operation of this distinction.

In my research, I adopt a field theory approach to explore global university rankings, offering a layered and straightforward analysis. This method examines ranking results on multiple scales—from a broad global perspective down to specific regional, national, and institutional levels. By doing so, it provides a clear, yet scientifically robust, understanding of how university rankings operate and influence different layers of the academic world. This approach not only simplifies a complex topic but also offers deeper insights into the dynamics at play in global higher education. Moreover, standing on this theoretical tradition, I'll reinterpret established knowledge about the history and workings of global university rankings while uncovering new insights to deepen our understanding of this phenomenon. Next, I outline the leading questions derived from the overarching ones organised by themes.

Emergence and Legitimation

The first group of research questions leading this study concern the establishment of the infrastructure that enabled a world-class classification of universities. *When, where and in what context did the notion of the world-class university emerge? What events enabled its institutionalisation and dissemination? What institutions have been involved in the process of emergence and legitimisation of the notion?*

While it's true that previous research has touched on these questions, a thorough exploration using field theory remains absent. In addressing these queries, I will put forward the hypothesis of the formation of a global sub-field of universities, using the socio-historical context of the origins of the term “world-class university” and global university rankings as supporting evidence.

World-Class Competition and Rankings

The next set of questions focuses on the competition over world-class status as portrayed by global university ranking evaluations. *To what degree do the institutions assessed by global university rankings and their ranking positions vary over time and across evaluators? How much of the world do these rankings cover in their results over time? What differences can be observed in the geographical coverage of rankings' results regarding quantity and quality of representation?*

This segment aims to unravel the shifting trends and potential biases latent in global rankings' rationale and methodologies. While existing literature offers some insights into these questions, there's a gap in providing a detailed comparison across ranking results and against the backdrop of broader global higher education landscape. By evaluating both the absolute ranking data—meaning solely the institutions included in the rankings—and the relative data—contrasting ranked institutions with the entire global university population—we can better understand and refine existing perspectives on these biases.

Structure Analysis

After outlining the global competition for world-class recognition, I'll address a third set of questions about the relationships highlighted by global university rankings: *what kinds of assets considered by rankings are most relevant for characterising and understanding the relationship between the institutions evaluated by global university rankings? What distinct groups of institutions emerge from their performance as measured by ranking indicators? What other features (age, geography) become relevant to understanding the institutional hierarchies associated with ranking results?*

Instead of relying solely on the linear, unidimensional lists published by rankings, I will reinterpret these evaluations from a multidimensional angle, creating a map where the profile of universities defined by their possession of relevant assets determines their relative positions. This exercise will enable more complex and in-depth analyses of ranking results, painting a fuller and more detailed picture.

Regional Focus

Finally, the attention of the study will shift once more to delve deeper into the analysis of the relationships at a regional level between institutions engaged in world-class competition. Taking European universities' collaboration practices as an entry point, I ask: *how has the evolution of partnerships among European universities, particularly since the advent of global university rankings, influenced their collaboration patterns? Are there trends indicating that universities with more or stronger partnerships tend to rank higher, especially in science and technology (STEMM) compared to humanities and social sciences (SSH)? Additionally, have top-ranked European universities expanded their collaborations over time, and how does this vary between*

STEMM and SSH? Finally, what is the impact of international partnerships, beyond Europe, on these universities' collaboration patterns and rankings?

In sum, this research seeks to shed light on the intricate mechanisms and criteria that elevate certain universities to the status of “world-class” institutions. Through the lens of sociology and underpinned by a field theory perspective, this study not only revisits the history of global university rankings but also critically evaluates the processes and actors that have shaped this classification over time. I intend to offer a comprehensive and multi-dimensional understanding of the world-class phenomenon, one that moves beyond simple ranking lists and delves into the symbolic and sociological relationships between institutions, regions, and nations. By reinterpreting existing knowledge and filling the gaps in current literature, this study ultimately aims to present a more holistic view of what it means for a university to be considered “world-class”, the implications of such a title, and the power dynamics at play in its bestowment.

1.4 Outline of the Dissertation

This study is structured into nine chapters, starting with an introduction in chapter one, which sets the context for the entire thesis. The introductory chapter—which concludes in this subsection—provides an overview of the problems surrounding the understanding of the notion of a “world-class university” and the emergence of global university rankings. It highlights the importance of understanding the globalisation of higher education as an ongoing phenomenon underlined by relatively recent developments in communications and transportation as well as an economic turn on the views concerning the university as an idea. This chapter also provides an overview of previous literature on the topic of global university rankings and details the research questions guiding the current investigation.

The second chapter delves into the theoretical approaches that underpin the study. This chapter explores different theoretical frameworks, namely, the world-systems perspective, the world-society approach, and field theory as frameworks commonly used to study global phenomena in higher education. It argues for the use of the latter in the form of a global field perspective. In doing so, it reviews recent works developing this implementation to then lay down the specific adaptations for the study at hand.

Chapter three concerns the research design used in the study. This chapter outlines the methods implemented in this research, including data collection methods, analysis techniques, and the conceptual framework used to guide the study. This chapter also discusses the obstacles that this study faces and the solutions I have found.

Chapters four through eight contain the empirical work of this study, and each one builds on the perspective of a global sub-field of universities. Chapter four is hybrid. It first develops an interpretation of the known history of global university rankings and surrounding institutions as a field formation process. Then, as a complement, the chapter develops an analysis of the presence and use of the term “world-class university” in scientific texts. It answers the research questions related to the emergence and legitimisation of global university rankings.

Chapter five analyses the global university ranking competition. This chapter offers a comparative analysis of institutions, nations, and regions, examining past and present trends across global university ranking results. It engages with questions regarding the trajectory and current state of the world-class competition.

Chapters six and seven offer a mapping out of a global sub-field of universities, identifying the main features at stake and the hierarchies existing within it. These chapters answer questions regarding the structure of the field and the different groups of institutions that exist within the studied sub-field.

Taking collaboration patterns between universities as an entry point, chapter eight examines the relationship between the global sub-field of universities and a regional European academic collaboration network. It offers a comparison over time and across disciplines distinguishing between “Science, Technology, Engineering, Mathematics, and Medicine” (STEMM) and “Social Sciences and Humanities” (SSH).

Finally, chapter nine develops the conclusions of this study, synthesising its main findings and offering insights into the future of the global sub-field of universities. The chapter also discusses the implications of the study for policymakers, academics, and other stakeholders interested in the changing landscape of higher education.

A Global Field Approach to Higher Education

The study of globalisation entails a series of both theoretical and methodological challenges for which no single solution exists. Scholars have resorted to an extensive array of perspectives when studying particular aspects of this phenomenon. Most commonly, when it comes to studying the globalisation of higher education, researchers draw from the disciplines they practice and the traditions they follow to focus on the analysis of the mobility of students and staff, the uniformity of university systems across countries, specific institutional strategies, and policy formulation and execution.⁶⁷

The discipline and scientific traditions informing each research project affect their range, findings, limitations, and conclusions. The narrative deployed to understand a given subject matter acts as the investigation's blueprint. Meanwhile, the concepts and terms used to define specific phenomena serve as the building blocks of the research object. Thus, articulating the rationale behind the selection of one perspective presents a significant opportunity to reveal the potential scope of a given study.

Because this thesis focuses on the social origins, legitimisation, and structuring properties of the notion of the “world-class university” in connection to global university rankings—implying the consideration of a particularly wide collection of processes and practices—a rather comprehensive perspective is required.

Traditionally, the study of the globalisation of higher education has largely been approached through the implementation of world system theory and neo-institutionalism.⁶⁸ However, in later years, new contributions, making use of field theory, have begun to emerge. This study aims at nurturing the latter strand of research by presenting and implementing a global field approach to the study of the globalisation of higher education, taking the notion of the world-class university and its connection to global university rankings as an entry point.

Next, in the first section of this chapter, I provide a general overview of the three aforementioned approaches—world systems theory, neo-institutionalism,

⁶⁷ Barbara M. Kehm & Ulrich Teichler, ‘Research on Internationalisation in Higher Education’, *Journal of Studies in International Education* 11, no. 3/4 (2007): 264, 266.

⁶⁸ See for example H. Lauder, Lauder, Hugh, Phillip Brown, Jo-Anne Dillabough, & A.H. Halsey, eds., *Education, Globalization, and Social Change*, (Oxford University Press, 2006); Joel Spring, *Globalization of Education: An Introduction*, 2nd ed. (New York and London: Routledge, 2015); Leonora Dugonjic-Rodwin, ‘Field Theory and Education: A Case Study of the International Baccalaureate’, *International Studies in Sociology of Education* 30, no. 3 (2021): 342.

and field theory. Note that this is an analytical division; there are studies combining the three perspectives. A general overview of literature employing each approach and a brief commentary on their potential implementation in the study at hand accompany their description. These commentaries at once lay the arguments for the choice and prepare the specification of the operationalisation of the latter perspective—field theory—which will be explored in detail in the second section of this chapter.

2.1 Three Main Strands of Research

World Systems Theory

The world system theory, developed by Immanuel Wallerstein,⁶⁹ delineates a world marked by unequal economic and political conditions. According to this theory, such disparities perpetuate a power dynamic where industrialised nations assert dominance over developing ones, primarily through economic dependency. This global power dynamic divides nations into three unequal economic groups. The first group, often termed the *core* or *centre*, includes affluent nations such as the United States, major European potencies, and Japan. The second, usually referred to as *semi-periphery*, encompasses emerging economies such as China, Russia, India, and Brazil. The third group, known as the *periphery*, covers less economically developed nations worldwide, including parts of Latin America, Africa, and the Middle East.

World systems' theorists argue that the exchange of ideas and policies at a global level is propelled by the economic might of multinational corporations and institutions like the World Bank. The wealthier nations, they claim, consolidate their dominance by imposing their agenda on other nations. This agenda promotes education geared towards economic growth and the cultivation of a workforce tailored for a free market economy.⁷⁰ The knowledge preferred by these rich nations is globally distributed and legitimised via publishing corporations, research organisations, higher education institutions, professional bodies, and testing services.⁷¹

In this light, the globalisation of education is seen as a mechanism to advance specific policies that favour wealthy nations, often at the expense of poorer ones. Theorists within this tradition further amplify this perspective by underlining the prevalent influence of Western education—a product of European imperialism and Christian missionary alliances. Additionally, these theorists propose that, af-

⁶⁹ Immanuel Wallerstein, *World-Systems Analysis: An Introduction* (Durham and London: Duke University Press, 2004).

⁷⁰ Phillip Brown & Hugh Lauder, 'Globalization, Knowledge and the Myth of the Magnet Economy', *Globalization, Societies and Education* 4, no. 1 (March 2006): 25–57.

⁷¹ Spring, *Globalization of Education: An Introduction*, 10ff.

ter the fragmentation of British, French, and Portuguese colonial empires in the twentieth century, these countries, in partnership with the United States, have devised new strategies to exercise power. The impact of these former colonial powers has reemerged via international governmental organisations (IGOs), multinational corporations, and trade agreements. In their current incarnation, these postcolonial powers purportedly reap benefits from advocating market economies, education for economic progress, and free trade.⁷²

Using this perspective to expand on field theory, Márton Demeter inspects the world system of knowledge production. Taking the social sciences as his case study, Demeter confirms the existence of a core-periphery structure in global social sciences. More specifically, this author distinguishes autonomous and centred, dependent and centred, autonomous and decentralised, and dependent and decentralised members of this world system. Based on the analysis of several indicators—publication output, participation at editorial boards and selection committees, ownership of publishing houses, and gatekeeping of theories and methods, among others—he places in the core faction countries from North America and Western Europe as autonomous regions, and those from Oceania and developed Asia as more dependent. At the periphery, one can find countries from developing Asia and Latin America as more autonomous regions, and from Africa and Eastern Europe as well as the Middle East as more dependent.⁷³

Another interesting implementation of this perspective can be found in the study carried out by Barnett and collaborators on persisting core-periphery dynamics in international student mobility.⁷⁴ This study analyses the international flow of students among 210 nations, identifying bilateral hyperlink connections and communication variables like telephone minutes as key factors shaping the flow. Other influences include trade, geographical distance, shared borders, and common languages. Findings show the United States as the central country in the network, with a core-periphery structure consistent with World-Systems Theory. Core countries like the United States, the United Kingdom, Australia, France, Germany, and Japan receive most international students, while semi-periphery countries like China, India, and South Korea mainly send students abroad. The pattern of student flow has been linked to the unequal distribution of resources and brain drain. Countries like Greece, Jordan, the Czech Republic, and South Africa are identified as favourable destinations within their regions but not as strong regional hubs as previously thought. The study concludes by recommending future research to focus on emerging stratifications and regional clusters in the mobility network of international students and to investigate con-

⁷² Joel Spring, *Education and the Rise of the Global Economy* (New York: Routledge, 1998).

⁷³ Márton Demeter, 'The World-Systemic Dynamics of Knowledge Production: The Distribution of Transnational Academic Capital in the Social Sciences', *Journal of World-Systems Research* 25, no. 1 (2019): 134.

⁷⁴ George A. Barnett et al., 'The Flow of International Students from a Macro Perspective: A Network Analysis', *Compare: A Journal of Comparative and International Education* 46, no. 4 (2016): 533–559.

nections with regional economies, politics, cultures, and features of higher education systems.

One crucial remark that follows from the key assumptions grounding this perspective is that global practices are born in local settings. Practices and processes with the potential of becoming global would arise at the core to then make their way out to the rest of the globe, experiencing some degree of transformation depending on local adaptations but generally retaining its fundamental features. In other words, global practices are local practices originating in localities whose circumstances favour the dissemination and adoption of said practices over the rest of the world.

Along these lines, one could hypothesise that the use of the notion of “world-class university” in association with global university rankings’ evaluations aimed at highlighting practices localised at the core of the world knowledge-production system which then spread outwards to the countries in the periphery and semi-periphery of the system. Nevertheless, available evidence seems to at least partially contradict such a hypothesis. The origins of the relationship between world-class standards and global university rankings harken back to the efforts of the Chinese government to compare their national universities to those from the United States in the 1990s as a way to guide the implementation of public policy in higher education for the twenty-first century.⁷⁵ Using the language of a world-system perspective, the idea of the “world-class university” as a measurable standard has been devised in a semi-peripheral country—China in the 1990s—rather than at the core of the system.

At this point, one could argue that, insofar as the point of reference for world-classness was research universities based in the United States, there was effectively an institutional bias favouring the organisation of higher education according to that model. China would have been trying to grasp what needed to be imitated from the United States to improve its university system, thereby confirming its semi-peripheral dependency on the standards set up at the core. However, this argumentative accommodation still presents some issues. The alluded Chinese exercise, published only in China, prompted the interest of other nations, making it so that the very first properly global ranking of universities addressing a global audience was published by China in the early 2000s including institutions from Asia, the United States and some European core countries.

No matter how we frame it, the fact remains that a semi-peripheral country managed to play a central role in establishing a set of practices that would become an essential feature for the globalisation of higher education into the core of the world knowledge-production system. This development not only seems to challenge the conventional one-directional approach characteristic of the world-systems perspective, but it also motivates questions whose answers demand a theoretical narrative capable of accounting for dynamics that move beyond the logic of economic dependency.

⁷⁵ A more detailed account of this development is presented in Chapter 4 of this thesis.

Neo-Institutionalism

Neo-institutionalism is a prominent theoretical perspective in the social sciences that offers a unique understanding of organisational behaviour and social dynamics. At the core of neo-institutionalism is the idea that organisations and social actors are not just driven by rational considerations and economic interests but are also significantly influenced by the institutions—norms, rules, and cultural beliefs—that surround them. A critical branch of neo-institutionalism that has been applied extensively in global studies is the world society perspective.

This perspective views the world as a single social unit rather than as a collection of separate societies or nation-states. It suggests that global structures, norms, and values shape the behaviour of individual states and organisations, highlighting the role of global cultural and institutional scripts in driving conformity and homogeneity across different contexts.⁷⁶ An example commonly used to illustrate this point is the rise and triumph of mass schooling in the West, a phenomenon which, according to this perspective, responded to the need for legitimacy of the nation-state and its leadership during and since its formation phase in the eighteenth and nineteenth centuries. Fast forwarding to the twenty-first century, the specific practices favoured by the world as indicators of nation-state status have evolved according to the values and discourses associated with globalisation.⁷⁷

Subscribing to this perspective, Mike Zapp and Francisco Ramirez suggest that the study of the globalisation of higher education should focus on the explanation of the increasing openness of local universities to global trends, as well as on the subsequent growing similarity between university systems across the world.⁷⁸ Zapp and Ramirez identify three main relatively recent developments related to the *discursive*, *normative*, and *regulatory* dimensions of what they propose to approach as the constitution of a *global higher education regime*. Respectively, these developments are the following: the emergence of global networks and organisations aiming to foster and facilitate global interactions between universities; the increase in the number and degree of legitimacy of global quality assurance and accreditation instances; and finally, the steady progress in the efforts to achieve a global standardisation of higher education qualifications.

In a different implementation of an institutionalist approach, Jelena Brankovik examines the global relations between universities using the notion of organisational status. Her work reveals three main ways in which these institutions build up and compete over status: categories (such as “world-class”), intermediaries (rankings, awards, credentials) and affiliations (collaborations, associations). This study describes relevant dynamics of competition within the global

⁷⁶ Francisco Ramirez, ‘The World Society Perspective: Concepts, Assumptions, and Strategies’, *Comparative Education* 48, no. 4 (2012): 424–425.

⁷⁷ John W. Meyer, Francisco Ramirez, & Yasemin Soysal, ‘World Expansion of Mass Education, 1870–1980’, *Sociology of Education* 65, no. 2 (1992): 145–146.

⁷⁸ Mike Zapp & Francisco Ramirez, ‘Beyond Internationalisation and Isomorphism – the Construction of a Global Higher Education Regime’, *Comparative Education* 55, no. 4 (2019): 474–475, 478.

market of higher education and provides insight into the ways that universities as institutions behave in a global economy.

Other works that should be mentioned are the global surveys conducted by the International Association of Universities (IAU) on the internationalisation of higher education. During the first half of 2019, this association released the results of the fifth version of a study specifically focused on the positions-taking of higher education institutions from across the world concerning the ongoing trend of globalisation. The results of this study show an overall growing importance assigned to cross-border activities by universities worldwide. As usual in this type of study, the relevance of North America is highlighted, especially regarding student mobility and the provision of transnational education in the form of online distance learning and joint degrees. Although the data informing the report was collected at the institutional level, the document presents the results aggregated by regions of the world, which impedes clear scrutiny of the internal polarisations in systems of higher education of a given region.⁷⁹

Analysing the “world-class university” through this lens, one can trace this idea in the discursive, normative, and regulatory dimensions. It is at once a main component of the narrative on the globalisation of higher education, a measurement for quality assurance, and a principle by which the global standardisation of qualifications in higher education can be rationally organised. Along the lines of this perspective, it is possible to hypothesise that any nation-state that wishes to be recognised as such by the world society must—among other things—invest in the establishment of world-class institutions capable of competing and collaborating with other universities of the same kind. Following this logic, striving for world-classness in university systems is what nation-states do to legitimise themselves among their citizens and other countries in the world society of the twenty-first century.

But because this perspective explicitly adopts a macro approach⁸⁰—a limitation of world system theory as well—we are blinded to the nuances and details in the analysis of the origins and dissemination of the world-class status. Its focus on nation-states and organisations leaves people out of the equation, hindering inquiries about competing views on the globalisation of the University by emphasising instead integration and agreement.⁸¹ Moreover, this perspective fails to account for the simultaneous activities taking place within—in addition to between—nations, fostering a one-directional approach to the problem.

⁷⁹ This report is designed to provide only a descriptive, very general picture of the globalisation trend it studies and does not harvest the explanatory potential of the data it collected—which, unfortunately, they have not made available to the general public.

⁸⁰ Ramirez, ‘The World Society Perspective: Concepts, Assumptions, and Strategies’, 427.

⁸¹ Zapp & Ramirez, ‘Beyond Internationalisation and Isomorphism – the Construction of a Global Higher Education Regime’, 478.

Field Theory

Field theory, developed by the French sociologist Pierre Bourdieu and collaborators, is a relational approach in sociology that examines the dynamic interactions and power structures in various social arenas. Instead of viewing society as a collection of independent entities, Bourdieu proposes that social life is defined by the relationships between individuals and groups within different social domains, or “fields”, such as science, politics, or art. Each field has its own rules and capital forms, influencing how actors within it compete for power and status. This theory is crucial in sociology for understanding how individuals and groups navigate and shape their social environments, emphasising the importance of relational dynamics in the construction of social reality.

In the context of this study, the application of field theory addresses certain limitations identified in previous perspectives. Firstly, while previous approaches have a broad scope focusing on supra-national analyses, they often overlook sub-national dynamics, such as the tensions between universities with world-class status and those aspiring to it within a single country. Secondly, the broader scope of these perspectives tends to sideline human activity, making it difficult to observe the specific dispositions and practices that contribute to the development of a world-class university. Finally, previous approaches often provide unidirectional answers, suggesting that new trends emerge either from the core of a world system or from the abstract consensus of a world society, thereby neglecting developments that originate outside these cores, within localised contexts, or through conflict. Bourdieu’s field theory offers plausible solutions to these issues while retaining the advantages of the previously discussed perspectives.

According to this third approach, universities can be conceptualised as places where practices and processes of production, distribution, and legitimisation of the unequal possession of certain cultural assets are organised, contributing in this way to the positioning of agents according to their unequal possession of assets and the conflicting interests they develop in relation to others.⁸² Thus, the emergence of the world-class university can be analysed not only as the outcome of an integration process as suggested by the world society perspective but also as the result of the global expansion of previously localised struggles’ organising principles.⁸³

This focus on conflict clarifies the reasons that explain the degree of dependence of the social structure on the “magic” performed by the nation-state via the functioning of its university system, rationalising and legitimising at once the quality of said nation-state in itself as well as the arbitrarily unequal distribution of assets and power structuring the social relations taking place within its terri-

⁸² Pierre Bourdieu & Jean-Claude Passeron, *Reproduction in Education, Society and Culture*, 2nd ed. (London: Sage Publications, 1990[1970]), 206.

⁸³ Pierre Bourdieu, *The Social Structures of the Economy* (Cambridge: Polity Press, 2005[2000]), 223–229.

tory.⁸⁴ Furthermore, this perspective also facilitates the study of the world-class university as a notion defined first by actors who have a specific stance within relatively autonomous localised spheres of practice, which are enclosed in turn by broader spheres, rather than defined by abstract entities.

Following field theory, Simon Marginson presented a study of the “polar field of global higher education”.⁸⁵ Borrowing theoretical concepts developed by Pierre Bourdieu and Antonio Gramsci, Marginson sets off to create a synthesised mapping of higher education institutions on a global scale, stressing their power dynamics. As it is acknowledged by the author, it is not primarily an empirical work.⁸⁶ Although empirical data is provided to justify the inclusion of specific countries in the study,⁸⁷ the atypical use of fundamental theoretical concepts⁸⁸ leads in this case to the construction and interpretation of the proposed field by relying on pre-made classifications.⁸⁹ Thus, rather than constructing a global classification of higher education institutions, Marginson presents a global classification of classifications from across the globe, neglecting the analysis of the practicality of the relations and struggles between universities at a global scale that could be answered by conducting a more complete implementation of a field theory approach.

Within a field approach, the prestige of a given university can be conceptualised as an added value (*symbolic capital*) bestowed upon other types of assets (other *species of capital*, for example, *cultural capital* in the form of a university credential or *economic capital* in the form of donations) held by a given agent or institution based on the perception or belief that such assets carry relatively superior importance than otherwise similar assets.⁹⁰

From this perspective, the world-class university label appears as an indicator of a globally recognised symbolic capital valid as such in the different spheres of social interest where universities occupy relevant positions given their dual nature of educational and scientific institutions. Competition over the definition and possession of this symbolic capital is crucial for the accumulation of economic capital, which will impact the volume and quality of scientific research output, and the distribution of cultural capital bearing this added value, which strengthens the legitimate positioning of agents whose educational trajectory include these institutions, of those institutions, and even of countries.

⁸⁴ Pierre Bourdieu, *The State Nobility: Elite Schools in the Field of Power* (Stanford, CA: Stanford University Press, 1996[1989]), 374–377.

⁸⁵ Simon Marginson, ‘Global Field and Global Imagining: Bourdieu and Worldwide Higher Education’, *British Journal of Sociology of Education* 29, no. 3 (2008): 303–3015.

⁸⁶ Marginson, 304.

⁸⁷ Marginson, 309.

⁸⁸ In the paper, the concepts of *social field* and *field of power* are conflated, implying throughout the text that the field of higher education presented in the study should be taken as a field of power on its own (304ff.).

⁸⁹ Marginson, ‘Global Field and Global Imagining: Bourdieu and Worldwide Higher Education’, 307.

⁹⁰ Pierre Bourdieu, *Distinction* (London and New York: Routledge, 2010[1979]), 291.

In the following section, the main theoretical tools necessary to proceed with the study of the emergence and structuring of a global field of universities based on competition over world-class status will be presented. First, a definition of and a distinction between social space and social field is made. Second, a brief overview of the relationship between the field of higher education institutions and the field of power is provided and then followed by a discussion on why these concepts are relevant to the study at hand. Finally, how the concept of the social field can be adapted to perform analyses on a global scale is examined, specifying how they will be applied in the coming chapters.

2.2 Field Theory Foundations

The concept of a “field” was first introduced by physicists in the mid-nineteenth century as a method to explain how different forces impact matter from a distance.⁹¹ This approach allowed for a more relation-focused understanding of how particles interact, as opposed to just focusing on their individual properties. In the realm of sociology, this tool has found a significant application in understanding social interactions—echoing Auguste Comte’s vision of sociology as “social physics”.⁹² The French sociologist Pierre Bourdieu and collaborators, in particular, leveraged this concept to explain how social forces shape the behaviours and practices of individuals in society.⁹³

When faced with the question about the existence of social classes, Bourdieu proposed to look for an answer by focusing on the way of accounting for the social struggles that take place in the social world. The sociologist explicitly suggested the borrowing of the relational approach from modern mathematics and physics, which identifies the real not with substances but with relationships.⁹⁴ The invisible relationships that objectively occur in social reality, Bourdieu explains, constitute a social space of external positions relative to one another, whose distance and distribution structures such space.⁹⁵

The *social space*, as Bourdieu studied it, usually relates to a specific national context and can be defined as the place where multiple spheres of social interest are formed and function. These spheres are multi-dimensional, meaning that the positioning of the agents enclosed by them depends on the possession—or lack thereof—of multiple types of assets capable of conferring power to such agents

⁹¹ Steven Weinberg, ‘The Search for Unity: Notes for a History of Quantum Field Theory’, *Daedalus* 106, no. 4 (1977): 18–21.

⁹² Auguste Comte, *The Positive Philosophy of Auguste Comte* (Chapman, 1853).

⁹³ This perspective facilitates the movement from defining “world-class university” as a substance to analysing it as a notion indicative of relationships or struggles between multiple agents. See Donald Broady, *Sociologi och epistemologi: Om Pierre Bourdieus författarskap och den historiska epistemologin* (Stockholm: HLS Förlag, 1991), 266ff.

⁹⁴ Bourdieu, *Distinction*, 100–108.

⁹⁵ Pierre Bourdieu, ‘What Makes a Social Class? On the Theoretical and Practical Existence of Groups’, *Berkeley Journal of Sociology* 32. (1987[1984]): 3.

and thus are relevant for the struggles driving their practices and strategies. These specific assets receive the name of *capitals*, and four main species, which in turn manifest in different forms or kinds, are distinguished: economic (money, financial assets, property, etc.), cultural (academic credentials or degrees, embodied practices, objectified cultural possessions), social (group membership, friendship, associations, boards, kinship, etc.) and symbolic (an added value bestowed to specific assets in a specific social context). In addition, when reconstructing a social space for its study, it is important to consider and inspect the volume, composition and trajectory of the capitals used to determine the positions of the agents.⁹⁶

Now, a *social field* is a particular sphere of social interest whose historical development has resulted in the achievement of a certain degree of independence or *relative autonomy* from both the individuals involved in these relations and other spheres of interest. In other words, when a given sphere of interest develops a distinct and socially recognised set of rules and logic capable of transcending the agents enclosed by it at a given moment and thus endure the passing of time, it is possible to suggest that it has become a social field. Some examples are the field of literature, the field of science, the political field, and the academic field, among many others.⁹⁷

The relative autonomy of the sphere of interest that has become a social field manifests itself in the existence of a fundamental law or constitution (*nomos*) which because is never explicitly stated as such cannot be challenged, producing instead the tacit and necessary adherence of those engaged in the dynamics of that specific field (*illusio*). Moreover, such law and adherence become the basis for the development of a set of cognitive and evaluative beliefs (*doxa*) implied in the membership to the field and thus implicitly adopted by all the members of a given field—also known as principles of vision and division.⁹⁸

Among the social field studies conducted by Bourdieu and his team, the analysis of the academic field, the scientific field, and the field of power in relation to the space of higher education in France are highly relevant to the present work. All three studies, presented in detail in *Homo Academicus*, *Science of Science and Reflexivity* and *The State Nobility* respectively, relate to each other and include observations on the social role played by higher education institutions in the unequal distribution and legitimisation of power positions.

Symbolic Violence, Higher Education, and the Field of Power

Within the tradition of field theory, the nation-state is conceived of as an ensemble of bureaucratic fields and constitutes a place of struggle where what is at stake is the monopoly over the power to establish a common set of coercive norms

⁹⁶ Bourdieu, 4.

⁹⁷ Pierre Bourdieu & Loïc Wacquant, *An Invitation to Reflexive Sociology* (Cambridge: Polity Press, 1992), 104–107.

⁹⁸ Pierre Bourdieu, *Pascalian Meditations* (Cambridge: Polity Press, 2000[1997]), 96–100.

within a given territory. Together with the relations among the different forms of power stemming from the specific features of dominant positions in other social fields (economic, cultural production, scientific, etc.), they constitute the field of power. All agents holding a volume and kind of capital that is sufficient and appropriate for them to be placed in the dominant regions of their respective fields simultaneously integrate the *field of power*, which can further be defined as a place of struggles where what is at stake is the monopoly over the power to determine the dominant principles of domination and over the legitimate mode or strategies of reproduction of the foundations of domination itself—or in short, over the monopoly of legitimate *symbolic violence*.⁹⁹

Symbolic violence, in Bourdieu's theory, is a type of non-physical violence that's embedded in the everyday social practices of a society. Particularly, it refers to the way power and dominance are maintained not through overt force or coercion, but through accepted norms, beliefs, and perceptions. These rules and principles don't have inherent value in and of themselves; their value is assigned by society and often reflects the interests of the dominant groups. In simpler terms, their content is "arbitrary"—not as a synonym of indiscriminate or random, but as indicative that they are assigned, not intrinsic or natural.

One of the strategies of reproduction more widely used by agents to legitimise their access to the field of power and to legitimately reproduce the occupation of dominant positions are the strategies connected to the operations of institutionalised educational systems.¹⁰⁰ Through attaining a specific form of cultural capital, e.g., a university diploma from a prestigious programme in a prestigious institution following an educational trajectory in very selective schools,¹⁰¹ a given agent positioned in the field of power secures, rationalises and legitimises their dominant position.

In *Homo Academicus* it is noted that the structure of the field of institutions of higher education in France reproduces the structure of the field of power to which it gives access.¹⁰² That is to say, there is a close relation between the fields of higher education institutions and the field of power not only in that the former provides strategies to legitimately access the latter but also in that the fields of higher education institutions contribute to the reproduction of the conditions of existence of the social fields connected to the disciplines imparted by these institutions.

Global Fields

Although the notions of social space and social field are intrinsically free from national boundaries, i.e., these theoretical tools allow one to conceive and ap-

⁹⁹ Bourdieu, *The State Nobility: Elite Schools in the Field of Power*, 375–376.

¹⁰⁰ Bourdieu, 386–388.

¹⁰¹ Which is partly the consequence of the conversion of other species of capital (economic) and derives in the acquisition of certain social capital and dispositions (*esprit de corps*).

¹⁰² Pierre Bourdieu, *Homo Academicus* (Cambridge: Polity Press, 1988[1984]), 38; Bourdieu, *The State Nobility: Elite Schools in the Field of Power*.

proach an examination of the relations between agents belonging to different countries, their operationalisation demands an account of the social and historical context in which they exist.¹⁰³ Even though a large proportion of the research carried out following this tradition is restricted to one nation—including many works carried out by Bourdieu himself—there are many other works with an explicit focus on international, transnational and global comparisons.

In the study of the social structures of the economy, Pierre Bourdieu reflects on the possibility of conceiving and studying *global fields*. It is noted that because of the growing weakening of technical and juridical limits constraining economic fields to national borders since the establishment of contemporary means of communication such as the internet and supra-national regulatory frameworks, one can propose the emergence of a global economic field. Bourdieu highlights that the formation of such a field is not the result of a mechanical process, but the result of a political creation materialised by the implementation of neoliberal policies. Further still, in attention to the social and historical context of these developments, globalisation should be understood as the universalisation of a particular set of features and practices embedded in a particular social structure of the economy, more precisely in Bourdieu's account, those of the US.¹⁰⁴

In the last three decades, a growing body of literature using a field approach in the examination of other global fields or sub-fields has begun to emerge. Some examples are the work by Dezalay on the internationalisation and subsequent restructuration of legal fields,¹⁰⁵ the study by Lebaron on central bankers and their relation to the global field of power,¹⁰⁶ the analysis of the emergence of a global field of social sciences carried out by Heilbron,¹⁰⁷ the study on the globalisation of the field of literature by Sapiro,¹⁰⁸ the exploration of the global field of IB schools conducted by Dugonjic-Rodwin,¹⁰⁹ the proposition of the emergence of a cultural world economy by Buchholz,¹¹⁰ and the examination carried out by Madsen on power elites and transnational fields.¹¹¹

The available research on global spaces and fields, however, does not always engage explicitly nor consistently in the debate on how to study social fields on a

¹⁰³ Gisèle Sapiro, 'Le champ est-il national? La théorie de la différenciation sociale au prisme de l'histoire globale', *Actes de la recherche en sciences sociales* 5, no. 200 (2013): 70–85.

¹⁰⁴ Bourdieu, *The Social Structures of the Economy*, 224–227.

¹⁰⁵ Yves Dezalay, 'The Big Bang and the Law: The Internationalization and Restructuration of the Legal Field', *Theory, Culture & Society* 7, no. 2–3 (1990): 279–293.

¹⁰⁶ Frédéric Lebaron, 'Central Bankers in the Contemporary Global Field of Power: A "Social Space" Approach', in *Remembering Elites*, ed. Mike Savage & Karel Williams (Oxford: Blackwell Publishing, 2008), 121–144.

¹⁰⁷ Johan Heilbron, 'The Social Sciences as an Emerging Global Field', *Current Sociology* 62, no. 5 (2013): 685–703.

¹⁰⁸ Gisèle Sapiro, 'Globalization and Cultural Diversity in the Book Market: The Case of Translations in the US and in France', *Poetics* 38, no. 4 (2010): 419–439.

¹⁰⁹ Dugonjic-Rodwin, 'Field Theory and Education'.

¹¹⁰ Larissa Buchholz, *The Global Rules of Art* (Princeton and Oxford: Princeton University Press, 2022).

¹¹¹ Mikael Rask Madsen, 'Transnational Fields and Power Elites: Reassembling the International with Bourdieu and Practice Theory', *SSRN Electronic Journal*, 2016.

global scale. Attending to this problem, Larissa Buchholz suggests starting by distinguishing two kinds of relative autonomy: on the one hand, the *functional autonomy* traditionally described by Bourdieu, and on the other a *vertical autonomy* that differentiates a global level of social organisation in the same realm of specific interest and practice as that of the national level.¹¹² A global field is therefore defined as a sphere of specialised social practice on a transcontinental scale with functional autonomy from other fields of practice and vertical autonomy from regional or national field levels of organisation within the relevant sphere of practice.¹¹³ This vertical autonomy has been found to emerge through three main mechanisms: the foundation of global institutions for exchanges across borders, the formation and legitimisation of a field-specific global discourse, and the creation of global evaluation devices.¹¹⁴

Drawing on the remarks made by Bourdieu and Buchholz, we can read the recent developments in university systems worldwide as evidence of the formation of a global field encompassing a select group of “world-class universities”. The new means of communication and more accessible transportation in combination with the establishment of supra-regional regulations have fostered the flow of ideas and people as well as the adoption of market-driven and pro-globalisation policies, boosting at once competition and collaboration among higher education institutions to an extent never seen before. Against this backdrop, new global-reaching narratives, institutions, and evaluation systems surrounding universities have emerged and stand as key developments informing the perspective I propose. Next, I will elaborate on the implementation of a field theory perspective to global university rankings, offering an approach to the critiques through the conceptual lens of this Bourdieu-inspired approach.

2.3 Implementation Summary

Following a field theory approach, global university rankings seem to act as *consecration instances* which legitimise and reproduce a pre-existing global order of universities related to a global order of nations and potentially to the global field of power. Furthermore, if this is the case, the activity of these rankings could be conceptualised as an act of *symbolic violence*, insofar as they, as an arbitrary authority, manage to impose as legitimate a cultural arbitrariness. Please note, when I use the term *arbitrary*, I am not suggesting that the selection of indicators is random or indiscriminate; rather, I seek to emphasise the absence of any truly objective reason for the selection of certain indicators of world-classness over oth-

¹¹² Larissa Buchholz, ‘What Is a Global Field? Theorizing Fields beyond the Nation-State’, *The Sociological Review Monographs* 64, no. 2 (2016): 31–60.

¹¹³ Buchholz, 41–42.

¹¹⁴ Buchholz, 44.

ers. These choices are instead shaped by subjective, socially constructed factors such as tradition and power relations that precede the emergence of rankings.

I have previously discussed how social fields are social sub-spaces within the context of a broader social space (usually circumscribed within a nation-state) where agents engage in struggles over the possession of specific forms of capital—that is, of assets whose accumulation structures the practices of the agents encompassed by such fields. The volume and kind of capital held by an agent define their relative positioning regarding other agents in a field. As it follows, the existence of different positions occupied by different agents responds to the unequal distribution of capital and the ensuing competition over its acquisition, accumulation and reproduction. Moreover, the positions existing within a field are not isolated; they integrate groups, thus producing a structure based on the degree of influence that concrete groups are directly or indirectly capable of exerting over the definition of the structuring principles of the field based on the volume and types of capital they possess.

One can explain the inequality in the distribution of capital within a field—and consequently the inequality in the distribution and exercise of power—by studying the social history of that field’s formation. Such a study assumes that the specific structure of the field is not a necessary, unavoidable, or predestined outcome; rather, that the structure of the field results from the socio-historical events leading to its formation and organisation. Bourdieu studies the legitimate operation of the principles of vision and division associated with the structuring of a social field under the name of *consecration instances* and *rites of institution*.

In *The State Nobility*, Bourdieu presents an analysis of the *social magic* of consecration instances and rites of institution concerning the educational strategies used by agents to gain legitimate access to the field of power in France. Bourdieu proposes that traversing through a *Grande École*, i.e. accumulating a specific type of cultural and social capital, constitutes a rite of passage that transubstantiates an act of social reproduction—the evaluation of the degree of coincidence between the predispositions associated with the social origin of applicants and the predispositions possessed by those in charge of creating and implementing the admission process—into an act of meritocracy.¹¹⁵

Multiple scholars around the world have conducted similar studies arriving at analogous conclusions regarding the true nature of admission processes of national higher education systems.¹¹⁶ In sum, they have shown how higher education insti-

¹¹⁵ Bourdieu, *The State Nobility: Elite Schools in the Field of Power*, 374.

¹¹⁶ Ann-Marie Bathmaker, ‘Thinking with Bourdieu: Thinking after Bourdieu. Using “Field” to Consider in/Equalities in the Changing Field of English Higher Education’, *Cambridge Journal of Education* 45, no. 1 (2015): 61–80; Mikael Börjesson & Donald Broady, ‘Elite Strategies in a Unified System of Higher Education. the Case of Sweden’, *L’Année sociologique (1940/1948)* 66, no. 1 (2016): 115–146; Rajani Naidoo, ‘Fields and Institutional Strategy: Bourdieu on the Relationship between Higher Education, Inequality and Society’, *British Journal of Sociology of Education* 25, no. 4 (2004): 457–471; Bonnie Pang, ‘Engaging Bourdieu’s Habitus with Chinese Understandings of Embodiment: Knowledge Flows in Health and Physical Education in Higher Education in Hong Kong’, *Educational Philosophy & Theory* 52, no. 12 (2020): 1256–1265.

tutions, especially the most prestigious and selective ones, tend to serve as consecration instances capable of transforming advantageous social predispositions stemming from arbitrary social inequalities into legitimate and meritocratic achievements for those accessing power positions in different fields—and, in turn, justify and rationalise the arbitrary exclusion of those who lack the possession of the assets (habitus, capital, trajectory) required to access dominant social positions.

At the turn of the twenty-first century, certain developments in higher education¹¹⁷ threatened to expose the implicit workings of this so-called social magic: the dissociation of prestige and excellence underlying the logic of global rankings suggested—at least hypothetically—that institutions conventionally recognised as prestigious could lack the level of excellence required to justify their reputation. If this dissociation became effective, then questions regarding the symbolic value attributed to the social goods produced and distributed by these institutions would surely ensue.¹¹⁸ In other words, the expansion of higher education systems that followed the widespread marketisation of the sector together with the spread of a global excellence standard in higher education brought about a potential inquest on the legitimacy of the social division consecrated by higher education systems.

The idea of excellence embodied in higher education by the idea of the “world-class university”, however, lacks a fixed meaning, therein laying its strength. Therefore, in practice, its measurement had to be carried out according to a standard reflecting the features of institutions already perceived as prestigious and excellent. Hence, traditionally prestigious universities—particularly, American institutions and those following a similar model—managed to retain and solidify their reputable positions because their advantageous predispositions were effectively transubstantiated into a more objectified form of prestige: a global ranking position assigned by evaluating institutional performance according to certain indicators.

On these grounds, I propose that global university rankings have become consecration instances which seem to reproduce and legitimise a global order of universities. Furthermore, if this is the case, they represent a special type of consecration instance, since they effectively consecrate other consecrators.¹¹⁹ Through the social magic exerted by global rankings, universities subjectively perceived as prestigious can confirm and objectify their reputation by being well evaluated according to the now quantifiable indicators derived from the arbitrary¹²⁰ notion of what an excellent university should be. At the same time, less prestigious institutions are confirmed in their exclusion by the operation of the same indicators. Evaluators then publish an ordered list regarded as the outcome of an annual

¹¹⁷ As discussed in the previous chapter.

¹¹⁸ Paul Taylor & Richard Braddock, ‘International University Ranking Systems and the Idea of University Excellence’, *Journal of Higher Education Policy and Management* 29, no. 3 (2007): 246.

¹¹⁹ We can add a third link to this “consecration chain” by considering the role of the IREG Observatory in determining which global university rankings should be trusted, as discussed in Chapter 4.

¹²⁰ Again, by using the term arbitrary I don’t mean to imply that the notion of excellence is an indiscriminate outcome; I want to highlight the fact that this notion was not created by the application of an objective principle alien to the realm of practice, rather it represents the objectivation of structured structuring practices and traditions that predate the emergence of rankings.

competition where institutions can gain, maintain, or lose reputation depending on their performance as measured by those excellence indicators.

Thus, in subsequent chapters, I will test the hypothesis of whether global university rankings govern a global sub-field composed of both aspiring and established world-class universities, dictating what assets count as a legitimate measurement of academic excellence. If the evidence supports these claims, then this arbitrary attribution of an arbitrary meaning to the notion of world-class (excellence) in higher education and its evaluation according to the indicators considered by these rankings would constitute an act of symbolic violence: an arbitrary power—evaluators and the evaluator of evaluators, the IREG Observatory—successfully manage to impose a cultural arbitrariness—the identification of prestige with the idea of excellence symbolised in the notion of the “world-class university” as expressed by ranking indicators—rationalising and legitimising a pre-existing social order.¹²¹

¹²¹ Bourdieu & Passeron, *Reproduction in Education, Society and Culture*, 4.

Research Design

Throughout the empirical chapters of this thesis, I employ a field theory approach to uncover why and how certain institutions are recognised as world-class universities while others are left out of this classification. This entails an investigation into the entities that hold the power to enact this classification, how their authority is legitimised, and the symbolic relationships that result from this classification process. In simpler terms, I will begin by delineating the formation of a global university sub-field and then proceed to analyse its present structure in detail.

This study operates on several key assumptions. Firstly, I will consider that the notion of a “world-class university” originates from a collection of initially local practices and processes that have spread globally through the actions of specific agents. These agents, individuals or institutions, have accumulated the necessary resources and cultivated the appropriate dispositions to legitimately promote the adoption of these practices and processes on a global scale. Secondly, these agents have primarily operated in cross-national contexts. Thirdly, investigating the concept of a world-class university involves examining both attitudes and actions, requiring a focus on symbolic and material aspects. Finally, understanding the “world-class university” designation as a marker of a globally acknowledged symbolic capital implies that control over its definition and embodiment is a core stake in the struggles within the global sub-field of universities under examination. This struggle in turn organises the reciprocal positioning of institutions within this field.

When I refer to the construction of “a global sub-field of universities”, I imply that universities, as institutions, form part of this sub-field. Furthermore, it is crucial to understand that this is *a* global sub-field of universities, not *the* global sub-field encompassing these institutions. This phrasing recognises the potential existence of other sub-fields integrated by universities and alternate conceptualisations of this same sub-field.

The research methods and resources used in this study are divided into two main categories, each pertaining to one of the two primary themes identified above. Thus, the first category involves methods and resources that facilitate the study of the formation of this global sub-field of universities, particularly focusing on the origins and legitimisation of the world-class university notion. The second category includes methods and resources that help understand the structures derived from this classification. Let’s now discuss each category of methods.

3.1 Field Formation

The initial set of questions addressed in this dissertation involves the origins and legitimisation of the term “world-class university” in association with the emergence of global university rankings. Specifically, I intend to explore (1) the specific time, places, and context in which the concept of a “world-class university” originated, (2) the events that facilitated its global adoption, and (3) the range of actors involved in the emergence and legitimisation of the label. To comprehensively address these inquiries, I will employ a blend of qualitative and quantitative approaches.

In the qualitative part of this investigation, I will undertake a synthesised historical analysis. This analysis will identify and explore key events and institutions that played a significant role in establishing what can be described as a global sub-field of universities marked by the operation of global university ranking evaluations. Given that the heart of this study is the connection between the concept of a “world-class university” and global university rankings, my analysis will primarily focus on the emergence and evolution of the institutions that set up the infrastructure supporting a global ranking system for higher education. Key events in this journey include the creation of the International Ranking Expert Group (IREG), the drafting of the Berlin Principles, the initiation of the series of biennial International Conferences on World-Class Universities in 2005, and the implementation of global university rankings as such. Each of these milestones will be closely examined to provide insights into the trajectory of the world-class university as an idea. The materials used to carry out this phase comprise mostly available literature regarding the history of global university rankings and associated institutions. To complement these sources, I resorted to data available online, particularly the historical notes available on these institutions’ websites.

Upon completing this qualitative exploration, I will shift to a more quantitative mode of investigation. This will involve analysing bibliometric data to acquire a deeper understanding of the origins and spread of the term “world-class university” within scientific literature. To this end, I will study a corpus of texts indexed in the Web of Science containing the term. My investigation will focus on identifying the specific contexts where the notion has been used, mapping its geographical spread, and identifying the scientific disciplines where the term has been most frequently employed. This quantitative analysis will serve to further substantiate and expand on the responses to the initial set of questions, thereby strengthening the overall understanding of the emergence and propagation of the “world-class university” as a way to portray the formation of a global sub-field of universities. To present these developments under the light of field theory, I will follow Buchholz’s conceptualisation of the establishment of vertical autonomy which includes the construction of a field-specific discourse, the emergence of field-specific institutions, and the institution of a field-specific evaluation system.

3.2 Field Structure

The second part of my research revolves around understanding the structure of the global university sub-field. To accomplish this, I answer a series of questions, each guiding my selection of methods and data sources. The first issue is which data sources will best capture the structure of the field I propose. Given their extensive history and well-established reputation, I've chosen to focus on the three largest and oldest global university rankings: ARWU, Quacquarelli Symonds' World University Ranking (QS), and Times Higher Education World University Rankings (THE). To explore what types of institutions are evaluated by these ranking systems, I delve into the methodologies employed by each of these ranking bodies. This investigation will provide insights into the breadth and depth of coverage by these rankings and highlight any disparities in representation, both in terms of quantity and quality.

The next set of questions moves the focus onto the global relationships between universities. To address these inquiries, I will use a two-step process. Initially, I will adopt a prosopographic approach, using publicly available data produced by rankings to select a sample of universities that are representative of this global sub-field and capture the properties that best depict their positioning within it. Then, with the constructed dataset in hand, I will employ geometric data analysis techniques to map out and examine the structure of this global university field. I will thereafter turn to the third series of questions, this time focusing on the relational systems captured by global university rankings. I aim to identify the most pertinent assets characterising and differentiating the institutions vying for world-class status. By analysing the ranking indicators, I hope to discern distinct groups of institutions and uncover additional characteristics that contribute to understanding the institutional and geographical hierarchies associated with ranking results.

Finally, the study will shift once more to delve deeper into the relationships at a regional level. Here, I will seek to discern nuances and particularities in the structure of the global sub-field of universities when viewed from a regional perspective. This last part includes an exploratory study of research collaboration patterns among European universities and their evolution against the backdrop of the emergence and evaluations of global university rankings.

Mapping out the Field

Geometric Data Analysis (GDA) encompasses a broad class of statistical methods including principal component analysis (PCA), correspondence analysis (CA), and multiple correspondence analysis (MCA), among others. These techniques allow for the identification and geometrical modelling of correlations across variables describing numerous cases.¹²² Pierre Bourdieu viewed GDA as an instru-

¹²² Brigitte Le Roux & Henry Rouanet, *Multiple Correspondence Analysis* (London: Sage, 2010).

mental way to examine social fields¹²³ and implemented it in many of his most renowned works.¹²⁴ Other sociologists have followed this tradition, employing these techniques in their studies as well, showcasing the adaptability of these methods.¹²⁵ In the context of this dissertation, where the aim is to explore the distribution and relationships between the properties defining higher education institutions within the global field they form, I will use MCA, Euclidean Clustering, and Class-Specific Multiple Correspondence Analysis (CSA).¹²⁶

Often, critiques of these methods include the lack of indicators for statistical significance or effect, leading to the perception that the results are merely descriptive. However, these critiques have been challenged by pointing out that statistical significance does not necessarily equate to sociological significance, and a lack of proof of an effect is not proof of no effect.¹²⁷ Furthermore, by reconstructing social fields via GDA and laying bare their structure, researchers reveal the forces operating within fields that make actions and phenomena comprehensible. This approach inherently explains the dynamics of power struggles by elucidating the roles and strategies based on the positions of agents within these fields. Pierre Bourdieu's work stands as a clear example of the successful application of these methods to draw explanatory conclusions.¹²⁸

Nevertheless, the ability of these methods to yield explanatory results is contingent on the quality of the input data and the analysis performed by the researcher. As previously mentioned with regards to data collection, the selection of cases and their defining properties are ultimately arbitrary.¹²⁹ Therefore, the researcher must provide a transparent account of the reasoning behind their choices, grounded in the features of the field under examination. This ensures that the application of GDA methods like MCA and Euclidean Classification are tailored to the unique characteristics and requirements of the study at hand. The

¹²³ Pierre Bourdieu, *Science of Science and Reflexivity* (Chicago: The University of Chicago Press, 2004[2001]), 33.

¹²⁴ Bourdieu, *The State Nobility: Elite Schools in the Field of Power*; Bourdieu, *Homo Academicus*; Bourdieu, *Distinction*; Pierre Bourdieu, 'A Conservative Revolution in Publishing', *Translation Studies* 1, no. 2 (2008[1999]): 123–153.

¹²⁵ See for instance, Mikael Börjesson, 'The Global Space of International Students in 2010', *Journal of Ethnic and Migration Studies* 43, no. 8 (2017): 1256–1275; Börjesson & Broady, 'Elite Strategies in a Unified System of Higher Education. the Case of Sweden'; Lebaron, 'Central Bankers in the Contemporary Global Field of Power: A "Social Space" Approach'; Johs. Hjelldrekket et al., 'The Norwegian Field of Power ANNO 2000', *European Societies* 9, no. 2 (2007): 245–273; Gisèle Sapiro, 'The Structure of the French Literary Field during the German Occupation (1940–1944): A Multiple Correspondence Analysis', *Poetics* 30, no. 5–6 (2002): 387–402; Anne-Sophie Delval & Felix Bühlmann, 'Strategies of Social (Re)Production within International Higher Education: The Case of Swiss Hospitality Management Schools', *Higher Education* 79 (2020): 477–495; Erik Nylander & Andreas Melldahl, 'Playing with Capital: Inherited and Acquired Assets in a Jazz Audition', *Poetics* 48 (2015): 83–106.

¹²⁶ Le Roux & Rouanet, *Geometric Data Analysis*, 106.

¹²⁷ Le Roux & Rouanet, 309; Stephen Gorard, 'Damaging Real Lives through Obstinacy: Re-Emphasising Why Significance Testing Is Wrong', *Sociological Research Online* 21, no. 1 (2016): 102–115.

¹²⁸ Brigitte Le Roux & Henry Rouanet, *Geometric Data Analysis*, (New York: Kluwer Academic Publishers, 2004), 255.

¹²⁹ Arbitrary in the sense that there is no *a priori* principle determining such cases and properties.

specific accounts of the choices I've made at each step of the investigation are detailed in the relevant chapters of this dissertation.

Research Collaboration Patterns

To study the research collaboration patterns and their relationship to global ranking evaluations, I will use Social Network Analysis (SNA). This method is a methodological framework that examines social structures through the use of networks and graph theory. It identifies and analyses patterns of social relationships, focusing on how these relationships influence individual and group behaviour. In the context of research collaboration networks, SNA is particularly useful for understanding how researchers interact, collaborate, and share knowledge.¹³⁰

SNA has been employed extensively to uncover and interpret the complex patterns of academic interactions and partnerships. Studies in this area have often focused on deciphering the structural properties of these networks, such as identifying key players, understanding the flow of information, and examining the interconnectedness of various research groups.¹³¹ Through SNA, researchers have explored how collaborative networks in science are formed, highlighting phenomena like small-world networks and the pivotal role of certain hubs or central researchers in facilitating knowledge exchange and dissemination.¹³² These analyses provide valuable insights into the dynamics of scientific collaboration, offering a clearer picture of how relationships and alliances within the academic community shape the progress and direction of research.

When applying SNA to the study of collaboration patterns of European universities in the context of the emergence and evolution of global university rankings, the methodology becomes particularly insightful. This approach can be used to investigate whether the network positions of these universities correspond with their standings in global rankings. For instance, SNA can help determine if higher-ranked institutions also occupy more central positions in the network, suggesting a possible correlation between academic prestige and prominence in collaborative networks. By mapping these relationships and positions, SNA can reveal how the emergence and evolution of university rankings might influence or reflect the structure and dynamics of collaboration networks. This analysis can provide a nuanced understanding of how rankings, perceived prestige, and academic recognition shape the landscape of collaborations among European universities. Such insights are crucial for understanding the broader implications of global rankings on academic collaboration, resource allocation, and the dissemination of knowledge within the higher education sector.

¹³⁰ Stephen P. Borgatti et al., 'Network Analysis in the Social Sciences', *Science* 323, no. 5916 (2009): 892–895.

¹³¹ Yves Gingras, 'Mapping the Structure of the Intellectual Field Using Citation and Co-Citation Analysis of Correspondences', *History of European Ideas* 36, no. 3 (2010): 330–339.

¹³² M. E. J. Newman, 'The Structure of Scientific Collaboration Networks', *Proceedings of the National Academy of Sciences* 98, no. 2 (2001): 404–409.

3.3 Obstacles and Solutions

In this study, I confront certain inherent limitations that shape the scope and depth of my research. This project, which explores the social construction of “world-class universities” in association with global university rankings, grapples with two primary constraints: the focus on institutions over individuals and the inherent biases in data sources. Firstly, the emphasis on institutions rather than individuals is a deliberate but limiting choice. Grounded in Bourdieusian theory, my approach views universities as actors within a global sub-field, competing over the acquisition and reproduction of a field-specific symbolic capital and other related resources. While this institutional focus is necessary to map out the global sub-field of universities and understand their competitive dynamics, it inevitably sidelines the importance of individuals. Their assets, trajectories, and contributions, though acknowledged, are not the central concern of my study. A more granular exploration of individual experiences within this global academic field remains a pending inquiry, one that could potentially reveal deeper insights into the impact of these institutional dynamics on personal academic careers and scholarly practices.

Secondly, the reliance on ranking data introduces a significant constraint, given the inherent biases in such datasets. Data provided by rankers is shaped by what they choose to measure, what can be feasibly measured, and the methods they employ. This pre-determines, to some extent, the outcomes of my analysis. To mitigate this limitation, I critically examine the indicators used in these rankings, placing them within their broader context. This allows me to explore not just the numeric standings of universities but also the underlying assumptions and values that these rankings perpetuate. By doing so, I aim to unveil the symbolic power dynamics at play in the construction and legitimisation of the “world-class university” narrative. These constraints, while challenging, also offer avenues for further research and critical reflection. They underscore the complexity of studying global academic structures and the need for diverse methodologies to fully grasp the multifaceted nature of this field. My project, thus, is not just an exploration of the current state of global university rankings but also a call to critically examine and expand our understanding of what it means to be a “world-class” institution in today’s academic landscape.

Let there be World-Class: On the Formation of a Global Sub-Field of Universities

In this chapter, I adopt a methodologically hybrid approach, weaving a comprehensive literature review with a reinterpretation of existing research. This process involves a deep exploration of the prevailing studies on global university rankings and the notion of “world-class universities”. Beyond mere review, I actively re-frame these findings through the analytical lens of field theory. This unique fusion enables me to construct my narrative within the field theory framework, effectively shaping my research object.

This reinterpretation is not a simple repetition of existing knowledge; rather, it’s a creative reconstruction that aligns with the principles of field theory. By employing this approach, I offer fresh insights, presenting these reinterpreted findings as empirical evidence that underscores the emergence of a global sub-field of universities. This perspective not only highlights the interactive dynamics of universities on a global scale but also emphasises the evolving structures and patterns that are shaping the higher education landscape worldwide.

First, I will develop a historical analysis covering the key events that I propose served as the foundation for the formation of a global sub-field of universities. Namely, I will focus on the creation and evolution of the International Ranking Expert Group (IREG)—including the introduction of the so-called Berlin Principles—, the launch and celebration of the biennial International Conferences on World-Class Universities since 2005, and the implementation of global university rankings themselves. I start this first part by explaining why I focus on these events as evidence of the emergence of a global sub-field of universities. The overall focus is set on answering (1) when, where and in what contexts the notion of the world-class university emerged, (2) what events fostered its embracement and legitimisation, and (3) what types of actors have been involved in this process.

Second, after having explored and developed the historical background, I will analyse bibliometric data to further understand the presence and use of the term “world-class university” in scientific literature. For this purpose, I study a corpus of texts indexed in the Web of Science, looking at the specific time and context of the appearance of the term, the research areas where the term has been featured more often, as well as the geographical distribution of its presence.

In this chapter—as well as in forthcoming chapters—I take a meso-level approach, emphasising the relational dynamics between institutions rather than delving deeply into the trajectories and profiles of individual actors. This approach does not overlook the significance of individual actors but rather situates their roles and influences within the broader institutional framework.

In line with Bourdieu’s emphasis on the interdependence of agents and structures, this study recognises that while individuals play critical roles in the development and propagation of the “world-class university” idea, their actions and influences are best understood in the context of the institutions they represent. This meso-level focus enables a more nuanced analysis of how global educational trends are shaped, legitimised, and contested. It allows the exploration of how institutional strategies and interactions contribute to the formation and evolution of a global sub-field of universities, revealing the underlying power dynamics and structural transformations.

4.1 The Formation of a Global Sub-Field of Universities

In previous chapters, I emphasised the historical role of universities as entities whose activities tend to spread across geographical borders, facilitating the movement of students, scholars, and ideas. While universities have always had some level of transnational engagement, their operation on a global scale is a more recent phenomenon. Drawing on insights from Saskia Sassen,¹³³ I clarified that in the context of this dissertation, the terms *global* and *globalisation* signify the adoption of a broader transboundary perspective in higher education, leading to the rise of influential supra-national initiatives that shape the global higher education landscape. Prime examples of such initiatives include the emergence of the IREG Observatory and global university rankings.

In Chapter 2, I introduced the concept of the *social field* as a distinct sphere of practice within the broader social space, where agents engage in competition aligned with their interests. Competition within a field revolves around a specific type of capital, which grants power or influence in that field. This capital gains its value through a collective, implicit agreement on its significance among competitors as evidenced by their efforts to obtain, increase, and reproduce it.

In the context of higher education, a competition for “world-class” status has taken over the agenda of multiple nations and institutions during the first two decades of the twenty-first century. This drive is primarily fuelled by the desire of top universities in each nation to become significant participants on the global stage. The position a given institution occupies in a global university ranking list seems to impact student and academic recruitment, research collaboration, and

¹³³ Sassen, *A Sociology of Globalization*; Sassen, ‘How to Theorize Globalization’.

funding;¹³⁴ or, in other words, the positioning impacts the acquisition, accumulation, and reproduction of other vital assets for the institution.

Reinterpreting available literature using Field theory, with the operation of global university rankings, the label of “world-class university” has become a mark of symbolic recognition; in other words, it has become a specific form of symbolic capital over which higher education institutions—and national-states—compete. The struggle over this symbolic capital has given rise to an exclusive global sub-field of institutions that are considered legitimate candidates for and even legitimate examples of “world-class” status. Institutions encompassed by this global sub-field are recognised as distinct from the institutions lacking the resources to even feature in these lists. These world-class institutions are subjected to the dynamics of this sub-field, influenced by global rankings and the competition to enhance their symbolic capital, at the time that they also have the agency to strategically act, adjust their practices, and contribute to some degree to alter the field’s boundaries and norms—especially those universities at the very top of the hierarchy.

This is not a spontaneous or mechanical development stemming from a logic inherent to university systems nor derived from *a priori* principles. Specific groups of actors with specific sets of interests have laid the infrastructure that makes the evaluation and subsequent distinction of “world-class universities” possible and legitimate. Three pivotal shifts have notably transformed the contemporary functioning of higher education on a global scale: the shift in the arguments leading the debate on the idea of the university during the 1980s and 1990s; the foundation of new global institutions for evaluating and consecrating higher education institutions during the early 2000s; and the implementation of a new evaluation system organised around the idea of the world-class university.

Together, these actors, discourses and events laid the foundation for a new institutional and cultural infrastructure that fostered the formation of a global sub-field of universities. As a result, higher education institutions worldwide found themselves engaging in a new set of symbolic struggles. Gradually, these developments led to the construction and legitimisation of a new kind of symbolic capital, often embodied by the moniker “world-class university” or a ranking position. All these transformations signal a fundamental shift toward a global logic in the spheres of higher education, which points to the development of new narratives surrounding the role and value of universities.

In the upcoming overview, I will discuss three critical aspects that suggest the formation of a global sub-field of universities. These aspects align with Larissa Buchholz’s theorisation of global fields’ formation. They include the rise and institutionalisation of field-specific global discourse, the formation of global institutions facilitating cross-border exchanges, and the development of genuinely

¹³⁴ Ellen Hazelkorn, *Rankings and the Reshaping of Higher Education*, 2nd ed. (New York: Palgrave Macmillan, 2015), 105–110, 133ff.

global evaluation mechanisms.¹³⁵ This triad of mechanisms offers a comprehensive framework for understanding how universities have been drawn into a globalised educational landscape, marking a significant shift in their roles and values.

The Idea of the (World-Class) University

Universities, with their long history and global presence, have evolved through different models shaped by numerous academics and philosophers from various regions and disciplines. Historically, universities were seen as knowledge and culture beacons, with some degree of independence from political and religious influence.¹³⁶ They were deemed duty-bound to contribute to the expansion of universal knowledge and national growth.¹³⁷ However, as global dynamics changed, this view shifted as well. Universities transitioned from being viewed as knowledge repositories to engines of the global knowledge economy.¹³⁸

Specifically, during the latter half of the twentieth century, the debates surrounding the university's role began to change more dramatically. The age-old, enlightenment-inspired ideals began to give ground to more pragmatic, economy-driven objectives.¹³⁹ This transition was analysed by Bill Readings, who noted that as universities slowly began to resemble bureaucratic corporations, people participating in global discussions surrounding higher education institutions favoured the language of economic management over that of cultural conflict. Within this new narrative, "excellence" emerged as the universal standard to which all universities should aspire.¹⁴⁰ However, this "excellence" was an empty container, devoid of an intrinsic meaning or external benchmark. Consequently, the imperative arose for a tangible, quantitative system to gauge this elusive "excellence" across universities of varied histories and cultures.

The introduction of global university rankings has thus ostensibly concluded the longstanding debates about the university's purpose, imposing their models through numerical metrics. These rankings, by presenting a quantifiable and seemingly objective approach to evaluating university performance, have effectively shifted the focus from philosophical and cultural discussions to a data-driven paradigm. This shift implies a more rational and measurable model of

¹³⁵ Buchholz, 'What Is a Global Field?', 44.

¹³⁶ Immanuel Kant, 'The Conflict of the Philosophy Faculty with the Theology Faculty', in *The Idea of the University*, ed. Michael Peters & Ronald Barnett, vol. 1 (New York: Peter Lang Publishing, 2018), 3–18; Wilhelm von Humboldt, 'On the Spirit and the Organisational Framework of Intellectual Institutions in Berlin', in *The Idea of the University*, vol. 1 (New York: Peter Lang Publishing, 2018), 45–55.

¹³⁷ John Henry Newman, *The Idea of the University* (London: Longmans, Green and Co, 1886); José Ortega y Gasset, *La Misión de la Universidad* (Madrid: Biblioteca Nueva, 2007).

¹³⁸ Marginson, 'The Knowledge Economy and Higher Education', 65.

¹³⁹ Jean-François Lyotard, *The Postmodern Condition: A Report on Knowledge*, Theory and History of Literature 10 (Minneapolis: University of Minnesota Press, 1984).

¹⁴⁰ Bill Readings, *The University in Ruins* (Cambridge, Massachusetts and London: Harvard University Press, 1996).

what constitutes an ideal university. By emphasising factors such as research output, funding, and internationalisation, these rankings effectively dictate the criteria for excellence in higher education. Critics frequently point out that the widespread acceptance of these metrics as definitive indicators of a university's value and success tends to overshadow more nuanced and diverse perspectives on the role of universities in society. This prevailing focus on quantifiable metrics often diminishes the consideration of broader, more complex academic contributions and societal impacts.¹⁴¹

The quest for “excellence” in higher education intersected with the emergence of these rankings, especially in the pursuit of the coveted “world-class” status. As specialists in the field suggest, the pathway to achieving “world-classness” is paved with “excellence initiatives”—strategic moves that often, and unsurprisingly, cater directly to the metrics favoured by global rankings.¹⁴² Thus, the narrative of the university's transformation from an intellectual sanctuary to a player in the global economic arena is inextricably linked with the rise and influence of global university rankings.

The development, spread, and legitimisation of this idea was made possible through the foundation and activity of specific institutions. In particular, the appearance of the International Ranking Expert Group (IREG) Observatory and the Center for World-Class Universities at Shanghai Jiao Tong University in association with UNESCO and the World Bank played a chief role in this process, mainly through the organisation of conferences and other instances where ranking publishers and other agents gathered to refine and consolidate the nascent infrastructure for the global evaluation of universities.

The Rise of Global Institutions

Having explored the emergence of a field-specific discourse anchored on the idea of the world-class university, let's now shift our focus to the emergence and influence of two pivotal global institutions driving the spread and implementation of this notion: The IREG Observatory and the Center for World-Class Universities. While certain individuals and aspects of their careers are noted, this section will concentrate primarily on the institutions themselves rather than detailed profiles of these individuals for three main reasons.

Firstly, institutions represent a conglomeration of multiple agents' interests and strategies, making them a more stable and enduring unit of analysis than individual agents. Their policies, initiatives, and shifts reflect broader trends and

¹⁴¹ Deem, Mok, & Lucas, ‘Transforming Higher Education in Whose Image? Exploring the Concept of the “World-Class” University in Europe and Asia’.

¹⁴² Jamil Salmi, ‘Excellence Strategies and World-Class Universities’, in *Global Rankings and the Geopolitics of Higher Education: Understanding the Influence and Impact of Rankings on Higher Education, Policy and Society*, ed. Elizabeth Hazelkorn, International Studies in Higher Education (London and New York: Routledge, 2017), 23–53.

changes within the field of global higher education, offering a comprehensive view of the systematic forces at play. This focus aligns with the understanding that while individuals may operate within and influence a field, it is the institutions that often codify, standardise, and perpetuate the field's doxa and norms.

Secondly, institutions are enduring entities that transcend the careers and lifespans of individual actors. Focusing on institutions provides a more sustainable and longitudinal understanding of the field's evolution. It allows for the examination of how the idea of a world-class university has been institutionalised and propagated over time, reflecting a more permanent inscription of power and influence than the episodic impact of individuals.

Finally, due to practical considerations of time and resources, concentrating on institutions rather than detailed profiles of individuals allows for a more efficient and focused analysis. It enables the investigation of the collective actions and effects of these entities on the global higher education landscape, thus uncovering the general trends and shifts within this history.

The International Ranking Expert Group

Today, the IREG Observatory on Academic Ranking and Excellence is an international institutional forum that brings together ranking organisations, universities, and other stakeholders to improve the quality and transparency of university rankings. Its inception in 2002, symbolised by the “IREG-0 Conference” in Warsaw, Poland, was a landmark event in the realm of global higher education evaluation, influenced significantly by the roles and perspectives of Jan Sadlak and Jamie Merisotis. They titled this instance “The Invitational Roundtable on Statistical Indicators for Quality Assessment of Higher/Tertiary Education Institutions: Ranking and League Tables Methodologies”, which came about as a response to UNESCO's appeal for a system that could quantify the intricate aspects of higher education.¹⁴³ Rather than focusing solely on global rankings, the focal point of their efforts revolved around understanding the broader international trends in higher education at the time, of which university rankings were one among other concerns.¹⁴⁴

Jan Sadlak is a prominent figure in higher education policy and governance, who has had a profound impact on shaping higher education both at the system and institutional levels. He holds an MA degree in economics from the Oskar Lange Economics Academy (Warsaw, Poland), and a Ph.D. in educational administration from the State University of New York at Buffalo (US). His extensive career includes serving as the Director of the UNESCO European Centre for Higher Education (UNESCO-CEPES) from October 1999 to July 2009, where he played a pivotal role as UNESCO's representative in Romania. Before this, he

¹⁴³ Jamie P. Merisotis, ‘Summary Report of the Invitational Roundtable on Statistical Indicators for the Quality Assessment of Higher/Tertiary Education Institutions: Ranking and League Table Methodologies’, *Higher Education in Europe* 27, no. 4 (2002): 475–480.

¹⁴⁴ Michael Lounsbury, Elizabeth Popp Berman, & Catherine Paradeise, *The University under Pressure* (Bingley: Emerald Publishing Limited, 2016).

was the Chief of the Section for Higher Education Policy at UNESCO in Paris from 1992 to 1999, overseeing the development and implementation of global higher education policies.

In addition to these roles, Sadlak has been deeply involved in providing senior-level policy advice to various international organisations, including UNESCO, The World Bank, OECD, and the Council of Europe, as well as governments and higher education institutions across multiple continents. His expertise has been instrumental in the policy formation for the Bologna Process, a major European educational reform initiative, from 2000 to 2009.

Jan Sadlak's tenure at UNESCO-CEPES was marked by a focus on understanding and enhancing the global dynamics of higher education, with an emphasis on quality assurance and the development of objective methodologies for evaluating academic institutions. Sadlak's guidance at the IREG-0 Conference was instrumental in setting the stage for discussions on the complexities of ranking systems and their impact on higher education.

Alongside Sadlak, Jamie Merisotis brought his extensive experience in education policy and governance. He holds a bachelor's degree in political science from Bates College in Lewiston (Maine, US). A key part of his early career was founding and leading the Institute for Higher Education Policy (IHEP), a nonpartisan education research and policy centre based in Washington, D.C. This role underscored his commitment to and expertise in higher education policy, a field where he would continue to make substantial contributions.

In addition to this, Merisotis served as the executive director of the National Commission on Responsibilities for Financing Postsecondary Education (in the US). This bipartisan commission, appointed by the U.S. President and congressional leaders, focused on addressing issues related to college affordability, further demonstrating his involvement in critical aspects of higher education.

As the president of the IHEP, Merisotis had a deep understanding of the policy implications of higher education rankings, especially in terms of accessibility and affordability. His expertise was vital in addressing the broader implications of using statistical indicators for quality assessment in higher education.

In 2006, in collaboration with UNESCO-CEPES and the IHEP, and with the participation of representatives from the World Bank, the IREG established what we know today as the Berlin Principles on Ranking of Higher Education Institutions. This document lays down a set of guidelines to foster the transparency and quality of global university rankings. The inception of these principles was driven by the escalating influence of these rankings worldwide and their consequential impacts on educational policies and public perceptions. Furthermore, the Berlin Principles fostered international collaboration among ranking producers, encouraging ranking organisations to share their methodologies, join forces to enhance data quality and undertake joint research activities.

In 2008 the group began to prepare the formalisation of the instance as an international organisation. By 2009, IREG had fully transitioned into a non-

profit entity known as the IREG Observatory on Academic Ranking and Excellence. This transformation brought together approximately fifty members globally, with strong representation from Eastern Europe, areas under Russian influence, as well as Gulf and Far East nations. This composition is reflective of its historical roots in UNESCO-CEPES. Later, in 2013, the IREG Observatory undertook its first audits guided by the Berlin Principles. Nowadays university managers responsible for international relations frequently refer to the IREG principles and endorsements when determining the credibility of rankings that they use for assessing their institution's standing.

The International Ranking Expert Group (IREG) stands out for its diverse and influential composition, comprising an executive committee of eleven members from countries spanning Brazil, China, Denmark, Germany, Hungary, Italy, Kazakhstan, Spain, and the US, with Poland notably represented by two members.¹⁴⁵ The breadth of representation is further enriched by eight honorary members from China, Spain, the US, Germany, and Poland, reflecting its global perspective.

Among the executive committee, several members are particularly noteworthy due to their significant roles in shaping higher education policies and ranking systems both nationally and internationally. For instance, Nian Cai Liu, the architect of the Shanghai ranking, brings to the table an innovative approach to university evaluation that has gained worldwide recognition and adoption. His methodology has redefined how academic excellence is measured and compared globally, influencing higher education strategies in numerous countries. As the creator of the Shanghai ranking, Liu's influence extends beyond IREG. He holds a significant position at Shanghai Jiao Tong University, where he has been instrumental in advancing the university's international reputation and influence in higher education.

Another key figure is Robert Morse, the director of data research for US News and World Report, whose expertise in data analysis and ranking methodologies has played a pivotal role in the establishment and evolution of one of the most influential university ranking systems in the world. His work has been instrumental in setting benchmarks for academic and research performance, impacting institutional strategies and priorities globally. In addition to his role with US News and World Report, Morse's expertise in data research and university rankings places him in a powerful position within the American higher education sphere. His work significantly influences university policies and priorities in the US, as institutions often strive to improve their standings in these widely recognised rankings.

Gero Federkeil from U-Multirank offers a unique perspective with his involvement in a multi-dimensional global university ranking system that emphasises a broader range of performance indicators. This approach provides a more nuanced understanding of university performance, catering to diverse institutional profiles and missions.

¹⁴⁵ One of the honorary members from the US, Robert Morse, sits on the executive committee.

Isidro Aguillo, who leads Webometrics, brings an emphasis on web presence and impact, a modern metric that reflects the growing importance of digital visibility and outreach in the higher education sector. His work at the Spanish National Research Council (Consejo Superior de Investigaciones Científicas) positions him at the intersection of digital scholarship and higher education policy, influencing how institutions leverage their digital footprint for global visibility and impact.

Each of these members holds a dual role as both a judge and a party within the IREG, given their direct involvement in creating and managing the ranking systems that the IREG endorses. This dual role is significant, as it places them in a unique position to not only assess but also directly influence the standards and practices within the space of global university rankings. This turns the IREG from a neutral third-party observer into an integral participant in this arena. In other words, the IREG isn't merely a passive observer assessing the relevance and quality of global university rankings in a detached manner. Instead, it operates as a significant hub within a tightly knit, interdependent network of agents who validate each other's work. This web of relationships reinforces their collective authority and shapes the landscape of global university rankings and global higher education.¹⁴⁶

Throughout its history, the IREG has further developed a field-specific discourse that acts today as a “law of constitution” of a global field of universities. In addition to embracing the idea of a world-class university, this law can be summarised in three narratives put forward throughout IREG's documentation—as well as in other documents and articles outside its direct scope of influence—as summarised by Brankovic, Ringel, and Werron. These narratives have been summarised as “rankings are inevitable”, “rankings reflect reality”, and “rankings are needed”.¹⁴⁷

The first narrative, “rankings are inevitable”, frames rankings as a necessary outcome of current global trends, such as the massification, globalisation, and expansion of higher education. This narrative is encapsulated in the often-repeated assertion that “rankings are here to stay”, signifying a belief in the enduring relevance and influence of global rankings in higher education. But, as critics point out, evidence shows how these devices are not an inherent outcome of how higher education works. Rather, there are socio-historical factors that clearly explain their emergence, providing a broader context against which to understand their prevalence.

The second narrative, “rankings reflect reality”, regards rankings as an honest attempt to reflect the reality of higher education dynamics. This suggests that rankings offer an impartial overview of the status dynamics within higher educa-

¹⁴⁶ Kevin Downing, Petrus Johannes Looock, & Sarah Gravett, *The Impact of Higher Education Ranking Systems on Universities* (London: Routledge, 2021), 39; Barron, ‘The Berlin Principles on Ranking Higher Education Institutions: Limitations, Legitimacy, and Value Conflict’, 318.

¹⁴⁷ Jelena Brankovic, Leopold Ringel, & Tobias Werron, ‘Spreading the Gospel: Legitimizing University Rankings as Boundary Work’, *Research Evaluation* 31, no. 4 (2023): 463–474.

tion, revealing a true hierarchical order of universities around the world. Influential scholars, like Philip Altbach, are often quoted to support this view, arguing that rankings are an essential tool to gauge global competition in higher education. But then again, we know from evidence that the evaluation results of these rankings are not impartial. For the same socio-historical context that explains their emergence, rankings cannot and have not been neutral, producing effects beyond merely evaluating institutions. Detractors have clearly shown how by their operation, rankings end up legitimising pre-existing inequalities, rather than merely revealing a hierarchy based on a purely technical assessment.

The third narrative, “rankings are needed”, emphasises the necessity and usefulness of rankings. It argues that rankings meet a growing demand for comprehensive and transparent information about higher education institutions, serving as useful tools for universities, governments, and other stakeholders to improve the quality of education. The utility of rankings is seen as an inherent quality, with millions of students, researchers, scholars, and managers relying on them. Yet, as previously discussed, crucial information remains inaccessible for most of the audience, further failing to provide clear explanations for fundamental decisions such as why one set of indicators should be used over another, or even what rationale informs the weight distribution across indicators.

Thus far, the IREG has strategically employed these narratives to foster a constructive discourse around rankings, inviting discussions on how rankings can better reflect reality or meet the needs of various users. Through these narratives, criticism against the inevitability, utility, or realism of rankings is often dismissed as unreasonable or futile, thus preserving the legitimacy of the IREG and the significance of the rankings they endorse. Going back to a theoretical level and parsing these developments through the lens of field theory, one can say that the IREG has become the consecration instance for global university rankings playing a fundamental role in the legitimisation of the global ranking system and therefore in the constitution of a global sub-field of universities.

The Center for World-Class Universities

Parallel to the development of the IREG, the organisation of international conferences on world-class universities represents another crucial instance of the institutionalisation of a field-specific discourse. The Center for World-Class Universities at Shanghai Jiao Tong University started its research on this class of universities in 1985, and by 2003, this institution introduced the Academic Ranking of World Universities (ARWU). In June 2005, two years after the debut of ARWU, the First International Conference on World-Class Universities (WCU-1) was launched by the Center. This international platform sought to facilitate dialogue among a global cohort of leaders, scholars, policy researchers, and senior

university administrators on the multifaceted issues underpinning the notion of “world-class universities”.¹⁴⁸

Since its inception, the conference series has been held biennially, hosting participants from over 40 countries, including university presidents, government officials, and academics. Each conference, while sharing the broader theme of world-class universities, has had a unique focus. Starting with *World-Class University and Ranking: Aiming Beyond Status* in 2005, the themes have evolved, reflecting changing contexts and priorities in higher education.¹⁴⁹

The Center has been instrumental in maintaining the relevance of the idea of “world-class universities” and its intrinsic connection to global university rankings. The impact of these conferences extends beyond dialogue, as illustrated by the 2007 publication of the book using the title of WCU-1: “World-Class University and Ranking: Aiming Beyond Status”. This compilation is structured into an introductory section, which examines the expectations and realities of the world-class university status and ranking practices, followed by three main thematic parts titled “Characteristics and Criteria of the World-Class University”, “Evaluation and Ranking of World-Class Universities”, and “Building a World-Class University”.¹⁵⁰

The central argument of the book, implied in its subtitle, is the claim that a “world-class university” does not merely refer to an institution of global prestige. Instead, it suggests that the characterisation of world-class universities can be rendered more objectively by assessing their performance in relation to other institutions. This viewpoint serves to solidify the influence of rankings and their integral role in defining what constitutes a world-class university, echoing the objectives and influence of the conference series. Therefore, these international conferences and subsequent publications have effectively preserved and cultivated the vitality of the “world-class” notion within higher education discourse, reflecting the dynamics of a global field of universities.

The foundation and activity of both the IREG Observatory and the Center for World-Class Universities, as well as the involvement of the other aforementioned organisations (UNESCO, OECD, and the World Bank), wouldn’t have been possible without the introduction of a global evaluation system of universities, another core piece in the formation of a global sub-field of universities. Let’s now turn to examine the origins of these rankings.

A Global Evaluation System for Universities

Born in an era when academic excellence and performance took centre stage, global university rankings swiftly changed the landscape of higher education on

¹⁴⁸ Gualberto Buela-Casal et al., ‘Comparative Study of International Academic Rankings of Universities’, *Scientometrics* 71, no. 3 (2007): 351.

¹⁴⁹ See <https://cwcu.sjtu.edu.cn/2022/en> for a full list of conference titles.

¹⁵⁰ Liu & Sadlak, *World-Class University and Ranking: Aiming Beyond Status*.

a global scale first and foremost by quantifying it and making it visible, that is, by *objectifying* it. The very first global university ranking to make an appearance was the Academic Ranking of World Universities (ARWU), also known as the Shanghai Ranking. Even though its first publication was made in 2003, its origins can be traced further back to 1998, when China's central government launched its ambitious 985 policy.¹⁵¹ This strategy was designed to offer a substantial influx of additional funding to a select set of universities, with the ultimate goal of propelling these institutions into a "world-class" echelon. Nevertheless, much like today, the concept of "world-class" was vague at best, prompting the need for coining a more tangible, measurable definition.

In this context, Shanghai Jiao Tong University, one of the beneficiaries of this initiative, tasked Nian Cai Liu, an engineering professor, with defining and quantifying "world-class". Liu, who earned his Ph.D. from Queen's University (Canada) in 1992, was marked by his educational experience in an Anglo-Saxon institution. Drawing specifically and explicitly on the values and practices of top American universities,¹⁵² he developed nine distinct indicators to evaluate Chinese institutions. This approach was a significant departure from earlier regional ranking efforts, such as Asiaweek's ranking, which relied on self-reported data. Liu instead chose to use third-party, primarily bibliometric sources, considering them more objective and reliable. His work culminated in a publication that circulated in China in 2001.

Upon this accomplishment, Liu went on to broaden his scope to fit a global perspective, which required a revision of the previously used indicators to accommodate third-party data sources that encompassed the new larger corpus of institutions. American institutions remained the ultimate benchmark for "world-class" status, which amplified a bias towards certain models of higher education organisation to the detriment of others. Moreover, regarding the indicators he chose, the attention directed toward the number of alumni and staff holding Nobel Prizes or Field Medals proposed a view of the "world-class university" as one not only with current high performance but also with historical prestige and recognition in scientific fields.

As discussed in earlier chapters, in their 2016 definition of "world-class universities", Salmi and Altbach attributed the alignment of the term "world-class" with the operations of leading American and British universities to the "own volition" and "incremental progress" of these institutions. However, the involvement of Nian Cai Liu in the development of global rankings casts this assumption in a new light. Rather than being an autonomous evolution, the definition of "world-class" has been significantly influenced by strategic choices, especially Liu's decision to use American universities as a benchmark in creating the

¹⁵¹ Usher, 'A Short Global History of Rankings'; Altbach & Salmi, *The Road to Academic Excellence: The Making of World-Class Research Universities*, 39.

¹⁵² Kuappi, Niilo, 'The Global Ranking Game: Narrowing Academic Excellence through Numerical Objectification', *Studies in Higher Education* 43, no. 10 (2018): 1755.

ARWU. This choice reflects his educational as well as geopolitical influences and has been pivotal in shaping our understanding of “world-class” as a reflection of Anglo-Saxon educational values and practices.

All in all, the success of ARWU paved the way for the development of other global rankings. Times Higher Education (THE), a UK-based higher education magazine, set off to develop a ranking system to provide its own take on a comprehensive comparison of universities worldwide. Their reasoning was to meet a growing demand for more transparency and information about higher education institutions. It also aimed to provide insights for various stakeholders, such as students deciding where to study, academic professionals considering where to work, and governments looking to compare their countries’ universities with others around the world. In this endeavour, they partnered with Quacquarelli Symonds (QS), a British company specialising in education and studying abroad. QS provided expertise in data collection and analysis, having previous experience in the education sector.

The first version of THE contemplated several indicators including academic reputation, employer reputation, faculty/student ratio, citations per faculty, and international orientation. Unlike ARWU, it relied on institutions’ self-reported data and academic reputation indicators based on surveys distributed among scholars. In 2009, THE and QS decided to go their separate ways due to differing views on methodology. After the split, THE collaborated with Thomson Reuters to refine its ranking methodology. The new approach emphasised research impact over research output, made use of a more robust database for citations, and reduced the reliance on reputational surveys.

On the other hand, QS continued to produce the QS World University Rankings, maintaining the importance of reputation surveys. Despite the changes over time, THE World University Rankings grew to become one of the most respected and referenced global university rankings. They have continued to evolve their methodology to reflect the changing nature of higher education and to ensure a comprehensive, balanced, and reliable comparison of universities worldwide.

In turn, the QS ranking decided to keep employing a mix of qualitative and quantitative indicators to provide a multi-dimensional view of university performance. To date, these indicators include academic reputation, employer reputation, faculty-to-student ratio, citations per faculty, international faculty ratio, and international student ratio. The emphasis on reputation surveys means that the perspectives of scholars and employers worldwide play a substantial role in the determination of these rankings. QS’s academic reputation survey is one of the largest of its kind, gathering responses from tens of thousands of academics worldwide each year.

During the early phase of global ranking emergence, several other metrics were created, but none reached the level of influence or recognition that the “big three”—ARWU, THE, and QS—managed to attain. One such example is Webometrics, which was introduced in 2004 and offers a distinct approach by

focusing primarily on metrics related to universities' online presence. In 2007, the National Taiwan University Performance Ranking of Scientific Papers for World Universities was launched, anchoring its ranking system solely on bibliometric indicators. This ranking highlighted the scientific research output of universities, reflecting their contributions to the world of academic publishing.

In 2009, Scimago entered the ranking arena, providing another perspective on global university performance by incorporating a three-dimensional approach to indicators. These indicators were designed to reflect the scientific, economic, and social characteristics of institutions. Significantly, Scimago's methodology includes both size-dependent and size-independent indicators, allowing for a comprehensive analysis of an institution's output while facilitating comparisons between institutions of varying sizes. The final indicators, after being weighted differently, are normalized on a scale from 0 to 100, ensuring a standardized evaluation framework. A few years later, in 2012, the Centre for World University Rankings joined the field, offering yet another unique methodology for evaluating universities worldwide, considering education standards and employability as main indicators. Another contender, the University Rankings of Academic Performance (URAP), came into existence in 2010, highlighting article output, citations, and collaboration. Each of these rankings provided its own take on what dimensions to take into account, contributing to the increasingly complex and varied ecosystem of global university rankings.

While these lesser-known rankings did not garner the same level of attention as their more prominent counterparts, they nevertheless added diverse perspectives to the discourse around university quality and performance. Each offered unique lenses through which to examine and compare institutions, further enriching the conversation about what makes a university "world-class". Thus, the ordering of universities worldwide became an annual tradition; listing institutions and assigning them a number signifying their performance on a global scale began to be taken for granted.¹⁵³

The implementation of these benchmarking tools has not only had symbolic repercussions. Let's point out a few cases where material consequences followed ranking results. First, we have the famous case of the University of Malaya in Malaysia.¹⁵⁴ The initial shock came after the results of THE in 2004 when the university placed 89th among the world's top 200 institutions. This achievement was met with great national pride and served as a testament to Malaysia's successful push towards a knowledge economy and internationalisation. However, the celebration was short-lived, as the University of Malaya's ranking plummeted to 169th in the following year.

¹⁵³ John O'Leary, 'The Origins of International Rankings', in *World University Rankings and the Future of Higher Education*, ed. Kevin Downing & Fraide Ganotice (Hershey: IGI Global, 2017), 66–67.

¹⁵⁴ This case has been documented online at 'The Unbelievable Professor Hashim Yaacob', *Malaysiakini*, November 2005, <https://www.malaysiakini.com/news/42736>, accessed 2023-08-10.

The fallout from this abrupt tumble was significant, leading to media backlash, calls for a royal commission inquiry, and eventually the dismissal of the Vice Chancellor, Professor Hashim Yaacob. However, it turned out that the drop was due to an incorrect data entry by THE/QS and not bad administration. In 2004 there was an overestimation in the number of international students and faculty members. In reality, the figures collected by rankers corresponded to Malaysian citizens of Indian and Chinese origin. When the error was corrected in 2005, the international student and faculty scores dropped dramatically, resulting in the scandal.¹⁵⁵

This type of error, attributable to wrongly self-reported data, affected other institutions as well, although without such strong consequences. As one other example, Duke University climbed from 57th to 11th place between 2004 and 2005, which was largely due to an implausibly low student-faculty ratio—less than two students per faculty member. In 2006, the error persisted, failing to accurately update the number of students and faculty due to incomplete data from the university's website. The miscalculations included misconceptions about the number of postgraduate students admitted and inaccurately doubling the number of faculty, skewing Duke's position in the rankings.¹⁵⁶

These incidents highlight a broader issue within the framework of university rankings: the instability and volatility inherent in the system. Changes in just one indicator, whether due to errors or legitimate fluctuations, can dramatically propel or plummet an institution's standing from one year to the next. This precariousness is especially pronounced when rankings heavily rely on self-reported data, which is susceptible to inaccuracies and misinterpretations. The dramatic shifts experienced by institutions like the University of Malaya and Duke University underscore the fragile nature of rankings and question the reliability of using these as definitive measures of an institution's quality and performance.

Another interesting case of material consequences of the symbolic competition over "world-class" status is that of France—a much more serious issue than the two mentioned above since it involves a whole national higher education system rather than specific institutions. Notably, France's most prestigious higher education institutions, known as the *Grandes Écoles*, do not conform to the Anglo-Saxon university model often used as the yardstick in these rankings. This divergence has historically rendered these institutions less visible in global university rankings. Thus, to bolster the international standing of French higher education, the government has undertaken a strategic approach, focusing on the amalgamation and collaboration of universities and research institutions. This strategy has primarily aimed to create larger, multifaceted entities that can enhance their research capacities and increase their visibility on the global stage.

¹⁵⁵ Richard Holmes, 'The THE-QS World University Rankings, 2004 – 2009', *Asian Journal of University Education* 6, no. 1 (2010): 102–103.

¹⁵⁶ Holmes, 103.

The Initiatives for Excellence (Idex), launched by the French government in 2010, serve as a pivotal component of this strategy. Additionally, these initiatives evidence the necessity of national-level strategies for strengthening the positions of individual higher education institutions, demonstrating the importance of multi-scalar analyses (in this case the global, national, and institutional levels) to fully grasp the dynamics underpinning the globalisation of higher education. Idex was launched with an ambitious objective: to foster the development of five to ten internationally recognised universities within France. This aim is facilitated by allocating substantial funding to chosen higher education institutions, thereby empowering them to attract distinguished researchers, bolster their infrastructure, and enhance their overall academic prowess.

The creation of the Paris-Saclay University in 2020 epitomises the success of this merging strategy.¹⁵⁷ This university represents a consortium of various prestigious entities from the Paris region, including numerous *Grandes Écoles*, universities, and research centres. Today, the Paris-Saclay University stands as a powerful institution exhibiting augmented research capabilities, a diverse pool of resources, and amplified international visibility.

This strategy of merging and building consortiums is not exclusive to Paris. In 2018, the University of Strasbourg embarked on a strategic collaboration with several institutions, including the University of Lorraine. This partnership focused on reorganizing and restructuring research laboratories, aiming to strengthen research capabilities and areas. This move was part of a broader initiative to enhance the university's international standing and influence, aligning with a contract started with the Ministry of Higher Education, Research, and Innovation. This collaboration underscores the concerted efforts of French universities to amplify their research impact and global presence.¹⁵⁸ Furthermore, the French government has also championed the French Tech movement, aimed at positioning France as a global forerunner in tech start-ups and scale-ups. French Tech primarily strives to foster collaboration among start-ups, large corporations, and research institutions, thereby nurturing an ecosystem conducive to technological innovation.¹⁵⁹

In parallel to France's strategic restructuring of its higher education system, Germany has similarly embarked on a substantial reform to elevate its institutions to a "world-class" status. This endeavour, primarily manifested through the Excellence Initiative launched in 2005 (*Exzellenzinitiative*), represents Germany's commitment to improving its academic institutions' standing in a climate of increased international competition. The initiative, funded jointly by the federal

¹⁵⁷ See <https://www.inde.campusfrance.org/shanghai-rankings-2023-success-of-france-s-new-university-models>.

¹⁵⁸ See <https://en.unistra.fr/unistra-news/news-in-details/13453-2018-2022-a-new-landscape-for-research-in-alsace>.

¹⁵⁹ Sébastien Bourdin & Fabien Nadou, 'La French Tech : Une nouvelle forme de mobilisation des territoires pour faire face à la compétition mondiale?', *Annales de géographie* 5, no. 723–724 (2018): 612–634.

and state governments, aimed to promote cutting-edge research and improve the quality of German universities. It has been instrumental in fostering a landscape conducive to world-leading research and scholarship.¹⁶⁰

The German Excellence Initiative has focused on three primary lines of funding: graduate schools to promote young scientists, clusters of excellence to foster top-level research, and institutional strategies to promote top university research. This strategic approach has led to the creation of Universities of Excellence, a title that brings prestige, additional resources, and a heightened profile on the global stage. The funding has been substantial, allowing these chosen institutions to attract leading international researchers, expand their infrastructure, and enhance their research output and quality.

The examples thus far discussed—to which we may still add China and their 985 policy, originating global university rankings—clearly underscore the tangible impacts of the symbolic competition engendered by the advent of global university rankings. It is of particular interest how even a traditionally rigid system, such as the French one, has been compelled to strategically adapt to secure a favourable position on the global stage.¹⁶¹ This demonstrates the significant influence and reach that the global ranking system has accrued over its twenty-year existence.

All in all, the willingness of higher education institutions worldwide to actively participate and devise strategies centred around the pursuit of acquiring, accumulating, and reproducing a specific type of symbolic capital legitimised by global university rankings is telling. This scenario strongly suggests the emergence of a global sub-field of universities. It also highlights how this symbolic capital, often distilled through the lens of university rankings, has become a potent factor in shaping the strategic decisions of these institutions.

The engagements of these institutions within this emergent global sub-field of universities are not just reactive but increasingly proactive, demonstrating an acknowledgement of the rankings' authority. This is evident in the extensive restructuring and refocusing efforts, such as the merging strategies in France and the strategic internationalisation efforts in Malaysia, as universities adapt to the competitive nature of the global higher education landscape.

Overall, these changes mark a shift in the higher education paradigm and an acceptance of the global university rankings' role as a transformative driver in this sphere. It signals an emerging interconnectedness among higher education institutions globally, unified by the common aim to enhance their standing and reputation within this global field of universities.

¹⁶⁰ Barbara Khem & Peer Pasternack, 'The German "Excellence Initiative and Its Role in Restructuring the National Higher Education Landscape', in *Structuring Mass Higher Education: The Role of Elite Institutions*, ed. David Palfreyman & Ted Tapper (New York and London: Routledge, 2009).

¹⁶¹ Gilles Rouet & Thierry Côme, 'Présentation générale classements des universités, où en sommes-nous? Du rejet au cadre d'action', in *Classement des universités*, ed. Gilles Rouet (Paris: CNRS Éditions, 2022), 7–24.

In Sum

The formation of a unique global field of universities has been significantly driven by the activity of influential associations such as the IREG Observatory and the Center for World-Class Universities in connection to UNESCO. These organisations have not only facilitated a competitive environment among higher education institutions worldwide but also set the stage for defining the meaning of a “world-class” university. This influential definition, in turn, has acted as a base upon which universities organise their strategies, resources, and overall identities.

The establishment of these university ranking systems has been marked by the endorsement of internationally recognised documents such as the Berlin Principles and the compilation of instructive books, providing a shared framework and language for university ranking and assessment. Their imprint on the higher education landscape extends beyond a mere enumeration of institutions; they have fundamentally transformed the dynamics of higher education on a global scale, introducing new symbolic capital embedded in the very notion of “world-class university”.

This new form of symbolic capital, supported by the authority of government entities like that of China, and international organisations such as UNESCO, has transitioned from being a buzzword to a highly sought-after label. Regular international conferences serve to continually reify the status and influence of this label, drawing together stakeholders from all corners of the globe to interpret, critique, and strategise according to the rankings’ evolving metrics.

Ultimately, these rankings are more than a superficial catalogue of institutions. They form a global axis of comparison, competition, and collaboration. Their existence shapes policy, provokes change, and spurs makeovers in the pursuit of a broadly recognised and highly coveted standard.

4.2 The World-Class University in Scientific Publications

Having provided a historical background of the main events leading to the formation of a global university sub-field in the preceding section, this chapter now delves into the exploration of the presence of the term “world-class university” in scientific literature. My goal in this section is to investigate the use of this notion within different research areas, highlighting its geographical distribution and identifying its more specific contexts of appearance. This bibliometric analysis will provide an understanding of the term’s reception in scientific literature.

In doing so, I will enhance and refine the answers given to the questions presented at the chapter’s beginning. To provide a broader context for the textual analysis, I will consult the Google Books Ngram Viewer to sketch a broad overview of the term’s usage over time. As a public search engine that produces word frequencies from a vast corpus of books, this source enables the study of cultural

trends as reflected in the temporal distribution of those documents, though it only provides quantitative data—frequencies.¹⁶²

To offset this constraint and supplement the results obtained from Google Ngram, I will also employ EBSCO databases. EBSCO, an online search engine, furnishes “a variety of proprietary full-text databases and popular databases from leading information providers”.¹⁶³ It offers general reference collections and subject-specific sources suitable for public, academic, medical, corporate, and school libraries. Compared to Google Ngram, its scope—while still wide—is more specialised, facilitating trend analysis and timeline construction.

To delve deeper into the textual analysis, I turn lastly to documents indexed in the Web of Science’s Core Collection that contain the term “world-class university”. This platform offers access to multiple databases with citation data spanning across various academic disciplines, housing different document types such as journal articles, reviews, editorial material, and proceeding papers, among others. Following a rigorous evaluation process centred around impact, influence, timeliness, peer review, and geographic representation, these documents are included. The Web of Science is often employed in bibliometric analyses due to the comprehensive data it discloses about its indexed documents, including their title, document type, publication date, author affiliations, keywords, source of publication, and funding information.

For this exercise, the search string used to compile the sample of documents for analysis was “world-class universit*”—this includes the phrase with and without a hyphen, and in both its singular and plural forms.

General Overview

The search of the term “world-class university” and its variations in Google Books Ngram Viewer databases spanning from 1800 to 2019 returned a total of 24,776 hits. The distribution can be seen in detail in Figure 1. For much of the nineteenth century, the notion in question was virtually absent from the literature, with only a single mention noted in 1837 and a more prominent spike of five mentions in 1881. It wasn’t until the late twentieth century that the term began to appear with increasing regularity.

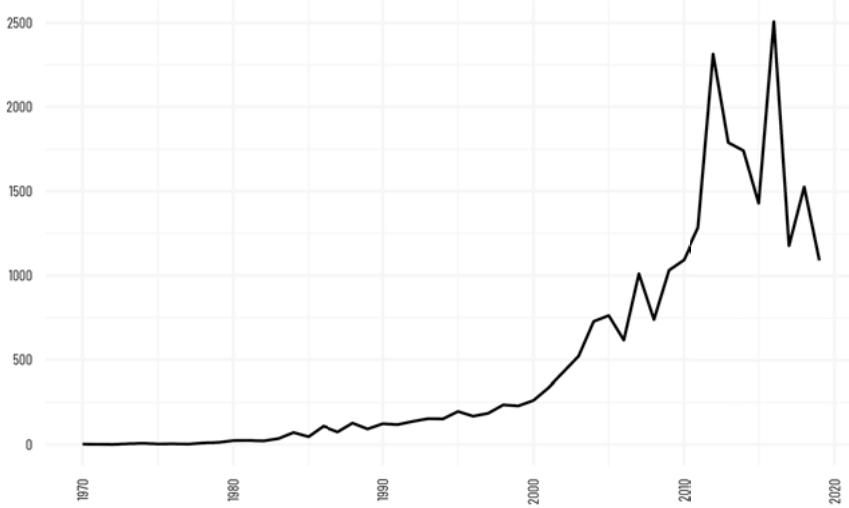
The first half of the twentieth century continued this trend with minimal mentions. Interestingly, while the years encompassing both World Wars saw minimal usage of the term, there’s a subtle uptick in the late 1940s, with three mentions in 1949. This might be attributed to post-war efforts to rebuild and

¹⁶² <https://books.google.com/ngrams/>

¹⁶³ For more information, see https://support.ebsco.com/help/?int=ehost&lang=en&feature_id=&TOC_ID=Always&SI=0&BU=0&GU=1&PS=0&ver=&dbs=amed,rh,ufh,nlebk,ecn,eue,eric,he v,8gh,lxh,msn,rvh,pdh,pzh,psych,bwh,trh,cmedm,bth,kah,mzh,ram.

improve institutional infrastructures. Yet, for the most part, the term remained on the fringes.

Figure 1. Count of documents in Google Books Ngram Viewer containing the term “world-class universit*”, 1970-2019.



The second half of the twentieth century saw a marked increase in the term’s frequency, beginning in the late 1970s and dramatically spiking in the 1980s and 1990s. The increase in usage during this period can be potentially attributed to the growing importance of higher education in a more globalised world, and increased competition among universities to achieve a status of global recognition.

Diving deeper into the numbers, the twentieth century, from 1900 to 1999, saw a combined total of 2,373 mentions, amounting to about 10% of the total. However, the pace significantly accelerated in the twenty-first century. From 2000 to 2019 alone, there were 22,397 mentions, corresponding to about 90% of the total, marking almost a tenfold increase in just two decades as compared to the entire previous century.

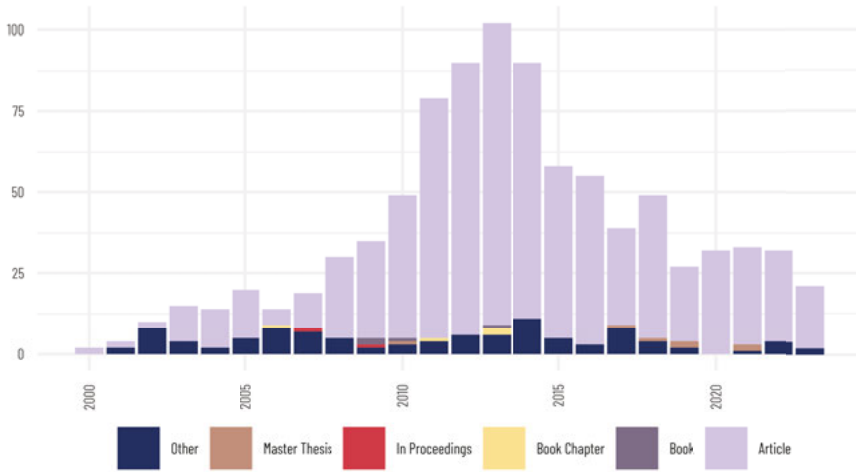
This surge in the twenty-first century correlates with significant events in higher education. The advent of global university rankings, which began to flourish in the early 2000s, placed a magnifying glass on universities’ global reputation. Notably, the term’s usage almost tripled between 2000 and 2004, jumping from 261 to 727. Coinciding with this is the Bologna Process initiated in 1999, aimed at harmonising higher education standards across Europe, which could have further propelled the aspiration for a “world-class” status.

By 2007, mentions of the term soared to 1,010 and reached its peak in 2012 with a whopping 2,316 mentions. However, past this point, the usage experienced fluctuations. In 2016, there was another notable rise with 2,508 mentions. After that, the use of the term continued to fluctuate, following a declining trend.

It should be noted though that this decline is relative to the explosive expansion of previous years. In 2019 over 1,000 documents still made use of the term.

The same search within the EBSCO databases generated 921 unique items recorded up until the year 2023, which are visualised in Figure 2. This database also makes available the type of document in six categories: books, book chapters articles, proceeding papers (In Proceedings), master theses, and miscellaneous (other). The results of this search confirm the prominence of the use of the term during the twenty-first century.

Figure 2. Count of documents available in EBSCO databases, 2000–2023.



Within this corpus, the notion most often appears in articles. The earliest mention was a solitary instance in 1989. However, after the year 2000, one can observe a clear upward trajectory. Notably, there was a surge from a mere 2 mentions in 2002 to 11 in 2003. The peak was reached a decade later, in 2013, with a staggering 93 mentions. Thereafter, mentions began to decline, tapering down to 19 by 2023. In total, articles accounted for 762 mentions during this period. Books and book chapters, on the other hand, offered a more modest contribution. The records indicate sporadic mentions in the years 1995, 2006, 2009, 2010, 2011, and 2013, cumulatively totalling 9.

To offer perspective, we can draw parallels to the results from the search in Google Books Ngram Viewer—which doesn't discriminate between document types. The previous search similarly emphasised a significant spike in the twenty-first century, specifically around 2012. This trend is mirrored by EBSCO results, especially within the articles category where 2012 marked 84 mentions. The prior dataset highlights the term's popularity in books, while the current analysis underscores that articles are also predominant carriers of this terminology.

Both patterns align with the emergence of global university rankings in the early 2000s, more specifically with the debut of ARWU and THE/QS. To these events we may add the inception of organisations like the IREG in 2002 and its formalisation as an Observatory in 2009, the celebration of the First Conference on World-Class Universities in 2005, and the publication of key documents such as The Berlin Principles in 2006. This temporal alignment points to a substantial influence these developments may have exerted on the term's adoption and propagation within academic literature.

The World-Class University in the Web of Science

Frequency and Distribution over Time

Upon investigating the Core Collection of the Web of Science (WoS), a total of 10,262 items were found, all indexed between 1992 and 2022.¹⁶⁴ A detailed examination of these documents' temporal distribution reveals a fluctuating pattern that does not correspond with the general indexing trend during the same period, as illustrated in Figure 3.

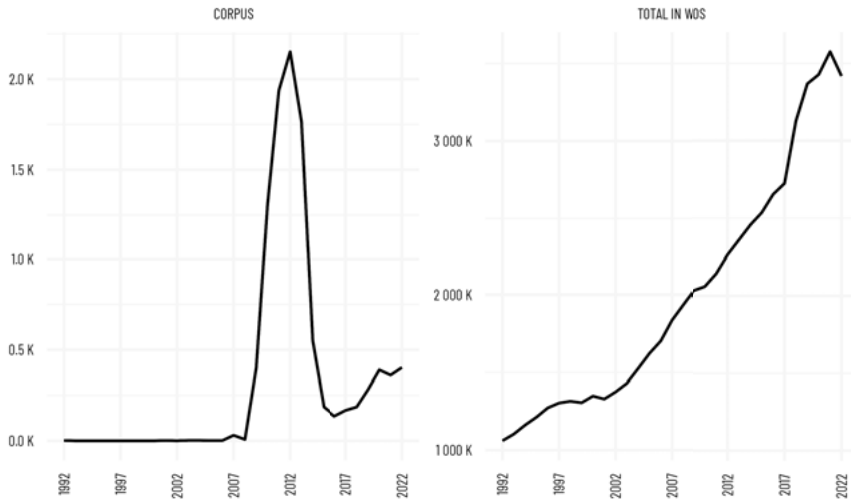
From 1992 to 2001, the term was virtually dormant. A lonely mention in 1992 and another in 2001 mark a decade characterised by an almost complete absence of the term within the publications indexed in WoS. However, once again the early years of the twenty-first century hint at a gradual awakening. Sparse mentions are observed from 2003 to 2006, with the count never exceeding two per year. Yet, it's important to recognise that these mentions, though modest in number, depict a more consistent use of the term over time.

The years 2007 and 2008 register a sudden surge to 30 mentions followed by an immediate decline to 7. This could potentially indicate a catalytic event or the inception of a significant discourse around the term. Indeed, bringing back the remarks from the first section of this chapter, the publication of the book compiling contributions from the First Conference on World-Class Universities titled *The World-Class University and Ranking: Aiming Beyond Status* came out in 2007, and most chapters were individually indexed in WoS databases, which may explain this otherwise puzzling fluctuation.

Then, an explosive proliferation was registered in 2009. A staggering 400 mentions indicate not just the mainstream presence of the term but perhaps some degree of centrality in academic discussions or its intersection with significant global events or trends. From 2010 to 2013, the terms' usage reached its zenith. A crescendo in 2012 with 2,151 mentions depicts its peak prominence. But just as rapidly as it rose, it began to decline. By 2014, mentions plummeted to 550. It's a drastic drop, yet we should note that it still towers over the figures from the decade prior.

¹⁶⁴ Results from <https://www.webofscience.com/wos/woscc/> accessed 2023-08-20.

Figure 3. Count of documents indexed in the Web of Science, 1992–2020.



The latter part of this decade, from 2015 to 2022, portrays a presence of the term that, while no longer in its heyday, continues to resonate. Mentions stabilise to the hundreds, with slight fluctuations. In 2019, mentions climbed to 281, and by 2022, they marginally increased to 402, showcasing a term that remains pertinent yet not as popular as in previous years.

In comparison to the results from Google Books Ngram Viewer and EBSCO databases, the trajectory of the presence of the term “world-class university” in scientific literature seems drastically different. While the earlier results showcased a steady ascent, particularly in articles, the same search in WoS depicts explosive growth followed by a descent, then stabilisation. This oscillation might suggest that the term resonated deeply for a specific period due to certain conditions or events but found sustained relevance thereafter, albeit at a lesser intensity.

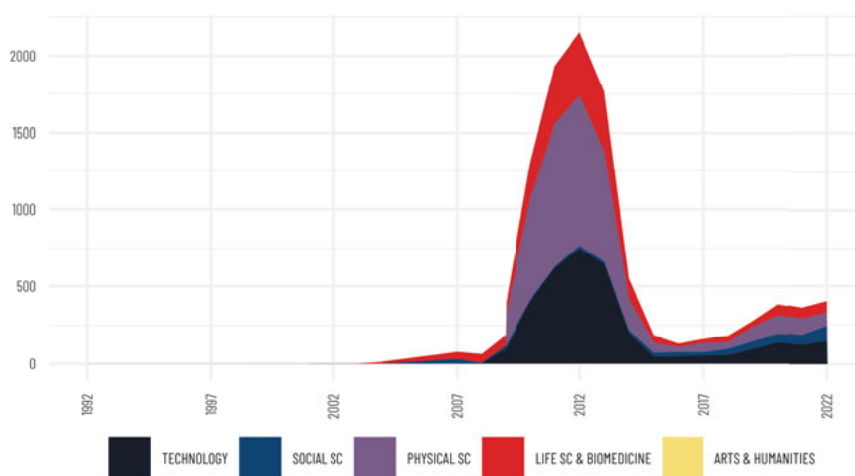
Disciplinary Distribution

Considering the disciplinary distribution, the Core Collection of the WoS organises documents into five major research categories: Arts and Humanities, Life Sciences and Biomedicine, Physical Sciences, Social Sciences, and Technology.¹⁶⁵ In the early 1990s, the term seemed to be primarily associated with Life Sciences and Biomedicine disciplines, albeit with just a single mention in 1992. The subsequent years, up to 2001, saw no recorded usage in any discipline, creating a void already noted above. However, the dawn of the new millennium marked a subtle shift, with the term being utilised in the Technology domain in 2001.

¹⁶⁵ For a more detailed account of the disciplines included in each research area, please see https://images.webofknowledge.com/images/help/WOS/hp_research_areas_easca.html

The next few years marked the term's presence branching out to various disciplines. By 2003, Arts & Humanities and Life Sciences and Biomedicine each had a single mention, while 2004 saw its adoption in the Social Sciences with two instances. Technology seemed to show a growing interest with one mention each in 2005 and 2006. A pivotal moment arrived in 2007 when Social Sciences showcased a surprising surge, recording 30 mentions. The subsequent year, the same discipline had four mentions, while Technology trailed closely behind with three.

Figure 4. Distribution of documents indexed in the Web of Science according to the research area, 1992–2022.



By 2009, the term had proliferated across multiple disciplines. Physical Sciences led the charge with 208 mentions, followed by Life Sciences and Biomedicine at 69, Technology at 100, and Social Sciences with 23. The pattern continued to intensify from 2010 to 2013, with Physical Sciences consistently dominating, reaching its peak in 2012 with 975 mentions. Meanwhile, Technology and Life Sciences and Biomedicine maintained their momentum, exhibiting steady growth.

After 2013, while the term's usage declined, it remained significant across disciplines. Technology and Life Sciences and Biomedicine saw a moderate decline but maintained a consistent presence. Interestingly, Social Sciences, which had shown an initial surge, witnessed a steadier trend, especially noticeable in 2022 with 90 mentions. Physical Sciences, after its dramatic rise, began to gradually temper down, recording 87 mentions in 2022. Throughout the analysed period, Arts & Humanities remained the least engaged with the term, albeit with sporadic mentions—so few that this discipline is invisible in the figure. This could indicate the term's peripheral relevance to this domain. Figure 4 showcases this distribution.

Context of Appearance

At this point, one may ask whether the “world-class university” has become a topic of multidisciplinary interest. To assess this hypothesis, it becomes relevant

to inspect in what data field the term was present for each indexed document. These data fields include the abstract, keywords, title, source name, funding agency, and/or funding acknowledgements. These search hits can be broadly grouped into two analytical categories: those that are *funding-related*, when the term exclusively appears within the fields of the funding agency and/or funding acknowledgements fields; and those that are *topic-related*, when the term emerges in the abstract, keywords, title and/or source name.

By analysing the results in this way, it becomes clear that the large presence of the term in the documents indexed in WoS is due to funding. Indeed, a whopping 97% of the corpus corresponds to publications funded by programmes or initiatives containing the term “world-class university” in their name. Of these funding-related documents, 4,292 pertain to Physical Sciences, 3,377 to Technology, 1,990 to Life Sciences and Biomedicine, 231 to Social Sciences, and 13 to Arts and Humanities. More details are displayed in Table 1.

Examining the temporal distribution of these two categories of documents (funding-related and topic-related) reveals diverging patterns. The trajectory of funding-related publications corresponds with the analysis of the general trend discussed above, where an explosion in presence followed by a decline and then stabilisation could be noted. Interestingly, the rise of the world-class university has led to an uneven playing field that favours certain types of institutions over others, enhancing the reputational capital of STEM-focused universities while potentially disadvantaging those centred on the humanities and social sciences. This implies that the notion of world-class universities is entangled with a certain bias towards science and technology that could shape the future trajectory of higher education. Considering the broader scope of this project, the documents related to funding raise additional questions that demand further scrutiny, which extends beyond the primary focus of this research. Therefore, I will refrain from delving deeper into this matter, beyond the observations already made.

As shown in Figure 5, the surge in documents between 2010 and 2013 can thus be largely attributed to publications funded by world-class university initiatives. This finding provides a compelling explanation for the disproportionate concentration of documents during this period, elucidating the relationship between the presence of the term and the funding directed towards world-class initiatives. However, the trajectory of topic-related texts tells a different story; one where the interest in discussing the term follows a relatively steady increase.

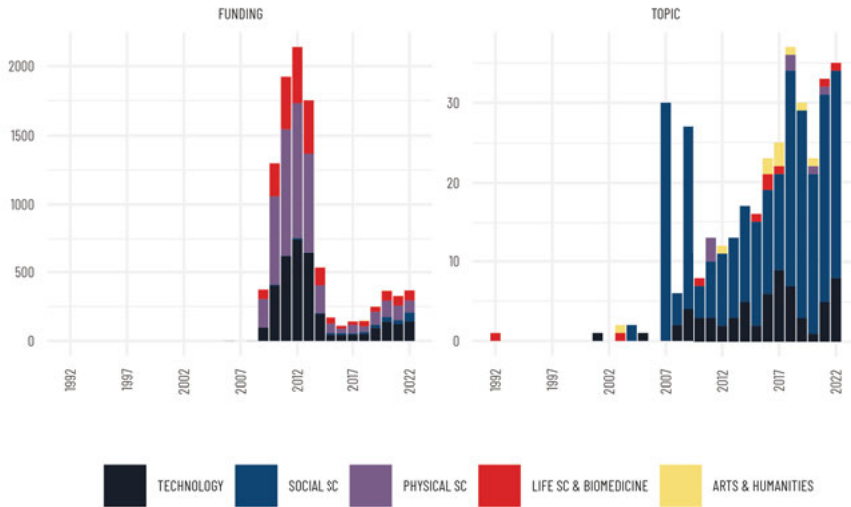
Table 1. Distribution of documents by discipline and context of the appearance of the term “world-class universit*”.

<i>Research Area</i>	<i>Type of Presence</i>	<i>N of Documents</i>	<i>% in Category</i>	<i>% in Total</i>
Arts & Humanities	Topic Related	10	2.8	0.1
	Funding Related	13	0.1	0.1
	Both	0	-	
Life Sciences & Biomedicine	Topic Related	9	2.5	0.1
	Funding Related	1,990	20.0	19.0
	Both	0	-	
Physical Sciences	Topic Related	7	2.0	0.1
	Funding Related	4,292	43.0	42.0
	Both	0	-	
Social Sciences	Topic Related	264	74.0	2.6
	Funding Related	231	2.3	2.3
	Both	2	50.0	0.0
Technology	Topic Related	65	18.3	0.6
	Funding Related	3,377	34.0	33.0
	Both	2	50.0	0.0
Total	Topic Related	355	-	3.5
	Funding Related	9,903	-	96.5
	Both	4		0.0

Results further suggest that funding associated with “world-class university” initiatives exhibits a clear bias towards STEMM (Science, Technology, Engineering, Mathematics, and Medicine), represented in the sample by Life Sciences and Medicine, Physical Sciences, and Technology, leaving the research areas of Social Sciences and Arts and Humanities underrepresented. Such a trend raises the possibility that the institutionalisation of the world-class university—its embracement as a benchmark for all higher education institutions—exerts a form of symbolic violence on the landscape of academic research. This focus on STEMM aligns with the broader societal trend towards technocratic forms of knowledge.

Interestingly, the rise of the world-class university has led to an uneven playing field that favours certain types of institutions over others, enhancing the reputational capital of STEMM-focused universities while potentially disadvantaging those centred on the humanities and social sciences. This implies that the notion of world-class universities is entangled with a certain bias towards science and technology that could shape the future trajectory of higher education. Considering the broader scope of this project, the documents related to funding raise additional questions that demand further scrutiny, extending beyond the primary focus of this research. Therefore, I will refrain from delving deeper into this matter, beyond the observations already made.

Figure 5. Count of documents indexed in the Web of Science containing the expression “world-class universit*” by research area, 1992–2020.



Geographical Distribution

Let’s turn now to the exploration of the geographical distribution of the results, according to the addresses reported by the main authors.¹⁶⁶ Remarkably, the term’s footprint extends across a vast array of 64 nations, encompassing every significant region of the globe. This ubiquity underscores the term’s overarching influence and global pertinence in scientific literature. When the results are differentiated based on the nature of the publication—either funding-related or topic-related—the spread shifts slightly. The former includes 59 nations, while the latter includes 45 countries. Notably, South Korea emerges as the largest player in this domain, accounting for a striking 56% of all funding-related articles. This data is indicative of the nation’s dedication and robust investment towards fostering the creation of “world-class universities”.

Trailing South Korea, the US and China mark their presence with 14% and 11%, respectively. Together, these three countries command an overwhelming 80% share of such publications. This trio’s dominance somewhat dilutes the narrative of the term’s universal footprint. Moreover, the subsequent nations—Japan, Taiwan, Indonesia, and the UK—highlight a distinct concentration in Asian and Anglo-Saxon territories.

¹⁶⁶ There were 18 publications where the main author’s address was not reported. In these cases, the publisher address was used instead.

Figure 6. Documents indexed in Web of Science containing the term “World-Class University” by Geographical Origin, 1992–2020.



Shifting our focus to topic-related publications, we encounter a more diverse geographical landscape. China stands out as the main producer, outputting 29% of the publications. The US, with 11%, settles in the second spot. The subsequent coun-

tries, namely Russia (7%), the UK (6%), Australia (5%), and Spain (5%), paint a picture of broader global engagement, reinforcing the term's worldwide resonance.

All in all, nations like China, South Korea, the US, and the UK emerge as pivotal regarding the presence of the term “world-class university” within the scientific literature. A recurring theme, echoing from our initial analysis, is the pronounced interplay between Asia and Anglo-Saxon powers in the global academic arena concerning this term.

4.3 Concluding Remarks

The emergence of the global sub-field of universities centred around the notion of the “world-class university” and closely tied to global university rankings, represents a significant development in the higher education sector. This chapter has traced the formation of a global sub-field, grounded in the development of a field-specific discourse, the emergence of field-specific institutions, and the introduction of a field-specific evaluation system.

The field-specific discourse that has evolved around the “world-class university” label is both a product and a catalyst of the globalisation of higher education. Influential organisations like the IREG Observatory and the Center for World-Class Universities, often in collaboration with UNESCO, have played a pivotal role in shaping this discourse. Their activities have not only fostered a competitive environment among higher education institutions but also set the standard for what it means to be “world-class”. This standardisation process has been deeply embedded within the broader socio-political context, reflecting global educational trends and reinforcing the notion of competitive excellence.

The establishment of institutions such as the IREG Observatory and the recurring organisation of conferences bearing “world-class university” in their titles, typically tied to ranking assessments, further legitimised and normalised the use and understanding of this notion. The adoption of international frameworks such as the Berlin Principles and the proliferation of guiding literature have provided a shared language for university ranking and assessment. This institutionalisation has introduced a new form of symbolic capital within the higher education landscape, transforming how universities are perceived and valued globally. Government entities, international organisations, and academic institutions have all contributed to this transformation, elevating the concept from a mere buzzword to a globally recognised standard.

Central to the development of this sub-field is the emergence of a field-specific evaluation system, epitomised by global university rankings. These rankings have become more than just a superficial catalogue of institutions; they represent a global axis of comparison and competition. The existence of these rankings has profoundly influenced policies, strategic decisions, and the identities of higher education institutions. They have spurred makeovers in the pursuit of a broadly

recognised and highly coveted standard, shaping the very dynamics of higher education on a global scale.

The imposition of the “world-class” standard, while seemingly objective, carries undertones of symbolic violence. It enforces a homogenising influence, compelling institutions to conform to a set standard, often at the expense of local educational values and priorities. This process of standardisation, while promoting global connectivity, also leads to stratification within the higher education sector, creating hierarchies and disparities between institutions. The relentless pursuit of this ideal often obscures the diverse educational missions and local contexts of universities, leading to a form of symbolic violence that privileges certain forms of capital—notably, those aligned with the “world-class” criteria.

The bibliometric investigation into the term’s representation in scholarly articles highlights a strong association with funding, especially favouring the STEM fields. This suggests an underlying bias; the term “world-class university” seems to subtly dictate that the pinnacle of academic excellence adheres to the modus operandi of STEM disciplines. This influence is evident, for instance, in the increasing push for academic disciplines traditionally known to produce books to pivot towards fast-paced article publishing. This shift aligns with the evaluation criteria predominantly reflected in global university rankings.

In a side observation, while still minimal, there’s a growing number of scientific papers critically discussing the “world-class university” concept. This growth stands in contrast to the decreasing number of publications stemming directly from “world-class university” funded projects.

The Gospel of Rankings: Principles of Vision and Division

Over the last two decades, global university rankings have become influential tools capable of shaping the decision-making processes of various stakeholders in higher education across the world. Annually, several evaluators publish their metrics, each seeking to provide a comprehensive comparison of universities worldwide. This systematic ordering of institutions endorsed and regulated by entities such as the IREG Observatory has undeniably profound impacts on the sector. On its website, the IREG Observatory¹⁶⁷ publishes a document titled “IREG Guidelines for Stakeholders of Academic Rankings”, providing advice to various groups of interest on how to use rankings.

In short, the IREG Observatory strongly encourages stakeholders such as students, parents, and employers to use university rankings primarily as a strategic tool for informed decision-making. For students and parents, these rankings serve as a compass, informing them about where best to invest in higher education. Employers, on the other hand, can leverage these rankings to guide their recruitment decisions. Similarly, the Observatory advises larger institutions, comprising governments, funding agencies, universities themselves, rankings’ publishers, and quality assurance organisations, to integrate ranking results into their strategic frameworks. According to the IREG, these rankings can guide these institutions in strategic planning, the allowance of international scholarships and research grants, devising marketing strategies, promoting academic excellence, evaluating research and teaching quality, and selecting potential academic partners.¹⁶⁸

Upon reviewing the document available through the website, it stands out that the IREG Observatory bestows a great deal of authority on global university rankings, particularly on those endorsed by the organisation. This conferred authority seems to echo throughout the actions of stakeholders; as previously explored in chapters 1 and 4, studies show that most actors appear to align their behaviour in accordance with these suggestions. Whether they do it with full awareness of this alignment or not, and whether these rankings genuinely steer their decisions

¹⁶⁷ See <https://ireg-observatory.org/en/>, accessed 2024-02-08.

¹⁶⁸ See <http://www.anc.edu.ro/wp-content/uploads/2022/05/ieg-guidelines-for-stakeholders-of-academic-ranking.pdf>, accessed 2024-02-08.

or simply provide a post-decision rationalisation,¹⁶⁹ are thought-provoking aspects worthy of further debate but go beyond the scope of this study.

In this chapter, I study the rules governing ranking evaluations, highlighting what kinds of assets are most relevant to characterise, differentiate and analyse the relationship between the featured universities. Thereafter, I inspect what institutions, countries and regions are covered by these metrics to clarify what hierarchies emerge from these evaluation processes. The chapter then concludes with an overview of the main findings.

5.1 Sorting the Wheat from the Chaff

Although the practice of comparing higher education institutions by using national and regional rankings began a long time ago, the publication of ordered lists covering multiple regions of the world is a relatively recent development in higher education. As of January 2024, the IREG Observatory recognises 17 global university rankings. Among these evaluators, three stand out as pioneers: The Academic Ranking of World Universities (ARWU)¹⁷⁰ first published in 2003 by the Center for World-Class Universities founded at the Shanghai Jiao Tong University, as well as the Quacquarelli Symonds World University Ranking (QS) and Times Higher Education World University Ranking (THE), which began as a joint publication in 2004 and later split in 2010.¹⁷¹ Whereas ARWU emerged as an initiative linked to the interests of the Chinese government, QS and THE were created by private companies based in the UK.¹⁷² Originally, ARWU set its focus on the comparison between universities from the US and China in a very explicit manner. So, even if no pioneering global university ranking enterprise was based in the US, this country still became a main point of reference during the emergence of global university evaluations.

Candidate Selection

Beyond their chronological and geographical origin, these three publications most notably differ from each other in the methodologies they use to select and evaluate institutions—that is, in the definition and operationalisation of their notions of world-class. Regarding the selection of candidate institutions, ARWU considers for evaluation “every university that has any Nobel Laureates, Fields

¹⁶⁹ One could think of a scenario where a master’s student is advised by their supervisor to apply for a PhD position in a given university based on his own networks and then emphasise the fact that such institution occupies a high position in this or that ranking. One can also take as an example the case of some scholarships (Becas Chile) that require candidates to apply for places in the top 100 institutions.

¹⁷⁰ Widely known as the Shanghai Ranking.

¹⁷¹ O’Leary, ‘The Origins of International Rankings’, 66.

¹⁷² Usher, ‘A Short Global History of Rankings’, 37.

Medallists, Highly Cited Researchers, or papers published in *Nature* or *Science*” as well as “universities with a significant amount of papers indexed by Science Citation Index-Expanded (SCIE) and Social Science Citation Index (SSCI).” This filtering results in a total of more than 2,000 institutions of which only half are listed.¹⁷³ Because of the emphasis placed on Nobel Laureates and Field Medallists, we can already presume a bias toward institutions with higher investments in STEMM (science, technology, engineering, mathematics, and medicine) in the lists produced by this ranking given the scope of the awards themselves. Furthermore, this inclusion criterion also reveals a heavier reliance on the scientific rather than on the educational dimension of universities, therefore hinting at the refraction of the order existing in scientific fields.

QS includes universities that “provide full degree programs (undergraduate or postgraduate) in at least two out of five broad subject categories” each offering at least two narrow subjects and having “at least three graduating classes in those narrow subjects”. These institutions must offer courses “at both undergraduate and postgraduate levels”, have a minimum number of 100 papers indexed by Elsevier’s Scopus database, as well as be ranked in one of QS’s regional rankings before making it into the global list.¹⁷⁴ Finally, to be considered by THE, a given university must have published “more than 1,000 relevant publications over the previous 5 years, and more than 150 relevant publications in any single year”, “teach at an undergraduate level”, have a broad disciplinary focus (they cannot publish more than 80% in just one subject area), and supply their overall numbers for the ranking year—including academic staff, international academic staff, research staff, students, international students, undergraduate degrees awarded, doctorates awarded, institutional income, research income, research income from industry and commerce.¹⁷⁵ The criteria observed by these latter two rankings suggest a more balanced reliance on both the scientific and educational dimensions of universities, as well as a more specific focus on international recruitment of both staff and students.

Summing up thus far, ARWU considers universities that stand out in some of the most prestigious instances of scientific fields, whereas QS and THE display a less selective approach regarding the scientific credentials required from candidate institutions while placing a stronger emphasis on their educational profiles and international recruitment practices. Of the latter two, QS seems to place less importance on the more strictly scientific profile of candidate institutions.

¹⁷³ See <https://www.shanghai ranking.com/methodology/arwu/2022>, accessed 2024-02-08.

¹⁷⁴ See <https://support.qs.com/hc/en-gb/articles/360019154559>, accessed 2024-02-08.

¹⁷⁵ For more details, see https://www.timeshighereducation.com/sites/default/files/breaking_news_files/the_2021_world_university_rankings_methodology_24082020final.pdf, accessed 2024-02-08.

Candidate Evaluation

Now, an inspection of the indicators used by these rankings to evaluate the selected institutions (displayed in Table 2) continues to reflect this divergence. Whilst both QS and THE give a high degree of importance to reputation among scholars and employers (a half and a third of the total score respectively), ARWU does not include an equivalent indicator. Instead, ARWU has historically relied on quantifiable metrics extracted exclusively from third-party sources. ARWU considers Nobel Prize winners and field medallists among alumni and staff of higher education institutions, attributing them a summed weight of 30% of the total score. In turn, both QS and THE disregard these or similar indicators.

Table 2. Indicators used by ARWU, QS and THE.

<i>Evaluator</i>	<i>Indicator</i>	<i>Weight</i>
ARWU	Alumni of an institution winning Nobel Prizes and Fields Medals	10.0%
	Staff of an institution winning Nobel Prizes and Fields Medals	20.0%
	Highly Cited Researchers	20.0%
	Papers published in Nature and Science	20.0%
	Papers indexed in Science Citation Index-Expanded and Social Science Citation Index	20.0%
	Per capita academic performance of an institution	10.0%
QS	Academic Reputation	40.0%
	Employer Reputation	10.0%
	Faculty/Student Ratio	20.0%
	Citations per faculty	20.0%
	International Faculty Ratio	5.0%
	International Student Ratio	5.0%
	International Research Network (added in 2022 for the 2023 edition)	0.0%
	Employment Outcomes (added in 2022 for the 2023 edition)	0.0%
THE	Teaching Reputation	15.0%
	Staff-To-Student Ratio	4.5%
	Doctorate-To-Bachelor's Ratio	2.3%
	Doctorates-Awarded-To-Academic-Staff Ratio	6.0%
	Institutional Income	2.3%
	Research Reputation	18.0%
	Research Income	6.0%
	Research Productivity	6.0%
	Citations (Research Influence)	30.0%
	Proportion of International Students	2.5%
	Proportion of International Staff	2.5%
	International Collaboration	2.5%
	Industry Income (Knowledge Transfer)	2.5%

Sources: <https://www.shanghairanking.com/methodology/arwu/2022>, <https://support.qs.com/hc/en-gb/articles/9051022681500-QS-World-University-Rankings-previous-methodology>, and <https://www.timeshighereducation.com/world-university-rankings/world-university-rankings-2022-methodology>; accessed 2024-02-08.

The consideration of indicators related to scientific awards could ground two apparently opposing hypotheses. On the one hand, it may suggest that a given university could climb up the ladder to higher positions in ARWU by hiring staff holding awards or incentivising them to stay; but on the other, because of how exclusive Nobel Prizes and Field Medals are—with regards to both the winners and the disciplines included in the competition—it could imply that the evaluations made by ARWU on these indicators are very much stable over time.

Out of the three rankings, ARWU is the one that assigns the heaviest weight to research indicators (highly cited researchers, publications in specific journals, and indexations), reaching 60% of the total score—and 70% if we add per capita academic performance (a metric consisting of the weighted scores of the other

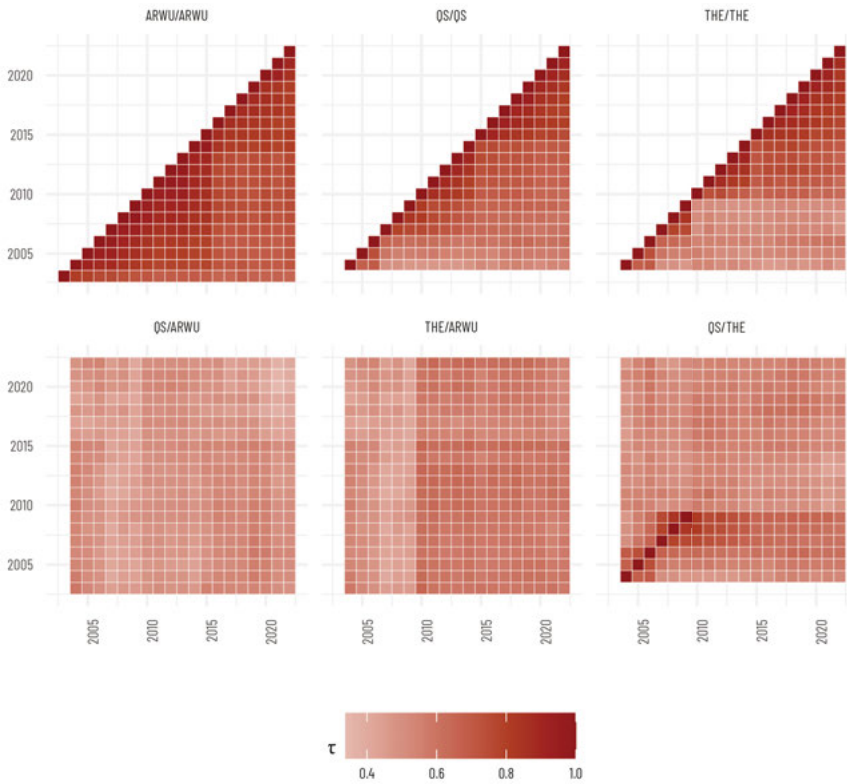
five indicators divided by the number of full-time equivalent academic staff). In comparison, the closest indicator in QS (citations per faculty) amounts to 20% of the total score, and those from THE (research income, research productivity, and citations) reach 42% in total. Once more, this would point towards the premise of greater relative stability in ARWU because of how the scores are measured: what was said for staff with awards can be said for highly cited researchers, as well as researchers favouring submission of papers to *Nature* and *Science*.

The ratio of international students and faculty members bears importance for both, QS and THE, amounting to 10% and 8% respectively (the latter also considers international collaboration); however, these metrics are completely ignored by ARWU. Indicators considering the standing of universities in the labour market appear in both, QS (employer reputation) and THE (industry income), another feature disregarded by ARWU. As of 2022, QS measured the international research network and employment outcomes of the evaluated institutions but assigned these indicators a weight of 0%.

The various indicators and weightings employed by these evaluators to rank the selected institutions serve to underscore the differing priorities of these ranking bodies. ARWU, for example, leans heavily on the positioning of universities within scientific disciplines, while both QS and THE place a higher value on indicators that reflect an internationalised educational and research environment. At a more theoretical level, the variance in indicators and weight assignment highlights an element of arbitrariness in these evaluations. Here, again, *arbitrariness* is used in a Bourdieusian sense, which signifies that the evaluation systems used by rankings are established by social actors and are not inherently dictated by objective or natural laws. Thus, the choice of inclusion or exclusion of a specific indicator, or the decision of its weightage, lacks a definitive logical explanation and instead arises from the subjective judgments and preferences of the evaluators.

Hence, these rankings reflect not only the actual performance of the institutions but also the specific perspectives and priorities of the evaluators themselves. Considering these subjective differences in selection criteria and the varying indicators used by ARWU, QS, and THE to rank institutions, it is reasonable to expect some inconsistency in their respective results. However, as illustrated in Figure 7, a scrutiny of the correlation coefficient of these three rankings over nearly two decades unveils a good level of agreement (with an average τ value of 0.60). There are no instances of negative correlation, and the lowest value is τ approximately equal to 0.34, indicating a generally fair relationship between all three evaluators. The most potent correlations are found within each evaluator, that is when juxtaposing the lists produced by the same evaluator across different years. Among these, ARWU displays the highest internal correlation with a τ value of 0.65, followed by QS with τ at 0.47, and lastly THE with a τ value of 0.46.

Figure 7. Correlation coefficient (Kendall's τ)¹⁷⁶ of the lists published by ARWU, QS, and THE between 2003–2022. The first evaluator corresponds to the vertical axis; the second evaluator corresponds to the horizontal axis.



Between rankings, ARWU and QS have the lowest average correlation at $\tau = 0.49$ within a range of 0.34–0.59. Next, ARWU and THE have an average correlation of $\tau = 0.55$ within a range of 0.4–0.65. Finally, QS and THE have the highest average correlation at $\tau = 0.57$ within a range of 0.43–0.77 (excluding the years when they were a joint publication). The reliance on different sets of indicators seems a good explanation for these similitudes and discrepancies. Whilst ARWU draws heavily on indicators reflecting certain metrics of scientific production and recognition via awards, QS and THE explicitly incorporate scores on subjective reputation, internationalisation, and labour market. The perfect coincidence between QS and THE between 2004 and 2009 responds to the fact that during that period they published together. That's also why during the same period the relationship between ARWU and THE looks the same as ARWU and QS.

¹⁷⁶ The coefficient was calculated using a complete-case analysis (pairwise deletion) within the top 100 institutions.

Do these findings challenge the argument that the choice of indicators entails an arbitrary process? Not necessarily. What these findings show is that ranking results are not random, but their arbitrariness prevails. What's measurable and what's measured, as well as how it's measured, are all products of the socio-historical trajectories of practices across multiple fields.

To illustrate, let's consider the institutionalisation of prestige through awards like the Nobel Prize. While winning such an accolade undoubtedly boosts a university's reputation, the criteria for awarding the Nobel Prize are formulated by its committee members, reflecting their values and beliefs—not to mention the disciplinary bias. Similarly, the emphasis on productivity, often gauged by research outputs and citations, is not an *a priori* indicator of academic contribution.

The fact that these rankings often converge, especially at higher tiers, underscores a globally shared, albeit arbitrary, perception of institutional prestige. It mirrors the socio-historical paths that shape practices in higher education across various fields. For instance, even as ARWU aims for heightened objectivity by focusing on third-party indicators, it can't escape the inherent biases. When Professor Liu sought to broaden the ranking's scope, he faced the challenge of ensuring the indicators were relevant globally, given the varied metrics provided by different countries and institutions. The weights attributed to these indicators further exhibit the lack of universal formulas in ranking, reinforcing the inherent subjectivity in the process.

Having examined the correlation coefficient of ranking positions, I will now develop a more in-depth analysis of ranking evaluations by looking at the resulting ordination of geographical units and institutions.

5.2 The Ordination

Let us turn to the exploration of geographic coverage, institutional variation, and corresponding ordering reproduced by rankings. I will first focus on the ranking ordination of geographical units by answering what regions and countries are included in each metric and how they perform in the evaluations. I will then move on from the description of the geographic hierarchies derived from the ranking results to the analysis of the institutions occupying the top tiers of these lists.

Geographic Coverage

All three rankings call themselves “world university rankings”, implying that they cover all regions of the globe—where there are universities, of course. Indeed, their published results support this implication; ARWU, QS, and THE include in their ordered lists institutions located in countries from all larger geographical regions. The quantity—the number of institutions by country and region—and quality—the positions where the institutions from these countries and regions appear—of this coverage vary.

Quantity

Previous studies have stressed time and again the overall quantitative dominance of North American and European institutions.¹⁷⁷ A general overview of the ranking coverage per region sustains this claim, although with certain caveats regarding time, the evaluator, and whether the inspection is carried out on absolute or relative terms. Let us carry out both examinations.

Absolute Ranking Coverage

I call “absolute ranking coverage” the ranking coverage defined solely by the count of institutions featured in the rankings, i.e., with no external reference for comparison. Below, Figure 8 shows the percentage of each region of the world¹⁷⁸ covered by the big three between 2003 and 2022. During the study period, the total count of institutions featured in all three rankings—ARWU, QS, and THE—increased to encompass 1,000 institutions. ARWU, initially showcasing 500 institutions annually from 2003 to 2015, expanded to 800 in 2016 and further increased to 1,000 from 2017 onwards. Interestingly, the most dramatic changes occurred precisely after these two years, which may indicate that the growth of Asia may have started in lower tiers.

QS and THE, both starting with 200 institutions, followed different growth trajectories. QS expanded to approximately 500 in 2010, then to 700 institutions between 2011 and 2015, jumped to over 900 for the years 2016 and 2017, and finally reached 1,000 from 2018 onwards. Conversely, THE maintained a count of 200 institutions in 2010, increased to 400 in 2011, expanded significantly to 800 in 2015, and, like the others, reached 1,000 institutions from 2017 onwards. Once more, the more dramatic changes in the distribution of their coverage tend to coincide with the years of expansion, and once more, the inclusion of lower tiers seems to include in these cases more institutions from Asia and the Americas¹⁷⁹ in QS, and from Asia, the Americas, and Africa in the case of THE.

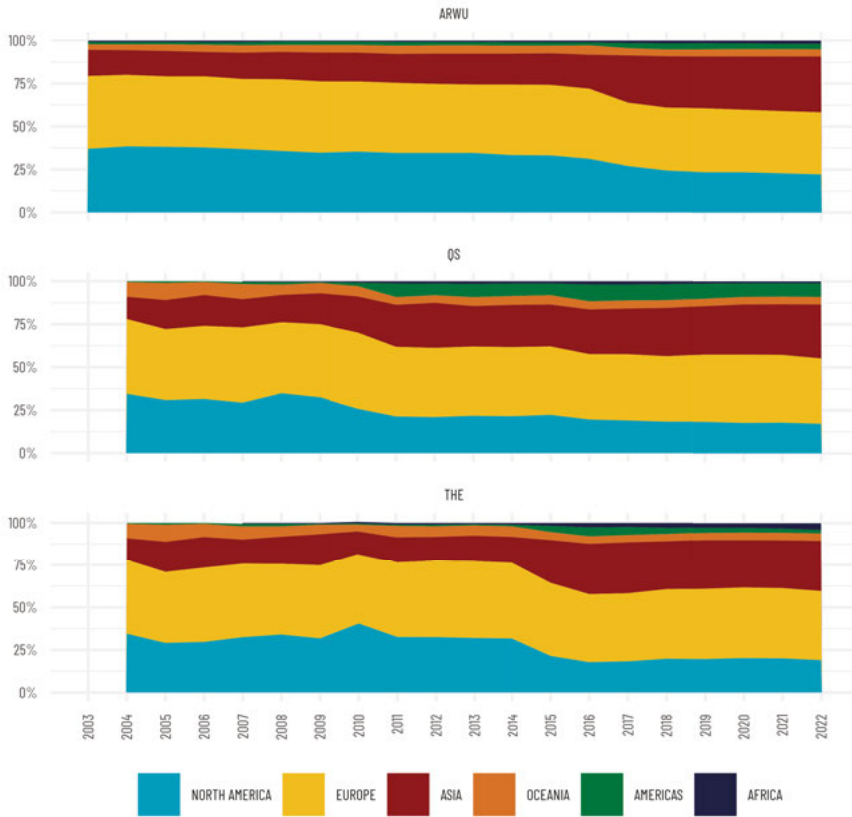
Starting with ARWU, it’s possible to see a marked increase in Asian institutions following the expansion to 1,000 universities after 2015, suggesting that the growth of this region took place in the new lower tiers. Conversely, Europe’s once dominant position has gradually declined, indicating a shift toward a more inclusive and diverse ranking population. North America has also seen a decrease in quantitative representation. Meanwhile, the rest of the Americas and Africa show a modest but steady increase, signalling growing recognition in the global academic community. Finally, Oceania’s representation remains relatively stable with a slight fluctuation over the years. There hasn’t been a significant increase or decrease, suggesting a steady state of representation of this region in ARWU.

¹⁷⁷ Heike Jöns & Hoyer Michael, ‘Global Geographies of Higher Education: The Perspective of World University Rankings’, *Geoforum* 46 (2013): 45–49.

¹⁷⁸ For cultural proximity, Mexico is included in the region “Americas” and not in “North America”.

¹⁷⁹ For the scope of this study, “Americas” includes countries from Latin America.

Figure 8. Representation of regions of the world in ARWU, QS, and THE between 2003 and 2022 in percentages.



The QS rankings present a similar story. Asia’s representation has consistently grown, being especially noticeable during the ranking’s expansion phases, thus reflecting the region’s expanding presence in global rankings. In contrast, Europe’s share has decreased, mirroring the diversification trend seen in ARWU. North America’s presence, while still significant, shows signs of fluctuation, indicative of the increased global competition. The rest of the Americas and Africa, on the other hand, have seen gradual growth, pointing towards QS’s broader inclusion strategy and the rising visibility of these regions in the global space. In comparison with ARWU, Oceania’s representation shows a decreasing trend with some fluctuation, which tends to coincide again with years of ranking expansion.

THE further reinforces these geographical shifts. Asia’s steady and significant growth post-expansion underscores its increasing role in global university rankings. Europe’s representation also declines, while North America, much like in the ARWU rankings, experiences a diminishing share, indicating a broader trend of decreasing dominance in global university rankings in quantitative terms. The rest of the Americas and Africa continue with rising trends, which have been es-

pecially noticeable since 2015. Meanwhile, Oceania's presence tends to generally decrease with again some fluctuation in years of expansion.

In summary, the expansions in ARWU, QS, and THE rankings are associated with significant geographical shifts. The growing representation of Asian institutions across all rankings is a testament to the region's burgeoning participation in the global university ranking game. At the same time, the declining share of European, North American, and Oceanian institutions reflects a move towards more globally representative ranking lists. The gradual increase in institutions from the Americas and Africa across QS and THE rankings indicates a growing recognition and inclusion of these regions.

As we delve deeper into the study of the distribution of shares by country within their distinct regions, it's important to start with a focus on North America. The lion's share of the representation in this region is owed to one dominating country—the United States of America. The US's impact on the region's representation is substantial, likely due to its considerable influence and size. Though Canada consistently makes its presence known across all three rankings, it does so with only minor fluctuations, its overall representation in absolute terms remaining significantly smaller.

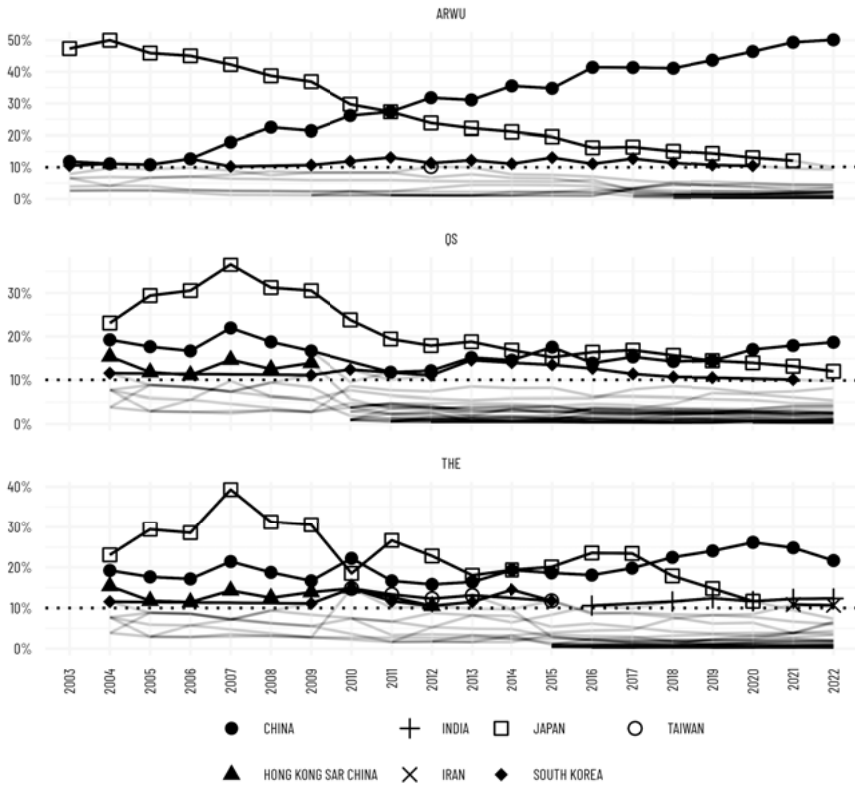
Turning our attention to Asia, its notable expansion is primarily attributed to the steady inclusion of an increasing number of universities from China across all three rankings, with a particular emphasis on ARWU. For a more detailed view, one can refer to Figure 9. In THE, China's growth trajectory reached its zenith in 2020, shifting in the following years, with this country registering a declining representation in both 2021 and 2022 within this ranking. Conversely, Japan, another Asian country with a notable academic presence, seems to be on a downward trajectory, its representation dwindling with each passing year across all three rankings. An interesting trend to note is that each year of ranking expansion (2017 for ARWU, 2011 for QS, and 2015 for THE) aligns with the inclusion of a broader array of institutions from various Asian nations.

South Korea also deserves a spotlight in this analysis. Its trajectory in both the ARWU and QS rankings has remained relatively stable, accounting for a little more or a little less than 10% of the total regional coverage. However, in THE, South Korea's representation dips below this threshold starting from 2016 and fails to rebound within the observed period. From that point forward, India steps up to take the place of South Korea, demonstrating a modest yet steady upward trend in its representation.

Shifting our gaze now to Europe (as depicted in Figure 10), a pair of countries consistently rise above a 10% threshold in terms of regional coverage, maintaining their prominence both over time and across all rankings. The United Kingdom, exhibiting only minor fluctuations in the ARWU until 2017, takes the lead, boasting the greatest number of featured institutions across all three rankings. Indeed, after 2010, the UK accounts for as much as one-fifth of the total regional coverage and even up to one-third before that in both QS and THE rankings. Interestingly, the presence of the UK is consistently much higher in QS

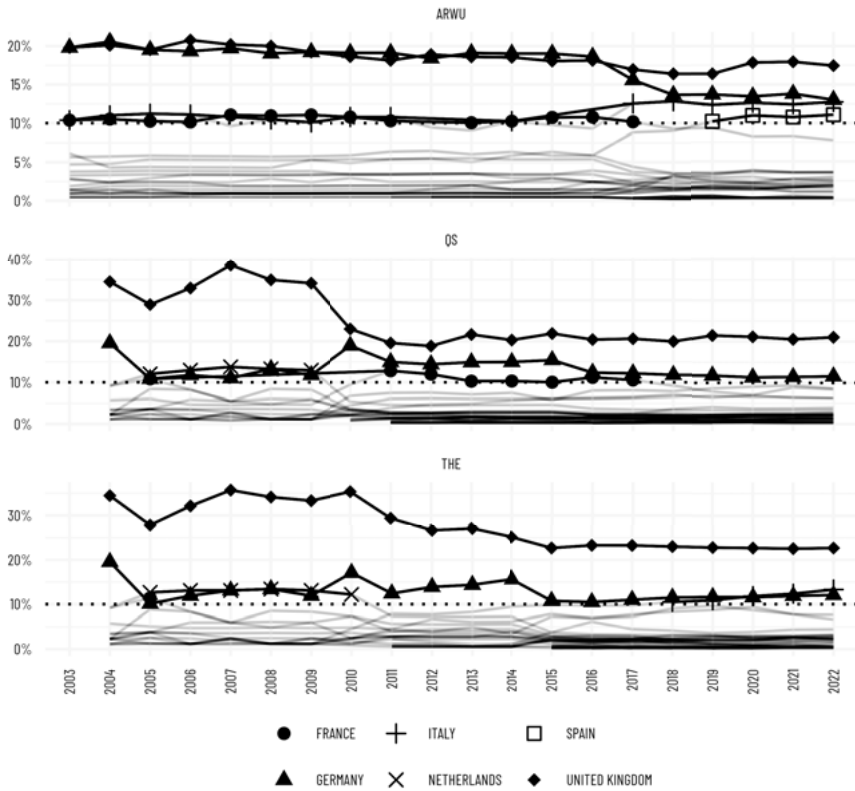
and THE compared to ARWU, and both of these evaluators are actually based in that country.

Figure 9. Country representation over time (2003–2022) in Asia by ARWU, QS, and THE in percentages. The dotted line indicates 10% coverage within the region.



Narrowing our lens onto the performance of Germany and Italy reveals a compelling narrative. Germany secures the second spot, trailing behind the UK, across all rankings—except for the last couple of years in THE. Italy, not too far behind, fluctuates between third and fourth place in ARWU. Following the expansion of ARWU to include 1,000 institutions in 2017, the gap between Germany and Italy narrowed down significantly. Italy, showing a commendable increase in representation, closes in on Germany’s position, making the contest for the second spot a tighter race. Despite this, Germany managed to hold onto its runner-up status. Meanwhile, the UK, securing the lead, widens its lead over Germany. This creates a new disparity between the first and second positions, with the UK consolidating its dominance in terms of institutional representation.

Figure 10. Country representation over time (2003–2022) in Europe by ARWU, QS, and THE in percentages. The dotted line indicates 10%.



Spain marks its emergence in ARWU 2019, charting a consistent growth trajectory since taking fourth place. Notably, in the THE and QS rankings, the Netherlands also features prominently, surpassing the 10% coverage threshold in earlier years. However, its visibility diminished after the rankings diverged in 2010.

A noteworthy pattern emerges wherein the most significant shifts in Europe’s representation appear to coincide with years when the rankings undergo expansion. This trend underscores the dynamic interplay between the number of institutions and their geographic representation within the rankings, providing an intriguing backdrop for understanding the evolving landscape of higher education in Europe.

So far, my analysis has covered over three-quarters of the total geographical representation in these rankings. The primary contributors are North American institutions, especially from the US, Asian institutions predominantly from China, Japan, South Korea, and India, and European institutions, chiefly from the UK,

Germany, Italy, France, and Spain. While other regions have seen increased coverage in recent years—likely due to the rankings’ expansion and not necessarily improved performance—the representation of Latin American and particularly African universities remains marginal. Oceania, with Australia at the forefront, also contributes a minor share, a factor that can be attributed to the relative size of this region.

This raises a crucial question: to what extent is the geographical representation determined by the number of higher education institutions in these regions? For instance, how much of the US’s high representation could be explained by its large number of universities relative to other countries? To assess this, I suggest comparing the rankings’ coverage with the total number of global universities.

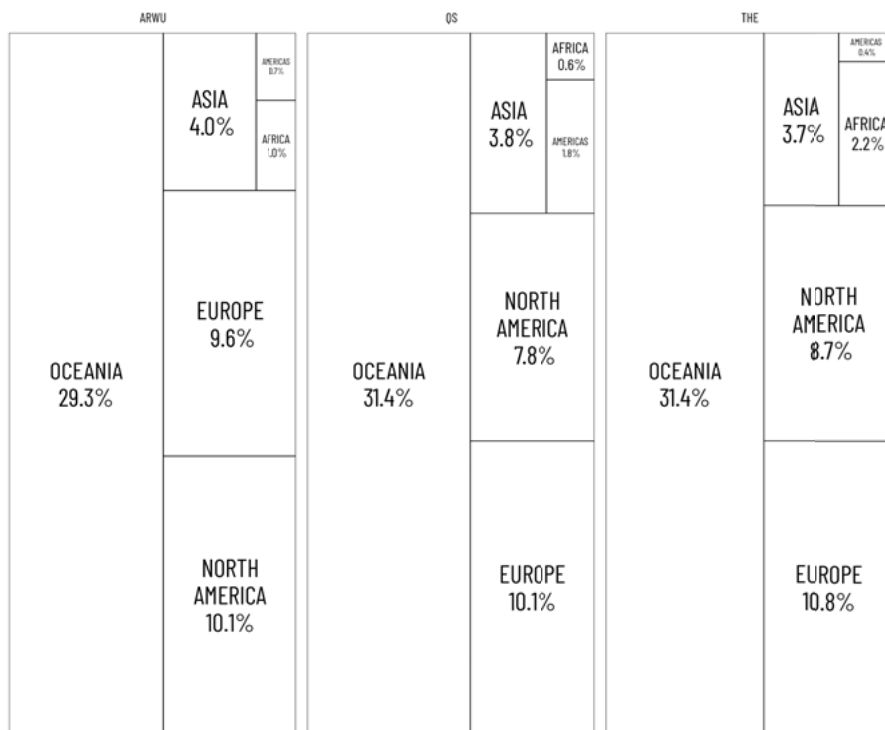
Relative Coverage

I will call “relative ranking coverage” the ranking coverage of regional units in relation to the total number of universities in each country, as reported in the World Higher Education Database (WHED) for 2022. This database, maintained by UNESCO, is a comprehensive and up-to-date directory of higher education institutions worldwide. It offers detailed information on universities and other higher education institutions across various countries. One of its main advantages is the breadth of its coverage; it includes information on over 19,000 institutions in more than 200 countries and territories. Another advantage is its reliability and official status, as it’s managed by UNESCO, a credible and recognised international organisation. This makes WHED a trusted source of information for global higher education systems and institutions. However, there are limitations to the WHED. Its data might not always be fully up-to-date, as the frequency of updates depends on the responsiveness of the institutions themselves and the speed at which UNESCO can process this information. Moreover, since it relies on self-reported data from institutions, there might be variations in the level of detail and accuracy of information provided. Additionally, the database focuses primarily on formal and recognised institutions, potentially overlooking non-traditional or emerging forms of higher education. Despite these limitations, WHED remains a valuable global educational resource and thus represents a meaningful point for comparison.

As we explore this data, we can discern that the three rankings we’re focusing on—ARWU, QS, and THE—reveal strikingly similar patterns in their relative coverage for the year 2022. This correlation can be visualised more clearly in Figure 11, where these patterns are graphically represented, helping us discern the similarities and differences across the rankings. A notable finding is that all three rankings feature an impressive 30% of the total institutions located in Oceania. This high percentage catapults this region into the position of being the most extensively covered in relative terms across all three rankings. This reveals a significant bias towards Oceania, despite its smaller size compared to other regions. Language and culture offer a good explanation for this bias; being an

English-speaking country and a former British colony, it's expected that its higher education system tends to observe similar norms and values.

Figure 11. Percentage of the total number of institutions per region covered by ARWU, QS, and THE in 2022.



North America, on the other hand, comes in at a distant second place in ARWU, with a coverage of just over 10% of its higher education institutions. However, it slips down to third place in both the QS and THE rankings. Europe presents an interesting case, where it clinches the third place in ARWU with a coverage of slightly less than 10% but ascends to the second place in the QS and THE rankings, demonstrating a dynamic shift across different ranking systems.

Asia, by contrast, presents a more consistent picture, with its coverage hovering just under 4% of all its higher education institutions in all three rankings. This consistency, despite the region's vast size and diversity, is a noteworthy aspect of these rankings. Meanwhile, Africa and the Americas are found to be vying for the last position, each demonstrating minimal relative coverage across the three rankings. QS reveals the lowest representation for Africa and the highest for the Americas, while THE presents the inverse scenario. ARWU, however, falls somewhere in between, with Africa slightly edging out the Americas—concerning coverage.

When we shift our focus to country-specific analysis, the commanding position of the US appears more nuanced. While the US's sizable presence in the rankings can be partially attributed to its vast number of universities—the largest in the dataset—there are other elements at play. A closer look reveals that while the US accounts for just over 10% of the total number of universities per country according to the WHED, its representation in the rankings is considerably higher: 20% in ARWU, 15% in QS, and 12% in THE. While these figures confirm an overrepresentation of the US in the three major rankings, the disparity is not as drastic as one might initially assume, particularly when compared to the overrepresentation seen in other nations.

We can find a stark example of this within North America itself, specifically in Canada. Despite representing less than 1% of the universities reported by WHED, Canada constitutes a significantly larger share of the rankings: 4% of ARWU, 4% of QS, and 3% of THE. This reveals a disproportionate representation, with ARWU featuring Canada approximately four times more than its global university size would suggest, compared to twice as much for the US.

This context brings into focus the complexity of representation within these rankings. While the overrepresentation of certain regions or countries might initially seem stark, further examination can reveal it to be less dramatic. Conversely, a country with seemingly modest absolute representation can sometimes exhibit a much larger relative overrepresentation when observed through the lens of its global university size. It's essential to dissect these rankings with a critical eye, understanding the dynamics of absolute and relative representations to reveal the intricate narratives they encapsulate.

What about the United Kingdom, another influential player in the ranking game? Despite comprising only 1% of the total number of institutions worldwide according to WHED, it holds a much larger share in the rankings: 5% in ARWU, 7% in QS, and 6% in THE. This means that universities from the UK appear roughly six times more frequently in these rankings than one would anticipate based on its global university count. The UK is a prime example of how a country with a relatively smaller number of universities can have a substantial presence in global rankings, suggesting that quantity does not always equate to representation.

Expanding our perspective back to the rest of Europe, we find that countries with a high absolute count of institutions in the rankings exhibit varying degrees of relative overrepresentation. For instance, Germany and France are featured in rankings at about twice and one and a half times their global university count, respectively. However, Spain and Italy show a greater discrepancy, appearing five to seven and seven to nine times more frequently than their global university count might suggest.

Other countries in Europe merit attention for their overrepresentation. Sweden and Greece are featured four to six times more than expected based on their global university size. Estonia varies between two to six times more, while Czechia and Finland are represented three to five and four to five times more,

respectively.¹⁸⁰ These figures underscore how overrepresentation is not a phenomenon exclusive to the larger or more globally recognised nations but can also be observed in smaller or less renowned education systems.

However, not all countries within the broader European region follow this trend of overrepresentation. Russia, a transcontinental country spanning both Europe and Asia, appears to be slightly underrepresented across all three rankings, with its largest underrepresentation in THE. Other post-Soviet and former Soviet-aligned countries, such as Georgia, Belarus, Bulgaria, and Ukraine, also exhibit lower representation than expected, making them the most underrepresented in the sample. This highlights the variations in representation across different regions and countries with unique political and historical contexts, emphasising the importance of examining these rankings with a discerning and critical eye.

Shifting our gaze to Asia, we find the case of China, which is seen only up to thrice as much as its global university count would suggest in all three rankings. This is in stark contrast to the overrepresentation seen in countries such as the UK and Italy. India, another relevant player in higher education on a global scale, appears to be underrepresented in ARWU and QS, yet it maintains a fair representation in THE. This dichotomy underscores the complexity of interpreting these global rankings and the necessity to consider multiple perspectives.

Hong Kong, despite its relatively small size, tops the chart as the most overrepresented country in Asia, with a count eight to ten times greater than expected in all three rankings. Singapore and Qatar, two other smaller countries with regards to the size of their higher education systems, follow with an overrepresentation of five to seven and five times respectively.

However, Asia is also home to some of the most underrepresented countries in these rankings. The Philippines and Indonesia, despite their large populations and having a significant number of universities, are underrepresented, suggesting that the rankings may not fully capture the diversity of higher education across all nations. This divergence in representation within the same continent underscores the disparities that can exist in such global evaluations.

Turning our attention towards Oceania, Australia and New Zealand, they manifest a significant overrepresentation in the rankings, appearing five to seven and four to five times more than expected respectively. This robust showing aligns with the broad coverage of Oceania previously highlighted, again emphasising the region's strong presence in global higher education rankings despite its relatively smaller size.

In the Americas, we see diverging patterns of representation. On one hand, Uruguay, Chile, and Argentina lead the way in overrepresentation according to QS results, with counts five, two, and two times greater than expected respectively. On the flip side, Mexico, Colombia, and Brazil are on the less represented end in all three rankings, with Mexico being the most underrepresented. These

¹⁸⁰ Luxemburg sticks out as the most overrepresented country in the region, but this is because only one university is registered in WHED, and that university appears in all three rankings.

variations in representation underscore the broad range of higher education experiences and performances across the Americas.

Lastly, when we look at Africa, Egypt and South Africa, they emerge as the leaders in overrepresentation, with counts two to six and three to four times greater than expected across all three rankings. Notably, Namibia also stands out in THE, with a count five times larger than expected. However, not all African nations enjoy such representation. Nigeria and Algeria, for instance, are the most underrepresented within the region.

In conclusion, a more nuanced view emerges from our exploration of global higher education rankings. While it is true that institutions from the US and key European powers dominate the listings in the big three (ARWU, QS, and THE), this does not automatically translate into the largest overrepresentation. Contextualised against the total number of universities worldwide, countries like Canada, Spain, Italy, Sweden, Hong Kong, Australia, Uruguay, and Egypt surface as compelling case studies in the quantitative coverage of global rankings.

However, it's important to highlight that these countries, despite their notable presence, do not necessarily secure superior positions within the rankings. The prevalence of a country's institutions in these rankings does not equate to their academic prestige or quality, a factor determined by numerous other variables. In the following section, I will dig deeper into this aspect, exploring the ranking tiers occupied by these geographies and shedding light on the complex landscape of global higher education.

Quality

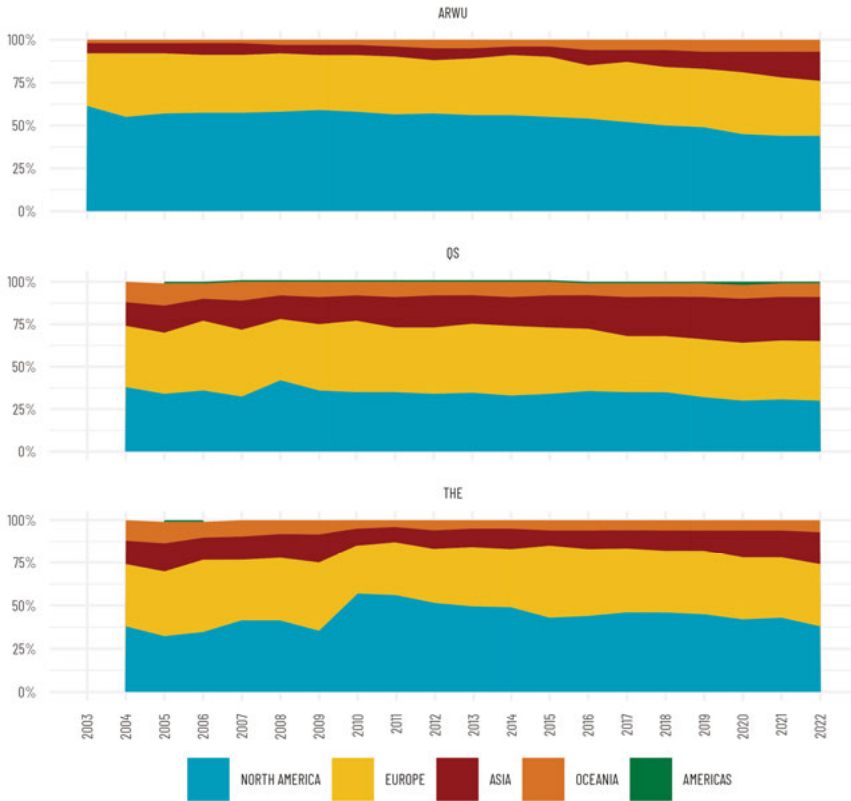
In addition to the quantitative disparities in the coverage of institutions by these rankings, there's also a significant qualitative component. It's crucial to recognise the distinction between profiling each country and region based on the sheer number of their institutions featured in rankings and profiling them based on the actual rank these universities occupy. In other words, we need to consider not just the presence of these institutions, but also their performance and placement within the rankings.

Therefore, let's focus on an analysis of the top 100 institutions. This group is particularly illuminating as it offers a balance between exclusivity and breadth. It captures the cream of the crop, the institutions deemed the best performers, while still offering a broad enough scope for comparison. Consequently, examining the regional share within the top 100 over time will provide valuable insights into the regional distribution of these rankings from a qualitative perspective.

Upon carrying out this analysis, the initial and most striking difference—aside of course from the fact that this group doesn't expand at any point in time, remaining stable in terms of quantity—is the evident absence of Africa in the top 100 (see Figure 12 in comparison to Figure 8). North America has historically been dominant in all three evaluators, particularly in ARWU in the early years, with a percentage above 60% in 2003. This dominance seems to have slightly diminished over time, reflecting a shift of prominence to other regions over the

years. Europe maintains a steady and strong presence across all evaluators. There are fluctuations in the exact percentages, but Europe remains a significant player, particularly in the QS and THE rankings, indicating the longstanding tradition and quality of European higher education institutions.

Figure 12. Representation of regions of the World by ARWU, QS, and THE between 2003–2022 in percentages for the top 100 institutions.



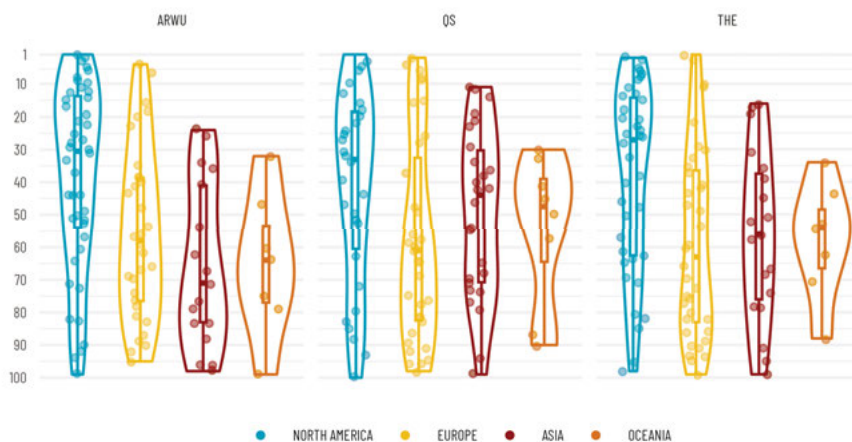
There’s a discernible increase in Asian institutions’ representation, particularly noticeable in the QS and THE rankings. From having a single-digit percentage in the early 2000s, the region’s presence has grown significantly, reflecting the increasing prominence and investment in higher education in Asia. Oceania, while having a smaller overall presence due to fewer countries and institutions, maintains a consistent representation, particularly in the later years in QS and THE rankings. Meanwhile, the Americas are represented in this tier by only two countries; Mexico appears in this tier of THE only for 2006, while Argentina is featured in QS from 2016 onward, revealing negligible participation of this region.

The data reflects a dynamic and evolving landscape within the top 100 of these three rankings, showcasing a shift from a historically North American-dominated space to a more multipolar environment. The decrease in North American insti-

tutions' representation has opened avenues for a more diverse set of top-ranking universities. European and Asian institutions, in particular, have capitalised on this shift, with the latter showing remarkable growth in alignment with its growth in rankings overall. Oceania and the rest of the Americas contribute to this diversifying trend, albeit less dramatically. These changes underscore the competitive nature of global rankings, influenced by various factors including research output, internationalisation efforts, and overall institutional reputation.

Now, while most regions have representation within the top 100, not all of those regions have institutions across every tier. Oceania's presence only starts around the top 30¹⁸¹ in all three rankings. In contrast, Asia displays a broader distribution, making its entrance around the top 25 in ARWU and within the top 20 for both QS and THE. In stark contrast, Europe and North America have a more extensive spread across the entire top 100, boasting universities in every sub-tier and clinching the leading positions. The top 10 is exclusively occupied by European and North American institutions in all three rankings, as indicated in Figure 13.

Figure 13. Dispersion of institutions within the top 100 in ARWU, QS, and THE per region for 2022.



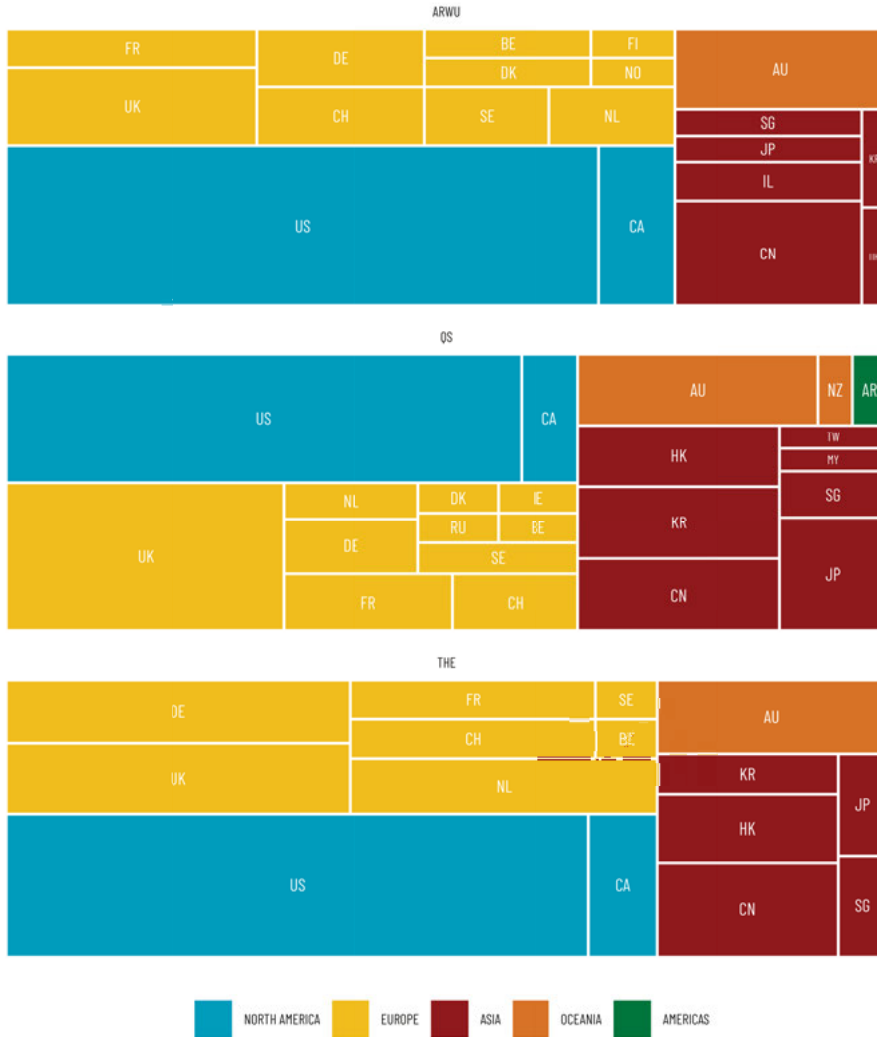
Given that universities from North America served as benchmarks for these evaluations, their dominance in the highest ranks is unsurprising. One could contend that if a ranking system failed to include North American or certain European institutions within the top 10, instead favouring primarily Asian ones, the credibility of its results would face substantial criticism.

When considering the diversity of countries represented in the top 100, QS has typically incorporated around 21 different nations, ranging from a minimum

¹⁸¹ Top 30 here refers to positions 21 to 30. The same logic is applicable to all references for other tiers. For example, top 20 refers to positions 11 to 20, and so on.

of 19 to a maximum of 22. ARWU has, on average, highlighted universities from 17 countries, within a range of 15 to 19. As for THE, it has usually represented 16 countries, within a range of 18 as a maximum and a minimum of 16.

Figure 14. Share in the top 100 in ARWU, QS, and THE by country in 2022. Acronyms follow the Eurostat convention.



Examining the country of origin of specific institutions within the 2022 top 100, the majority hail from the US and the UK. In ARWU, these countries feature 39 and 9 institutions in this bracket, respectively. In QS, they have 27 and 17 institutions, and in THE, they have 34 and 10 institutions. Adding the 7 Australian universities that also feature in this prestigious category of all three rankings as well as the Canadian institutions (5 in ARWU, 3 in QS, and 4 in THE), it be-

comes evident that at least 50% of the top 100 institutions in each ranking are located in English-speaking countries. The top 100 of the big three rankings also feature several other nations. For instance, Germany is represented by 9 institutions in THE, 4 in ARWU, and 3 in QS. Belgium has 2 in ARWU and 1 in both QS and THE. Sweden has 3 in ARWU, 2 in QS, and 1 in THE. Denmark has 2 in ARWU and 1 in QS. France has 4 institutions in all three rankings, Switzerland counts 4 institutions in ARWU and THE, and 3 in QS.

China has 7 institutions in ARWU and 6 in both QS and THE. Hong Kong appears once in ARWU and 5 times in both QS and THE. Singapore has 2 institutions in each ranking. South Korea has 1 in ARWU, 6 in QS, and 3 in THE. The Netherlands contributes with 7 institutions in THE, 4 in ARWU, and 2 in QS. Japan enters with 5 institutions in QS and 2 in both ARWU and THE. Israel has 3 institutions in ARWU, and Norway and Finland have 1. Finally, Argentina, Ireland, Russia, Taiwan, and Malaysia have each 1 institution featured in QS. The distribution of these institutions by percentage can be visualised in Figure 14.

The top 100 in all three rankings represent an exceptionally exclusive group. When considering the overlap between evaluators, merely 25 distinct countries are included in this elite segment of the list, with 17 making the cut in ARWU, 22 in QS, and 15 in THE (for 2022). This exclusivity becomes even more evident when contrasted with the full lists for the same year, 2022, where 64 countries were included in ARWU, 82 in QS, and 83 in THE. Only about a quarter of the countries featured in the comprehensive lists of ARWU and QS manage to break into the top 100. The figure is even starker for THE, with a mere fifth of the total number of countries reaching this high-ranking tier. The predominant representation of Anglo-Saxon countries (US, UK, Canada, Australia, and New Zealand, along with former British colonies and mandates in Asia such as Hong Kong, Singapore, Malaysia, and Israel) in the top 100 rankings of these evaluators is a telling indicator. It suggests a preferential alignment with the Anglo-Saxon model of the university. This model, characterised by the use of the English language as the *lingua franca* of academic and scientific communication, a strong focus on competition, substantial investment in research and higher education, and a historical legacy of educational excellence, appears to be a significant benchmark for ranking success.

Furthermore, when considering the representation of smaller Western countries like the Netherlands and Switzerland, which often surpass larger nations such as France and Germany in per capita representation within these rankings, it becomes apparent that the metrics and values prioritised by these rankings may indeed favour the Anglo-Saxon orientation. These findings point to a broader implication that the top 100 rankings may not only reflect the quality and output of institutions but also how closely they adhere to or mirror the Anglo-Saxon university model, thus favouring those within or aligned with this cultural and linguistic sphere.

Institutional Composition

Within the studied period, a total of 152 unique institutions have been featured in the top 100 of ARWU, 178 in QS, and 204 in THE. In combination, a total of 232 unique universities have been featured within the top 100 at least once in at least one of these rankings. And, out of this total, there is an overlap of 114 institutions across all three rankings. Narrowing the scope to the top 10, there have been 11 unique institutions featured in ARWU, and 16 in both QS and THE, for a total of 16 institutions across all three rankings and an overlap of 11 institutions. These numbers suggest that there has been some degree of competition at the highest levels of these lists. Next, I analyse exactly where within the top 10 and top 100 change—or lack thereof—has been more prevalent, to what extent, and why.

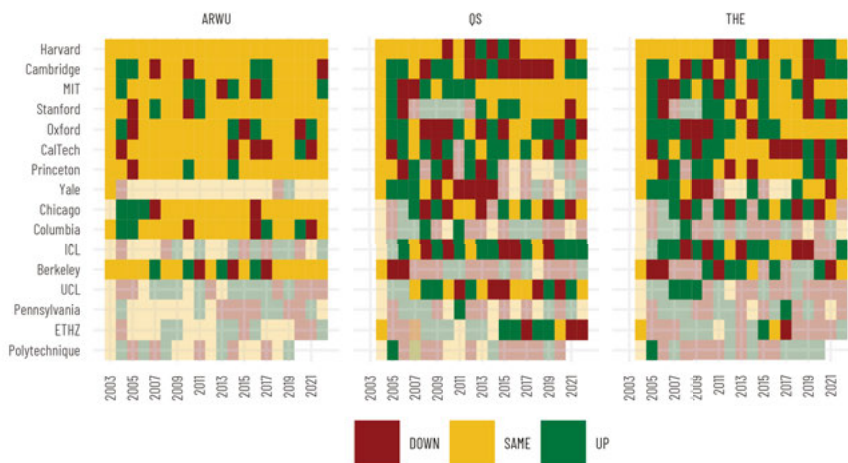
(In)Stability within the Top 10 over Time

I will now present the findings of a more detailed analysis of ranking variation within the top 10 institutions based on the positions of each institution between 2003 and 2022. As one can see in Figure 15, ARWU emerges as the ranking with the most consistency within the top 10 positions. In this ranking, Harvard stands as the sole institution that has maintained a singular position—namely, first place—for over two decades. Princeton, Stanford, and Chicago also exhibit this trend of steadfastness, with Princeton experiencing only three shifts and the latter two universities seeing four movements during the same period. While other featured institutions display a degree of variation, they generally uphold a considerable level of stability.

Yale, however, is the outlier in this group, at least at first glance, appearing within this tier only once in 2003. The lack of subsequent appearances is due to its drop beyond the top 10 threshold, as illustrated by lower transparency in the figure. Nevertheless, a closer look at the data reveals that Yale's displacement was minor, moving down only one spot to rank 11th until 2017, slipping an additional place in 2018, and then rebounding to 11th for the remainder of the observed period. This movement confirms the overall trend of stability observed in ARWU's top-ranking institutions; other than Yale and Chicago in 2003, no other institution fell below the threshold.

Contrastingly, both QS and THE rankings exhibit significantly more fluctuation within their respective top 10 placements. Numerous institutions dip beneath the top 10 threshold, though the majority of them manage to regain their top 10 status at some point. Harvard presents a more stable profile, securing the top spot in both QS and THE rankings until they split in 2010. Following a period of positional oscillation in QS, the Massachusetts Institute of Technology (MIT) solidified its standing, maintaining the number one position consistently from 2013 onwards. In THE, it takes a few additional years before Oxford ascends and subsequently secures the leading spot in the rankings. The trajectories of most institutions within the top 10 in these two rankings are notably more diverse, underscoring a degree of volatility in their relative performances over time.

Figure 15. Variation of top 10 institutions in ARWU, QS, and THE between 2003 and 2022. Transparency indicates a position below the top 10.



Two significant omissions in the ARWU's top 10 are University College London (UCL) and Imperial College London (ICL). While the former consistently ranks among the top 10 in QS and the latter maintains a prominent presence in the top 10 for the majority of the study period in both QS and THE rankings, neither has managed to break into the top 10 in ARWU. Instead, they are typically found closer to the top 20 or even the top 30 within ARWU.

This positioning seems to correspond with the different focuses of each ranking system. ARWU tends to emphasise institutions in the US and Asia more heavily. In contrast, QS and THE, both based in the UK, appear to place a greater emphasis on indicators that favour institutions within their home country and, more broadly, within the European region. This preference is further suggested by the prominent placements of European institutions like ETHZ from Switzerland and École Polytechnique from France within these rankings.

(In)Stability within the Top 100 over Time

Now, shifting our focus onto the 114 institutions simultaneously featured in the top 100 in ARWU, QS, and THE between 2003 and 2022, and analysing their change in position by tier (that is, in this case, by position groups in chunks of 10), we can see a generally similar picture (see Figure 16). Let's start with ARWU. At the outset, in 2003, the rankings were in their infancy, and like any new system, they were finding their footing. The fluctuation was notably high in 2004, suggesting an initial period of adjustment in the ranking criteria or perhaps the universities' responses to these criteria. However, this early turbulence settled down, and the period around 2009 marked a phase of relative tranquillity. With the lowest annual fluctuation recorded this year, it was a time when universities seemingly found a momentary pause in the relentless race for academic prestige. As we move further into the 2010s, the narrative changes. ARWU enters a phase

of heightened volatility. The years following 2014, especially 2019, stand out as times of significant shifts. This era could be seen as reflective of the intensifying global competition among universities.

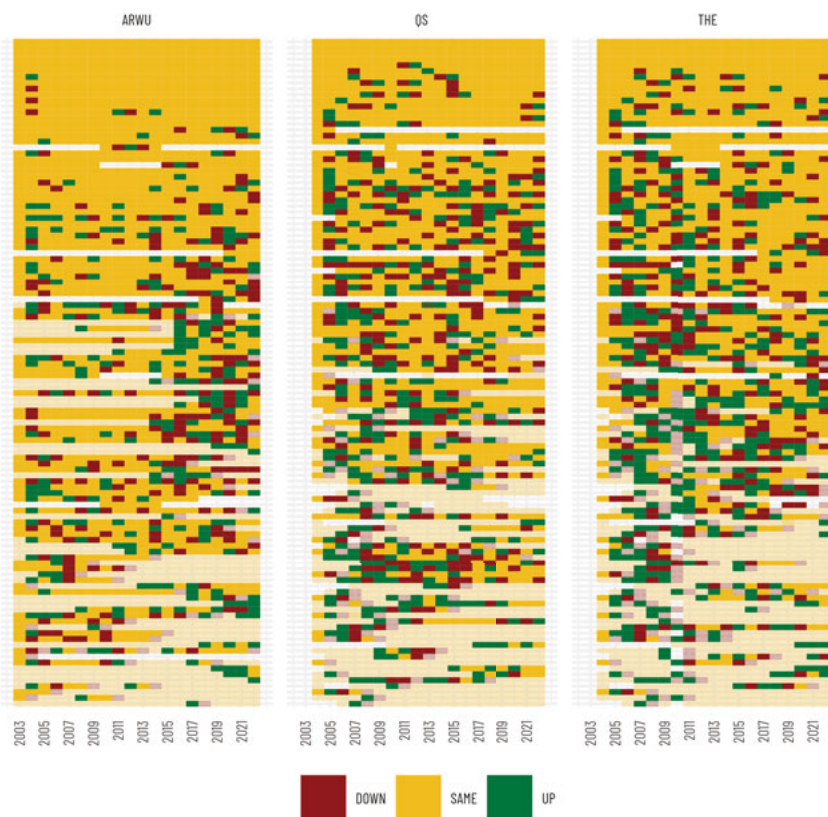
The story of fluctuation across different university tiers adds another layer to this narrative. As already discussed, the top 10 universities show remarkable consistency in their rankings. This stability at the zenith of academic excellence speaks to the entrenched positions of these elite institutions. As we descend the tiers, the picture starts to change. The institutions ranked between 11 and 20 show slightly more movement, though still maintaining a high degree of stability. However, the real competition unfolds as we delve into the lower tiers. Universities in the 21–50 tier show more variability, indicative of a more fiercely contested space. This trend becomes even more pronounced in the 51–100 tier, where universities experience significant shifts in their rankings. The narrative reaches its climax in the tier above 100, where the fluctuations are the most pronounced, telling tales of universities vying to break into the coveted top 100 or struggling to maintain their global standing.

In the nascent stages of the QS/THE rankings, between 2004 and 2006, the landscape was marked by significant upheavals. These early years, particularly 2006, were characterised by notable shifts, indicative of a ranking system still refining its evaluative criteria and universities adapting to this new global yardstick. As we progress through the timeline, a gradual transition to stability becomes apparent. Around 2009, when QS and THE split ways, the former showed a notable decline in fluctuations, leading to more predictable year-over-year standings. This phase of relative calm extends up until 2013, indicating a period where the global academic community found a consistent rhythm within the QS parameters.

After 2014, the QS showed more dynamic movements, albeit less pronounced than in the earlier years. Interestingly, 2019 emerges as a year of minimal fluctuation, a brief respite in the otherwise competitive landscape, possibly reflecting a maturing ranking system and a steadier global educational environment.

A deeper dive into the tier-based analysis of these rankings reveals an intricate story of academic prestige and competitiveness. At the pinnacle, the top 10 universities exhibit remarkable consistency, with minimal annual fluctuations, underscoring their entrenched positions of global academic prominence. Moving beyond the top echelon, into the 11–20 tier, we witness slightly more movement, though these institutions still maintain a high degree of stability. The narrative shifts as we venture into the middle tiers (21–50 and 51–100). Here, we encounter increasing variability, reflective of a more fiercely contested space. These tiers, representing a mix of established and rising institutions, become stages for more pronounced competition and strategic manoeuvring.

Figure 16. Variation of top 100 institutions featured simultaneously in ARWU, QS, and THE between 2003 and 2022. Transparency indicates a position below the top 100.



In juxtaposition with the ARWU rankings, the QS analysis paints a parallel yet distinct picture. Both ranking systems affirm the relative stability of the world's top-tier universities and greater volatility among the lower tiers. However, the QS rankings, particularly in recent years, portray a landscape of lesser overall fluctuation, as a partial reflection of the differences in methodologies and evaluation criteria between the two systems. From 2009, the inception of THE's independent ranking system, we observe an initial phase of adjustment. This initial period was a time of recalibration, as universities and the new ranking system aligned themselves to each other. The year 2010 stands out in this early phase with a significant reshuffling in the global academic order as the new ranking criteria took effect. As the years progress, THE gradually moves towards a more stable state. The years following 2010, particularly from 2013 to 2014, demonstrate a decrease in fluctuation. However, the subsequent years up to 2022 continue to witness fluctuations, though less extreme than in its initial years.

Examining the variation by tiers, THE results reveal a pattern similar to QS and ARWU but with unique nuances. The top 10 tier shows the least annual

fluctuation. As we move beyond, the stability gradually diminishes. The 11–20 tier, while still relatively stable, shows more movement compared to the top tier. This trend of increasing fluctuation continues as we delve deeper into the rankings. The middle tiers, 21–50 and 51–100, are characterised by greater variability. These tiers represent a dynamic battleground of academic institutions vying for higher recognition and prestige. The most dramatic shifts occur in the tier above 100, where universities experience the greatest fluctuations, reflecting a highly competitive and ever-changing academic environment.

In comparison to QS and ARWU, THE rankings from 2009 to 2022 portray a unique landscape of academic competition and prestige. While there are similarities in the relative stability of top-tier institutions and greater volatility in lower tiers, THE's fluctuations, particularly in the initial years of its independent ranking system, highlight the impact of evolving ranking methodologies and the responsive nature of global higher education.

Summarising these results, a common thread across all three rankings is the remarkable stability at the apex—the top 10 tier. Institutions in this elite group exhibit minimal fluctuations, indicating a stronghold of academic excellence and prestige. These universities, consistently at the zenith of global rankings, represent anchor points for these evaluation systems, seemingly impervious to the more dynamic shifts seen in lower tiers. Considering the top 11–20 tier and further down, a shift in narrative emerges. Here, the rankings begin to reflect more movement and competition. While still maintaining a degree of stability, especially in the 11–20 tier, institutions in the 21–50 and 51–100 tiers experience greater fluctuations. These middle tiers serve as battlegrounds for universities striving for higher recognition and global standing, indicative of a more competitive and fluid academic landscape.

5.3 Concluding Remarks

The initial part of this chapter constructed a theoretical lens, inspired by field theory, to understand the role of global university rankings in higher education. These rankings act as consecrating instances where universities receive a rank that establishes their degree of world-classness. Contrary to what some indicators may suggest, globally ranked universities are not competing for the same resources. Anglo-Saxon institutions, for instance, draw a different cohort of international students than Spanish or French-speaking establishments do.¹⁸² Similarly, not all universities or even specific departments compete for the same funding. Geographical and geopolitical factors significantly influence the patterns of competition and collaboration among universities. Yet, it's evident that these institutions, particularly those at the top of the rankings, partake in a symbolic race for world-classness.

¹⁸² Börjesson, 'The Global Space of International Students in 2010'.

These rankings, in short, evaluate how closely global institutions resemble prestigious Anglo-Saxon establishments, particularly the American Ivy League and Britain's Oxbridge, as suggested by the composition of the top 10 over time. A relative count of ranked institutions shows a consistent overrepresentation of universities from Australia, New Zealand, and select Western European countries. These trends reflect the underlying prestige of Western, particularly Anglo-Saxon, institutions. Significantly, the rise of Asian institutions, particularly those in China, indicates a shift towards global practices aligning with Western norms. This trend suggests an increasing trend of non-Western universities adapting to Western standards. Considering that the main countries of origin of these institutions include former British colonies and mandates in Asia like Hong Kong, Singapore, Malaysia, and Israel, this argument gains strength; by removing institutions from these countries, the representation of Asia becomes more modest.

Upon examining the indicators ARWU, QS, and THE used for evaluation, it becomes clear that the ranking process is inherently subjective. There's no set of universal criteria to define world-classness. Instead, evaluators select metrics to measure a university's commitment to either research or teaching, assign arbitrary weights to these metrics, and produce an ordered list. This process essentially rationalizes and legitimizes a pre-existing hierarchy of institutions, with the US and the UK consistently at the top. ARWU, QS, and THE rankings each emphasise different aspects of university performance. ARWU focuses primarily on research, while QS and THE also account for the teaching environment and international recruitment. Despite these differences, these rankings significantly influence perceptions of institutional prestige and the strategies universities employ to climb the rankings.

The prestige conferred upon institutions by global university rankings serves as symbolic capital. These rankings enhance the reputation of certain universities by establishing a standardised performance metric. This recognition allows individuals holding credentials from top-ranked institutions to convert this institutionalised cultural capital into economic benefits such as scholarships, or access to favourable migration policies. This could lead some to suggest that world-classness becomes a form of international capital. However, the credentials gained within a national setting aren't inherently international. Rather, global university rankings enable cross-border reconversion strategies for these credentials, which individuals use based on their specific trajectories. In the emerging global field of power, it's expected that individuals with credentials from top-ranked institutions will leverage these credentials to justify and legitimise their standing.

The symbolic order created by rankings reflects a pre-existing geopolitical hierarchy through the specific lens of higher education systems. This space, similar to social fields, shows stability, a fundamental law of formation, principles of vision and division, instances of consecration, and assets whose acquisition and accumulation shape the behaviours of the agents within it. These assets carry a symbolic value, which further objectifies the prestige and global recognition associated with these "world-class" institutions.

From Chaos to Cosmos: The Construction of a Global Sub-Field of Universities

As a relatively autonomous sphere of practice, the global sub-field of universities I propose encompasses institutions engaged in a symbolic competition over a field-specific form of symbolic capital, usually represented by world-class status. Within this global sub-field, rankings serve the purpose of consecration instances, defining what world-classness means and legitimising that meaning by ranking the institutions that substantiate that definition in the highest tiers of their lists.

Rankings set the founding principles of vision and division within this global sub-field of universities when they establish the conditions that make a given institution a candidate for their evaluation. This selection process enacts a first divide between candidate and non-candidate universities. Then, because no formal process for determining exactly which of the candidates achieve or not a world-class status, world-classness operates in a spectrum reflected on the specific positions assigned to each institution according to the results of their evaluation. Although there is room for debate on what institutions represent that world-class status, one thing is clear: the higher the rank, the higher the degree of world-classness of a given university. As discussed in the previous chapter, different rankings use different sets of indicators, yielding varying although similar results. This variation suggests competing or at least complementary definitions of world-classness.

In this chapter, I study the multidimensional structure of the individual differences of world-class universities featured by ARWU, QS and THE in 2022 using an inductive approach. In doing so, I answer what indicators are more important to characterise, differentiate and understand the relationship between the universities featured in global university rankings as well as what distinct groups of institutions can be identified based on their different performance profiles. I map out these differences employing Multiple Correspondence Analysis (MCA). Next, I will describe the dataset used for the study and its coding. Then I present the results of the MCA and delve into the interpretation of the resulting axes. As usual in Geometric Data Analysis, a Euclidean clustering rounds up the examination. These techniques are further explained in Chapter 3.

6.1 Sample Population, Data Selection, and Variable Re-Coding

The dataset I use for the analysis comprises 140 universities, each featured in all three major world university rankings (ARWU, QS, and THE) within the top 100 of at least one of them in 2022. This selection criterion ensures a comprehensive sample covering the most prestigious universities globally.¹⁸³

For the analysis, I considered all 17 indicators employed by these ranking bodies. These indicators, consisting of numerical scores ranging from 0 to 100, provide a robust framework for constructing a multidimensional data map. The typical approach for analysing such data would be Principal Component Analysis (PCA). PCA excels in examining the multidimensional distribution of observations, particularly when the variables are continuous.

However, this specific dataset presents a unique challenge: the prevalence of outliers even within the small sample population I selected. Top-ranking universities often have exceptionally high scores across most, if not all, indicators. In standard PCA, these outliers would be eliminated to avoid skewing the analysis. But in the context of university rankings, these outliers are not mere anomalies; they are fundamental actors whose positions further our understanding of the structure of the global sub-field of universities under scrutiny.

Acknowledging this, the decision was made not to remove these outliers. Their exclusion could lead to a short-sighted view of the trends and patterns that characterise the structure derived from university rankings evaluations as well as of the institutional embodiment of world-classness. Instead, to accommodate these outliers while maintaining the integrity of the analysis, a methodological shift was necessary. The solution I chose was to transform the numerical variables into categorical ones. This transformation makes Multiple Correspondence Analysis (MCA) the most suitable method for this study. MCA, essentially PCA's counterpart for categorical data, allows for exploring the relationships among various categories. In this case, it handles the impact of outliers more effectively, ensuring a balanced analysis.

During this study, to ensure the robustness of the chosen methodological approach, I conducted a PCA alongside the MCA. This was done to compare the findings from both methods, thereby validating the reliability of the results. The PCA served as a benchmark, a sort of control mechanism, against which the MCA's outcomes could be measured. There were no major disparities in the findings derived from the two analytical methods. This similarity in results provided a strong foundation for confidence in the accuracy and relevance of the MCA. More importantly, it was observed that while both methods yielded comparable outcomes, the MCA offered a clearer and more interpretable representation of the data.

¹⁸³ The list of institutions and the acronyms used in figures can be found in Appendix A.

The categorical treatment of the variables in MCA, as opposed to the continuous variables approach in PCA, allowed for a more nuanced understanding of the relationships and patterns within the university ranking data. This clarity is particularly beneficial in a sociological context, where the interpretation of data is as crucial as the data itself. Therefore, the MCA not only mirrored the PCA results to a great extent but also enhanced the interpretability, providing more comprehensive and insightful results.

Variables Retained for Analysis

Active Variables

After a thorough evaluation of all indicators used by ARWU, QS, and THE, totalling 17 variables, I discerned a pattern of correlation akin to that discussed in Chapter 5. This correlation was not only within individual rankings but also across them, highlighting the preeminence of certain indicators, particularly those from ARWU. Consequently, I carefully selected variables that consistently yielded the most stable and interpretable results. This choice was pivotal in ensuring that the outcomes of both the PCA and MCA were robust, insightful, and void of any artificial skewing of data.

From ARWU, both “Staff...” and “Alumni of an institution winning Nobel Prizes and Fields Medals” as well as “Per capita academic performance of an institution” were retained. From QS, I kept “Academic Reputation”, “Employer Reputation”, “Faculty/Student Ratio”, “Citations per Faculty”, “International Faculty”, and “International Students”. Finally, from THE, “Research”, “Teaching”, “Industry Income”, and “International Outlook” were included in the analysis. In all, retained variables add up to 13.

Supplementary Variables

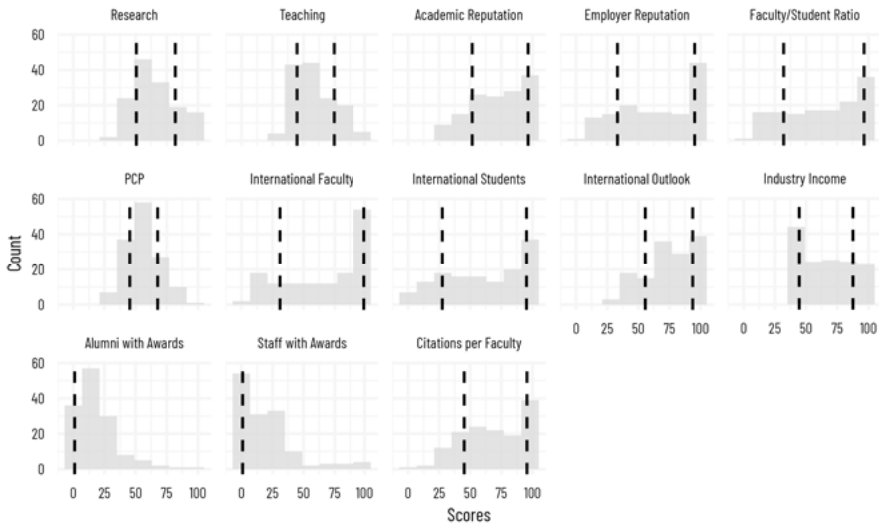
Supplementary variables are those which do not actively contribute to defining the dimensions of the MCA. Instead, they are projected onto the already established factorial space created by the active variables. Supplementary variables are used to enhance the interpretation of the dimensions and to understand how additional information correlates with the main structure. They can be either supplementary categories (additional categories of active variables) or supplementary individuals (additional observations).

In the case of this study, I will consider the origin of the institutions by country and region. In addition, I will also consider the age of these institutions according to their place of belonging. After exploring a wider set of supplementary variables—including legal status, government funding, and type of institution—these were the ones that yielded more interesting results.

Recoding of Active Variables

After examining the distribution of the active variables in their numerical form, two main strategies for re-coding were employed. Firstly, due to the significant number of institutions having low scores in both “Staff...” and “Alumni of an institution winning Nobel Prizes and Fields Medals”, these variables were recoded into two distinct categories. This was deemed necessary as a large concentration of low scores could potentially skew the analysis. The new categories were based on whether someone among the staff or alumni of an institution had received these prestigious awards (score > 0) or not (score = 0). A second approach was taken for the remaining indicators. Here, the institutions were categorised into three groups based on their scores in each area. Institutions with scores in the lowest quintile were classified as having a low score. Those with scores in the highest quintile were denoted as having a high score. Finally, institutions with scores falling within the middle quartiles were considered to have medium scores.¹⁸⁴

Figure 17. Distribution and cuts by variable.



This method of categorisation allows for a balanced and meaningful analysis. Instead of treating scores as isolated data points, this approach acknowledges that the ranking of universities often falls along a continuum. As such, using categories like low, medium, and high scores provides a more holistic view of the data and enables a better interpretation of the results. Figure 17 displays the distribution of these variables and the cuts made for categorisation.

¹⁸⁴ The frequencies for each recoded modality can be found in Appendix A.

6.2 Multiple Correspondence Analysis

Looking at the importance index (also referred to as Benzécri's modified rate), the inspection of the first three axes adds up to 89.2. This number suggests that an interpretation of these axes will be more feasible. Adding the fourth brings up the cumulated importance index to 96.8, so it will also be inspected.¹⁸⁵

Table 3. Eigenvalues, variance, and importance index.

	<i>Axis 1</i>	<i>Axis 2</i>	<i>Axis 3</i>	<i>Axis 4</i>
Eigenvalues (λ)	.30	.20	.19	.16
% of Variance	15.9%	11.0%	10.0%	8.5%
Importance Index (Benzécri's modified rate)	55.9	19.1	14.3	7.6
Cumulated Index	55.9	75.0	89.2	96.8

Interpretation of Axes

Below, Table 4 shows how variables, now grouped in themes, contribute to the four principal axes. Axis 1 shows a cumulated contribution of 88% from the Reputation and Performance theme. On this axis, all active variables, except Faculty/Student Ratio, have a contribution greater than the mean. This overwhelming percentage suggests that Axis 1 is predominantly a measure of universities' overall prestige and productivity. The variables contributing to this axis are all directly related to the core academic functions and prestige of universities, making Axis 1 a likely indicator of traditional academic excellence.

Table 4. Contributions by theme and variable. In bold, variables contributing above the mean contribution (7.7%) retained for the interpretation of each axes.

<i>Themes</i>	<i>Variable</i>	<i>Contribution</i>			
		<i>Axis 1</i>	<i>Axis 2</i>	<i>Axis 3</i>	<i>Axis 4</i>
Reputation & Performance	Research	21.0	2.0	2.8	19.0
	Teaching	19.6	7.7	2.0	5.0
	Academic Reputation	19.2	0.2	4.7	19.0
	Employer Reputation	15.1	0.3	9.3	10.9
	Faculty/Student Ratio	4.9	3.5	3.9	1.5
	Per Capita Performance	7.8	3.0	1.1	13.0
	Sum	87.6	16.7	23.7	68.4
Geographic Orientation	International Faculty	0.8	20.5	17.5	3.4
	International Students	2.0	15.2	9.7	9.1
	International Outlook	0.9	25.4	13.3	11.8
	Industry Income	2.2	10.1	1.9	1.4
	Sum	5.8	71.3	42.3	25.7
Scientific Recognition	Alumni of an institution winning Nobel Prizes and Fields Medals	1.8	3.7	11.8	0.4
	Staff of an institution winning Nobel Prizes and Fields Medals	2.7	5.2	12.1	0.7
	Citations per Faculty	2.1	3.2	10.1	4.8
	Sum	6.6	12.0	34.0	5.9

Meanwhile, Axis 2 is characterised by a sum contribution of 71% from Geographic Orientation. This strong emphasis reflects the axis's role as a measure of how globally oriented and internationally active the institutions are. The high

¹⁸⁵ Extended results for the MCA are provided in Appendix B.

percentage signifies that internationalisation is a principal factor in differentiating universities along this axis, with international outlook, faculty and student bodies being key indicators of an institution's global presence and appeal.

Axis 3, with a Scientific Recognition sum of 34% alongside the 42% from Geographic Orientation, suggests a balanced axis that captures both the international scope and the research impact of institutions. The significant percentage from Scientific Recognition highlights the importance of high-impact research and globally recognised scientific awards. The combined influence of these themes on Axis 3 indicates that it may represent a synergy between global reach and research excellence.

Finally, Axis 4 again sees a strong influence from Reputation and Performance at 76%. However, compared to Axis 1, this axis seems to be more nuanced. The percentages imply that while Axis 1 could represent overall prestige, Axis 4 might reflect specific aspects of reputation and performance, such as the immediate academic environment or teaching quality. Further inspection will be carried out in the following sections.

Interpretation of Axis 1: Institutional Performance and Reputation

The categories contributing significantly to Axis 1, predominantly in their “high” modalities, include Research, Academic Reputation, Teaching, Employer Reputation, and Per Capita Performance (see Table 5). The “high” modality of Research contributes 16% with coordinates at 1.8, suggesting a strong association of robust research output with this axis. Academic Reputation follows closely with a 15% contribution and coordinates of 1.72, indicating its crucial role in defining a university's position on Axis 1. Teaching, with a 15% contribution and coordinates at 1.71, further underscores the axis's emphasis on academic excellence and quality of instruction. Employer Reputation, contributing 11% with coordinates at 1.5, highlights the perceived value of the universities by employers, reflecting on their graduates' workplace readiness and skills. Per Capita Performance, though contributing less (6%) with coordinates at 1.1, still reflects a focus on individual performance and achievement within the university.

Table 5. Variables exceeding the mean contribution (7.7%) on Axis 1 and their modalities with higher contributions.¹⁸⁶

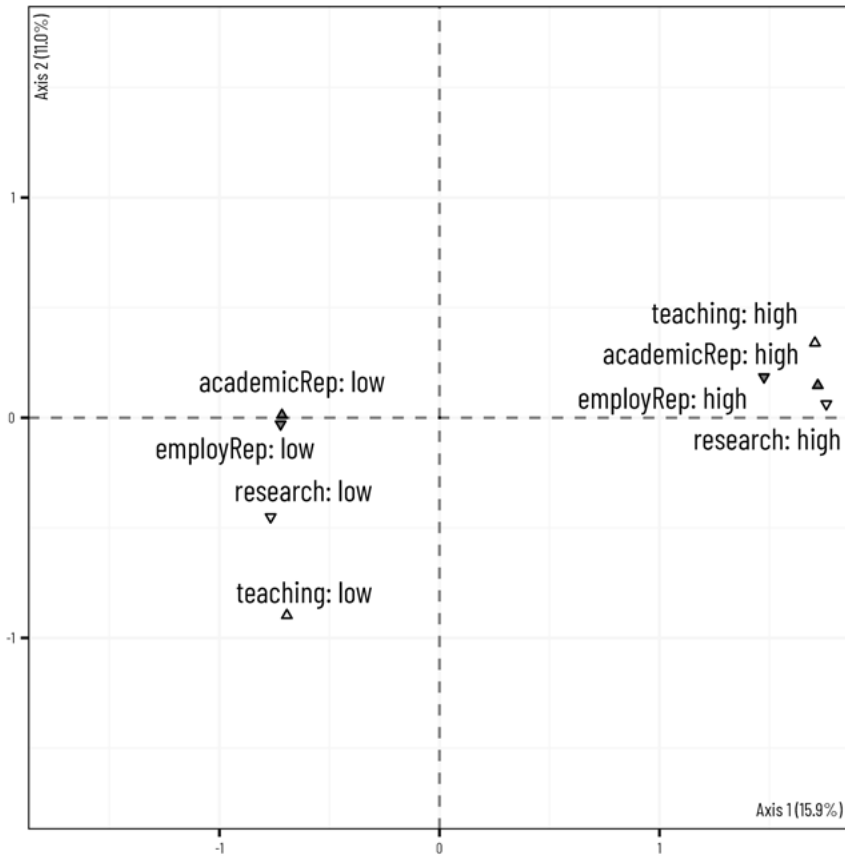
<i>Variables</i>	<i>Positive Coordinates</i>	<i>Negative Coordinates</i>
Research	High (16.2%)	Low (3.1%)
Teaching	High (15.3%)	Low (2.5%)
Academic Reputation	High (15.0%)	Low (2.7%)
Employer Reputation	High (11.4%)	Low (2.7%)
Per Capita Performance	High (6.1%)	Low (1.0%)

The “low” modalities of these categories also contribute to Axis 1 but to a lesser extent. For instance, the “low” modality of Teaching contributes about 3%, and

¹⁸⁶ For axis interpretation, the two modalities with the highest contribution of the variables contributing above the mean were retained. The mean contribution for modalities is 2.7%.

its coordinates at -0.69 suggest that a lower emphasis on teaching quality distinctly influences a university's positioning on this axis. Similarly, Academic Reputation, Employer Reputation, and Research in their "low" modalities contribute around 3% each, with their negative coordinates indicating a divergence from the axis's dominant trend towards high performance and reputation.

Figure 18. Cloud of categories. Variables exceeding the mean contribution (7.7%) on Axis 1 and their modalities with higher contributions, Plane 1–2. Sizes according to weight.



In summary, Axis 1 in this MCA captures a dimension heavily influenced by high levels of research output, academic reputation, teaching quality, employer reputation, and individual performance. The presence of both "high" and "low" modalities of these categories suggests a nuanced understanding of how these factors contribute to a university's overall standing. The axis appears to reflect a "size effect", where larger, more well-resourced institutions with extensive research activities and higher reputational standings are more prominently featured. This

axis, therefore, is a key indicator of the overall performance and reputation of universities, shaped by both their academic excellence and perceived value.

Interpretation of Axis 2: Domestic Focus vs. International Focus

Axis 2 in the MCA presents a different set of emphases compared to Axis 1, with its categories and modalities shedding light on aspects related to the international orientation and industry engagement of institutions (see Table 6 below **Error! Reference source not found.**).

Table 6. Variables exceeding the mean contribution (7.7%) on Axis 2 and their modalities with higher contributions.

<i>Variables</i>	<i>Positive Coordinates</i>	<i>Negative Coordinates</i>
International Outlook	Low (20.0%)	High (3.0%)
International Faculty	Low (16.3%)	Mid (2.4%)
International Students	Low (10.4%)	High (4.4%)
Industry Income	High (7.4%)	Low (2.2%)

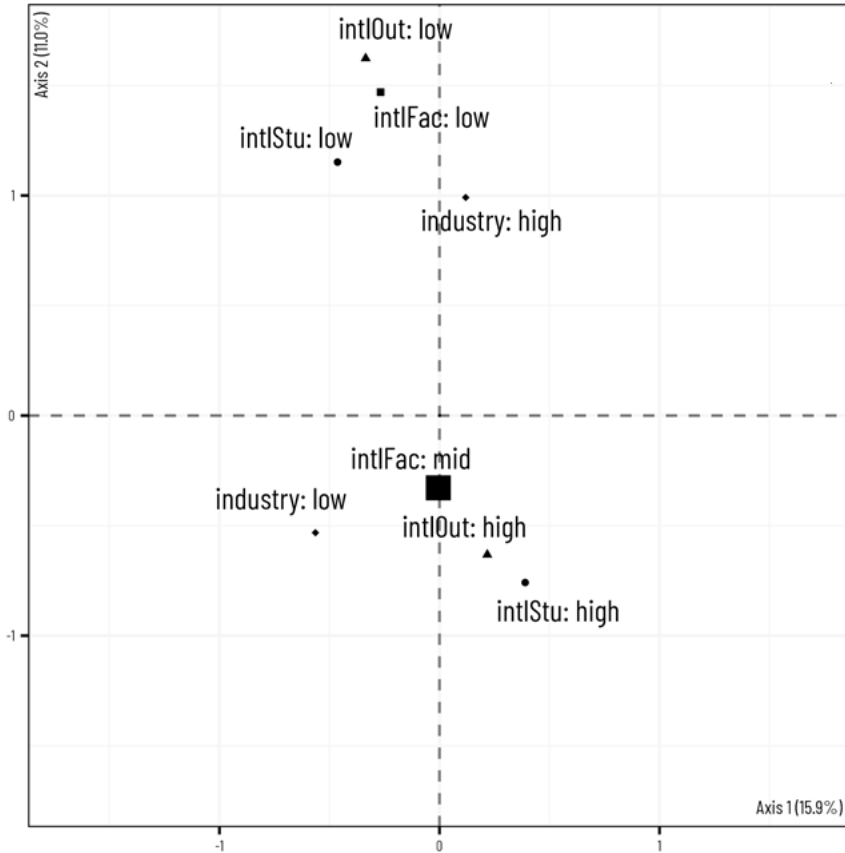
On one side of the axis, the “low” modalities of International Outlook (with a contribution of 20%), International Faculty (16%), and International Students (10%) with positive coordinates suggest that universities with less international exposure and diversity are a defining characteristic of this axis. The prominence of these “low” modalities in international dimensions indicates a set of universities that might be more domestically oriented or have limited international engagement. This could reflect institutions that either primarily cater to domestic students and faculty or have not yet developed extensive global connections. On the same side, Industry Income in its “high” modality (7%) supports the idea of a more domestic type of engagement.

Conversely, on the other side of the axis, the “high” modalities of International Outlook and International Students, alongside the “low” modality of Teaching, suggest that universities with a strong international presence, characterised by a high proportion of international students and a global outlook, are positioned in opposition to the more domestically focused institutions.

The opposition on Axis 2 can, therefore, be interpreted as a contrast between universities with a strong international orientation and those with a more domestic or local focus. This distinction is crucial in understanding the diverse strategies and characteristics of higher education institutions. While one group of universities may excel in cultivating a global presence, attracting international students and faculty, and fostering a broad international outlook, the other group might prioritise local or national contexts, focusing more on domestic students and issues.

In sum, Axis 2 paints a clear picture of the divide in the higher education landscape, highlighting the differences in how universities engage with and prioritise internationalisation versus domestic orientation. This axis offers valuable insights into the strategic positioning and focus areas of universities, reflecting the varied approaches they adopt in a globalised educational environment.

Figure 19. Cloud of Categories. Variables exceeding the mean contribution (7.7%) on Axis 2 and their modalities with higher contributions, Plane 1–2. Sizes according to weight.



Interpretation of Axis 3: Current Impact vs. Historical Prestige

Axis 3 of the MCA reveals an intriguing opposition that juxtaposes aspects of internationalisation against elements of scientific recognition, as indicated by the coordinates of various categories and modalities (see Table 7). On the one hand, the “high” modalities of International Faculty (14% contribution, 1.30 coordinates), International Outlook (10%, 1.11), and International Students (approximately 7%, 0.90) suggest that Axis 3 captures a strong international dimension. These categories, with positive coordinates, point towards universities with a pronounced global focus, manifested in their international staff and student body as well as their outward-looking perspective. This emphasis on internationalisation suggests a cosmopolitan and diverse academic environment, highlighting universities that excel in attracting a global community.

Table 7. Variables exceeding the mean contribution (7.7%) on Axis 3 and their modalities with higher contributions in %.

<i>Variable</i>	<i>Positive Coordinates</i>	<i>Negative Coordinates</i>
International Faculty	High (13.9%)	Mid (3.1%)
International Outlook	High (10.2%)	Mid (3.0%)
Staff with Awards	No (7.5%)	Yes (4.6%)
Alumni with Awards	No (8.9%)	Yes (3.0%)
Citations per Faculty	High (4.0%)	Low (6.0%)
International Students	High (6.7%)	Low (2.6%)
Employer Reputation	Mid (3.3%)	Low (5.4%)

Conversely, the “no” modalities for Alumni with Awards (9%) and Staff with Awards (close to 8%), paired with the negative coordinates for the “yes” modalities in these categories (Alumni with Awards “yes”: 3%, Staff with Awards “yes”: approximately 5%), indicate an interesting aspect of scientific recognition. Universities associated with these “yes” modalities, unexpectedly, align with the negative side of Axis 3, suggesting that institutions recognised for their prestigious academic awards are contrasted against those with a strong international focus. This counterintuitive finding might imply that universities known for Nobel Prizes and Fields Medals may not necessarily align with or prioritise the same attributes that drive internationalisation.

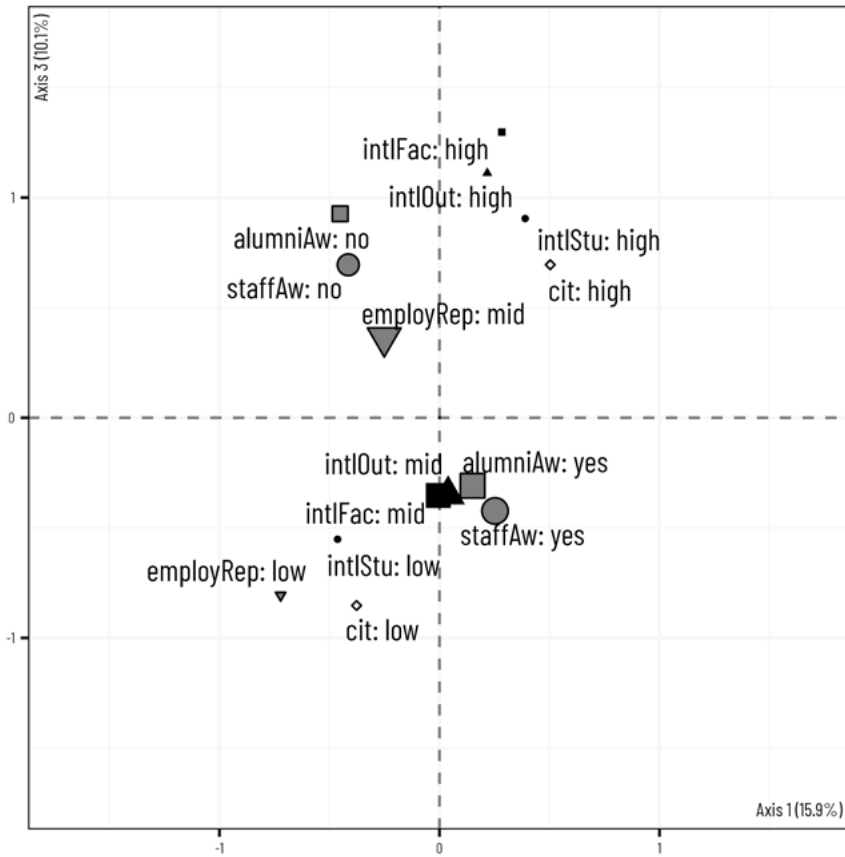
This opposition is further exemplified by the contributions on the opposite side of “low” Employer Reputation (5%) and “low” Citations Per Faculty (6%). The pairing of “yes” modalities for awards with these “low” categories could be interpreted as an indication that some highly recognised institutions, despite their accolades, may have a lower overall citation impact or may not be perceived as highly in terms of reputation among employers. This could be due to several factors, such as a focus on specialised or niche areas of research that do not generate high citation volumes, or perhaps a historic reputation that overshadows current performance metrics.

The interpretation of Axis 3, therefore, reveals a complex and somewhat paradoxical landscape. It underscores an opposition between the internationalisation aspects of universities and their recognition in the scientific community through prestigious awards. This axis challenges the conventional association of scientific accolades with overall academic excellence and suggests that universities recognised for international diversity may follow different trajectories in their pursuit of academic and research excellence. Axis 3 offers a nuanced perspective on how universities balance their global outlook with their scientific standing, highlighting the multifaceted nature of university reputation and performance.

In conclusion, Axis 3 underlines the diversity in university profiles, highlighting the distinct pathways towards academic excellence: through either a strong international presence and impactful research, or through the achievement of high-level academic recognition. In addition, Axis 3 might be seen as capturing the dynamic between contemporary and historical dimensions of academic success. This makes it distinct from Axis 2, which primarily differentiates universities in terms of their international engagement and industry income. By revealing this

dynamic, Axis 3 enriches our understanding of the various pathways that lead to academic distinction.

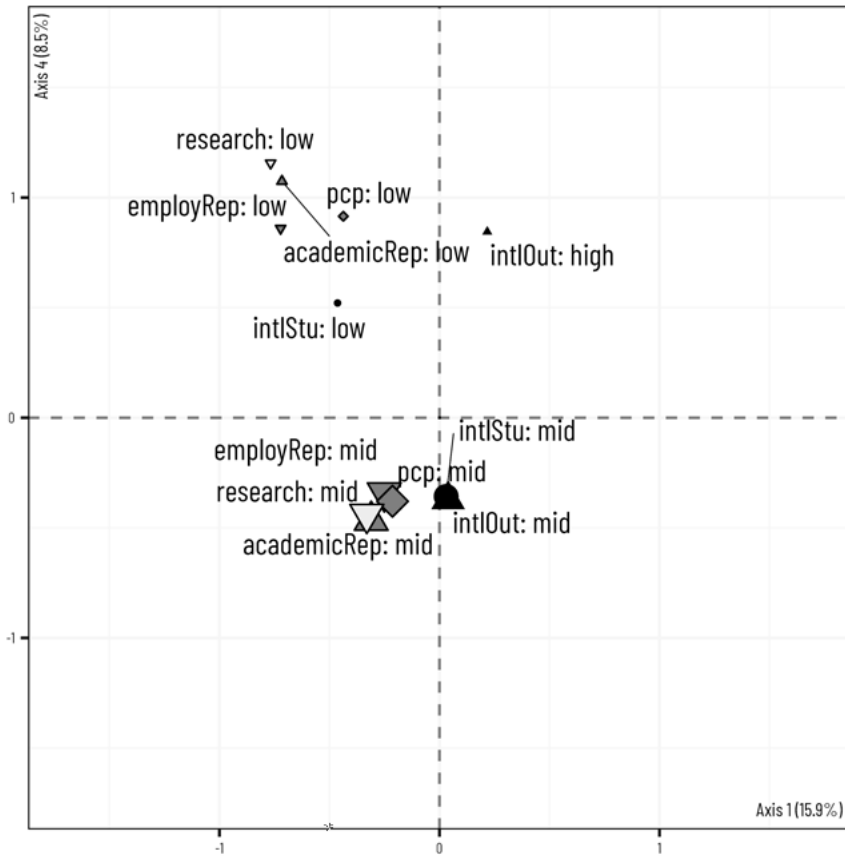
Figure 20. Cloud of Categories. Variables exceeding the mean contribution (7.7%) on Axis 3 and their modalities with higher contributions., Plane 1–3. Sizes according to weight.



Interpretation of Axis 4: Low vs. Medium Modalities

Axis 4 presents an opposition mostly between “low” and “mid” modalities in variables such as Research, Academic Reputation, Per Capita Performance, Employer Reputation, and International Students (see Table 8 below). This pattern indicates a divide between universities with moderate achievements across these variables and those with lower performance. Institutions with moderate achievements may represent an emerging tier in the global academic hierarchy, distinguishing themselves with steady, albeit not top-tier, performance in key areas of academic and reputational importance.

Figure 21. Cloud of Categories. Variables exceeding the mean contribution (7.7%) on Axis 4 and their modalities with higher contributions., Plane 1–4. Sizes according to weight.



This opposition might be indicative of the stratification within the higher education sector. Universities categorised in the “mid” modality could be those that have achieved a certain level of recognition and quality in research, academic reputation, and other metrics, positioning themselves above the threshold of newer or less recognised institutions (“low” modalities). This stratification is not just a measure of quality but also of visibility and historical development within the sub-field.

Table 8. Variables exceeding the mean contribution (7.7%) on Axis 4 and their modalities with higher contributions.

<i>Variables</i>	<i>Positive Coordinates</i>	<i>Negative Coordinates</i>
Research	Low (13.1%)	Mid (5.7%)
Academic Reputation	Low (11.3%)	Mid (6.5%)
Per Capita Performance	Low (8.2%)	Mid (4.3%)
Employer Reputation	Low (7.3%)	Mid (3.4%)
International Outlook	High (7.0%)	Mid (4.0%)
International Students	Low (2.8%)	Mid (3.7%)

Cloud of Individuals

Individuals on Axis 1: Institutional Performance and Reputation

The results from the MCA highlight a clear division on Axis 1. Universities like Harvard, Stanford, Massachusetts Institute of Technology (MIT), Cambridge University (CU), and Oxford exhibit high positive coordinates (ranging from approximately 1.23 to 1.42) and substantial contributions (from about 4% to 5%), solidifying their positions at the upper end of Axis 1. This indicates a strong alignment with the characteristics of high reputation and performance, which is consistent with their global standing and recognition in academic circles.

Interestingly, institutions like the California Institute of Technology (Caltech), the University of Chicago (UChicago), and Cornell show slightly lower coordinates (around 0.67 to 0.70), yet still contribute significantly to this axis. This suggests that while their overall impact on Axis 1 is notable, they may not align as strongly with the highest levels of reputation and performance as the previously mentioned universities.

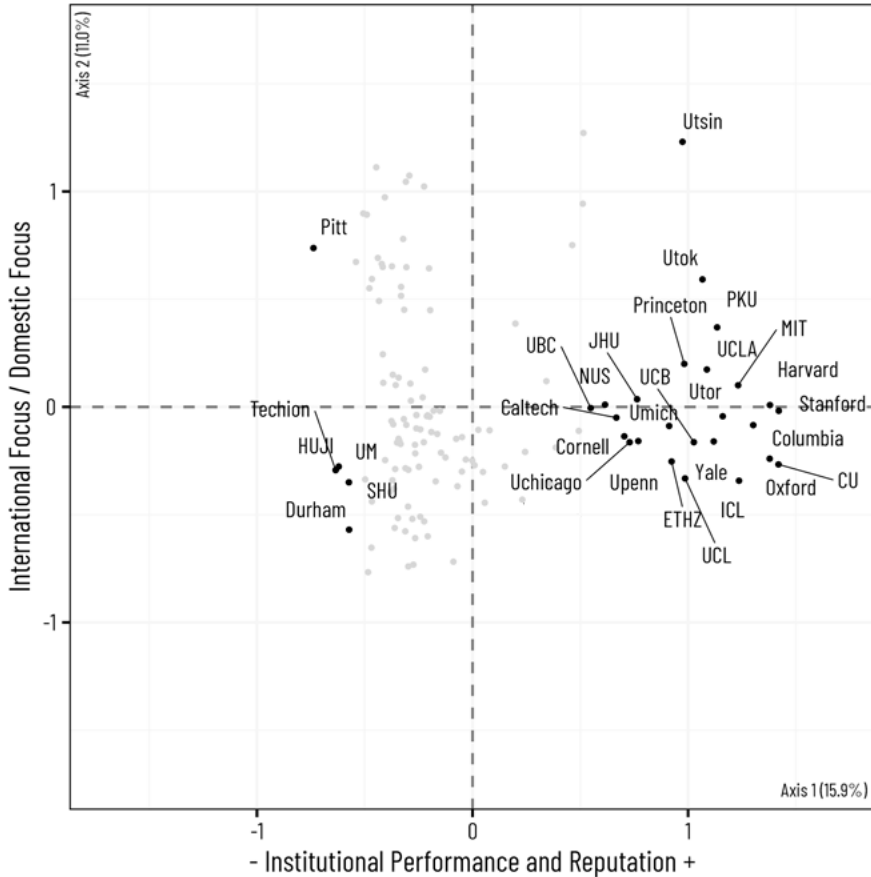
On the other end of the spectrum, universities such as Technion Israel Institute of Technology, Hebrew University of Jerusalem (HUJI), University of Pittsburgh (Pitt), Southampton University (SHU), Durham University (Durham), and University of Malaya (UM) have negative coordinates, indicating a different positioning on this axis. Their presence reflects a contrast to the high-reputation institutions, possibly representing universities with emerging or developing reputations or those that are strong in specific areas rather than across a broad spectrum of indicators.

When interpreting the positions of universities on Axis 1, it's crucial to consider that even those labelled as "low performers" are relative to a sample comprising some of the top-performing institutions globally. Therefore, terms like "low" or "worst" performance should be contextualised within this elite group. These universities, while perhaps lower on this specific axis compared to their counterparts, are still among the upper echelons in the broader landscape of global higher education.

The geographical distribution of these institutions across Axis 1 offers additional insights. On one end, with high coordinates and substantial contributions, we predominantly see universities from the US (such as Harvard, Stanford, and

MIT) and the UK (like Cambridge and Oxford). This grouping reflects the long-established academic dominance and global reputation of universities in these regions, known for their comprehensive research outputs, high academic standards, and historical prestige.

Figure 22. Cloud of individuals, Plane 1–2. Highlighting individuals with a contribution above the mean on Axis 1.



Conversely, the institutions with negative coordinates, representing a different positioning on Axis 1, include notable universities from regions such as the Middle East (Technion, Hebrew University of Jerusalem) and Asia (National University of Singapore, University of Malaya). This contrast might illustrate the emerging prominence of universities outside the traditional Western academic powerhouses. These institutions, while perhaps not aligning with the very highest levels of global reputation and performance as defined by this axis, are nonetheless making significant strides and contributions within their regions and in specific academic areas.

Additionally, the presence of Asian universities such as Tsinghua and Peking University with positive coordinates, albeit not as high as their North American and European counterparts, indicates the rising global influence of higher education institutions in this region. It underscores the increasing competitiveness of Asian universities, which are gradually closing the gap with traditionally dominant Western institutions.

In sum, Axis 1 reflects not only the spectrum of academic performance and reputation but also a geographical narrative. It underscores the longstanding dominance of Western universities in global academia while also highlighting the growing impact and evolution of institutions in other parts of the world.

Individuals on Axis 2: Domestic Focus vs. International Focus

The distribution of universities on Axis 2 illustrates a clear demarcation between those with a domestic focus and those with a stronger international orientation. Universities such as Tsinghua (Utsin), Science and Technology of China (USTCH), Seoul National (US), and Korea Advanced Institute of Science and Technology (KAIST), with their significantly positive coordinates (around 1.07 to 1.27) and high contributions (around 4% to almost 6%), exemplify institutions with a pronounced domestic focus. Despite their growing global presence, these universities' positioning on this axis suggests a predominant alignment with national priorities or strengths, indicated by high scores in industry income paired up with lower scores in indicators related to international recruitment. This could be reflective of their core focus on serving national educational and research needs or a strategic emphasis on domestic objectives.

Conversely, universities like Geneva (UoG), Stockholm (StockU), Western Australia (UWA), Trinity College Dublin (TCD), and St Andrews (UstA), represented by their negative coordinates (ranging from -0.53 to -0.77 approximately), demonstrate a stronger international orientation. This indicates their global outreach, international student and faculty composition, and perhaps a more global approach in their academic and research programs.

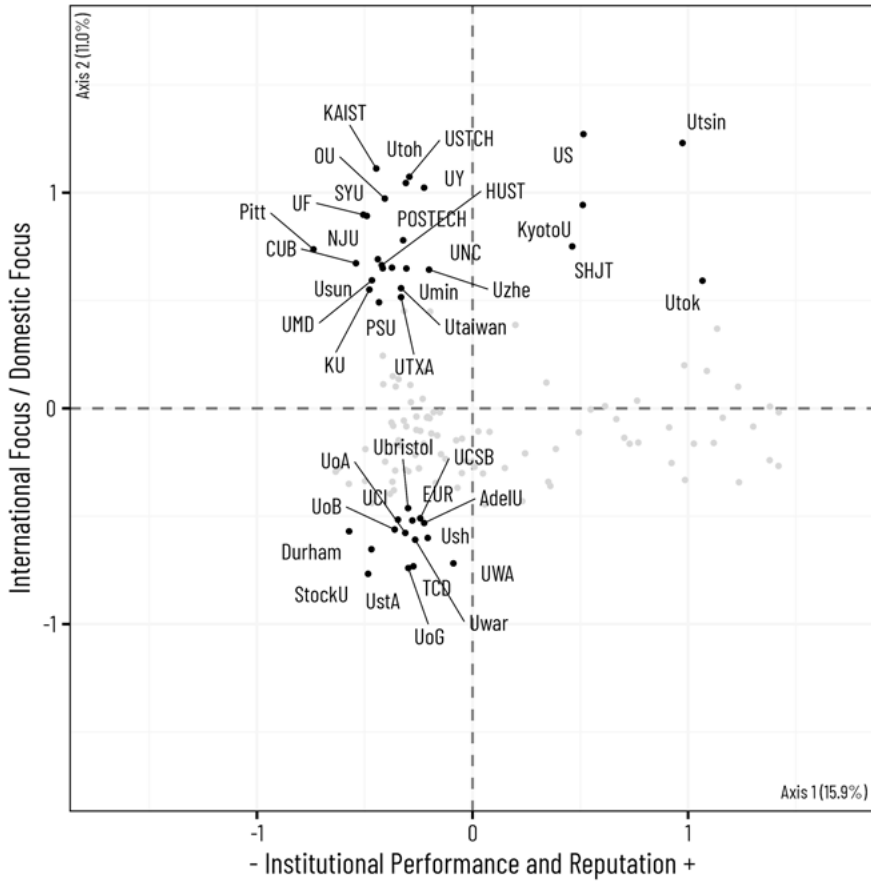
Interestingly, North American universities such as North Carolina Chapel Hill (UNC), Texas Austin (UTXA), and Colorado Boulder (CUB), with their moderately positive coordinates (around 0.52 to 0.67), indicate a balance between international and national focus but with a slight leaning towards domestic orientation. These institutions, while engaging internationally, may also be significantly influenced by their regional and national contexts.

The positioning of universities like California Santa Barbara (UCSB), California Irvine (UCI), Bristol (Ubristol), and Sheffield (Ush) with negative coordinates reinforces their international leaning. These universities, perhaps, emphasise global engagement and international collaborations, highlighting a strategic orientation that goes beyond their national boundaries.

The divide observed on Axis 2, when viewed through a geographical lens, aligns well with known patterns in global higher education, particularly regarding the mo-

bility of staff and students. Asian universities, represented by institutions like Tsinghua (Utsin), Science and Technology of China (USTCH), Seoul National (US), and Korea Advanced Institute of Science and Technology (KAIST), are typically known as exporters in the context of staff and student cross-border mobility. Their positive coordinates on Axis 2, indicating a domestic focus, may reflect this trend. These institutions, while increasingly recognised on the global stage, still retain a strong domestic orientation, perhaps due to their roles in supporting national educational agendas or focusing on domestic student populations.

Figure 23. Cloud of Individuals, Plane 1–2. Highlighting individuals with a contribution above the mean on Axis 2.



In contrast, European and North American as well as some Australian universities, with their negative coordinates on Axis 2, are often seen as importers in the global mobility landscape. Institutions like Geneva (UoG), Stockholm (StockU), Western Australia (UWA), Trinity College Dublin (TCD), and St Andrews (UstA) exemplify this trend. The European Higher Education Area (EHEA) and

European Research Area (ERA) significantly contribute to this pattern, fostering a high level of mobility and collaboration within the region. These initiatives have created an interconnected educational ecosystem in Europe, enhancing the international appeal and orientation of European universities.

Language also plays a pivotal role in shaping these patterns. English, as a widely spoken international language, gives an edge to universities in English-speaking countries in attracting international students and staff. This aspect further enhances the international orientation of these institutions, as reflected in their positioning on Axis 2.

The differing roles of Eastern and Western universities in the context of global mobility, influenced by regional policies and language factors, provide a comprehensive understanding of their positioning on this axis. This insight underscores the complex interplay of regional dynamics and global strategies in shaping the character and focus of higher education institutions worldwide.

Individuals on Axis 3: Current Impact vs. Historical Reputation

This axis highlights a fascinating dynamic. It contrasts universities that are emerging as modern centres of research and internationalisation with those that have long-standing reputations in scientific fields. This divide is not just about current performance but also reflects the historical context of these institutions.

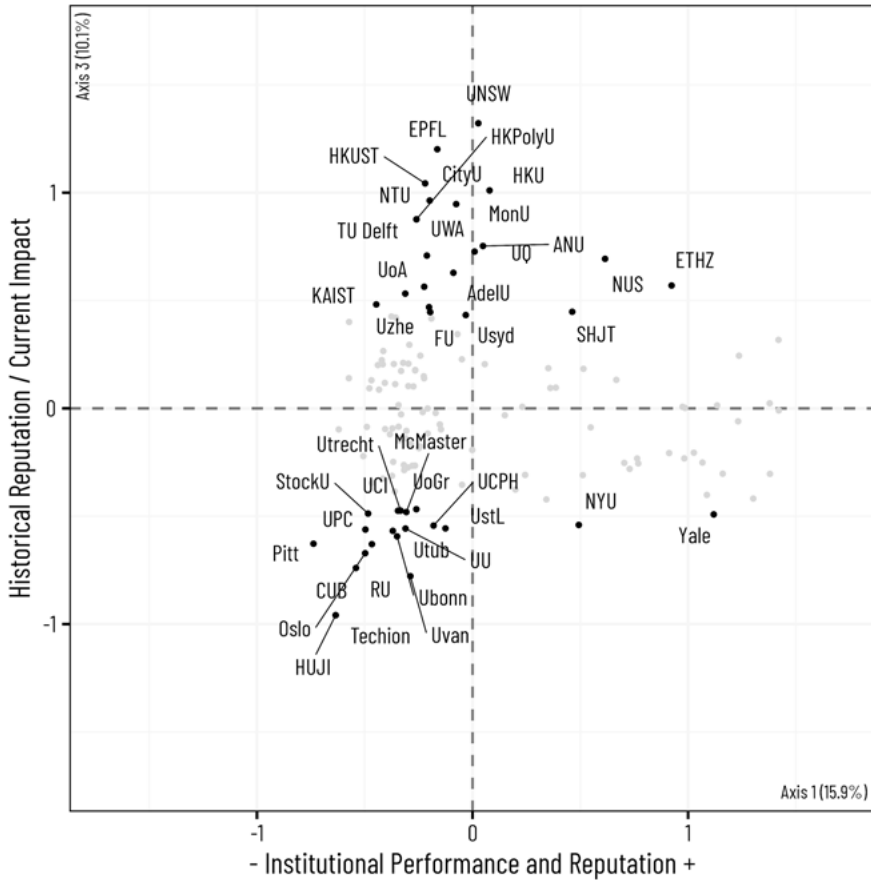
The geographical spread of these universities also underlines this narrative. Asian universities like Hong Kong University (HKU), City University of Hong Kong (CityU), and Hong Kong University of Science and Technology (HKUST) are making significant strides in internationalisation and research impact, contrasting with some traditionally prestigious Western institutions that might have a more established historical reputation but a different current profile in terms of internationalisation and citations.

Anglo-Saxon institutions, traditionally known for their long-standing academic prestige, appear to have a varied presence on Axis 3. For instance, Yale, with a negative coordinate, suggests a stronger alignment with historical prestige rather than current internationalisation or citation metrics. This pattern might be indicative of a broader trend among older, established universities in the UK and the US, where historical reputation, perhaps in specific scientific fields, has been more prominent than current performance in certain international and research metrics. Nobel Prizes and Fields Medals are often awarded for contributions that not only represent the pinnacle of academic achievement but also typically reflect a culmination of work over an extended period. As such, universities known for their associations with these awards, especially those with a history of Nobel laureates and Fields Medallists, are likely to have a strong historical prestige. This aligns with the negative coordinates seen in universities like Yale, where the legacy of academic excellence and ground-breaking research is well-established.

Universities from regions that were former British colonies, such as the National University of Singapore (NUS), Australian National University (ANU),

and the University of Hong Kong (HKU), show positive coordinates. This reflects their growing emphasis on current internationalisation and research impact. These institutions, benefiting from the English language advantage and often influenced by the British educational model, are actively bolstering their international presence and research output, differentiating them from traditionally prestigious universities with a more historical focus.

Figure 24. Cloud of individuals, Plane 1–3. Highlighting individuals with a contribution above the mean on Axis 3.



Scandinavian institutions, such as the University of Copenhagen (UCPH) and Stockholm University (StockU), with their negative coordinates, might be more aligned with historical prestige. This could be reflective of a strong regional and historical influence in these institutions, where the emphasis has been traditionally on maintaining academic excellence within a more localised or regional context, rather than aggressively pursuing current internationalisation or research metrics.

Asian universities like Tsinghua University (Utsin), Nanyang Technological University (NTU), and universities in Hong Kong, with their positive coordinates, are illustrative of a shift towards current internationalisation and research prominence. This is indicative of a strategic pivot in many Asian institutions towards enhancing their global standing through active international engagement and a focus on research output, distinguishing them from their Western counterparts with more historically established reputations.

This distinction on this axis highlights a key dynamic in global higher education: the balance between legacy and innovation. While historical recognition through Nobel Prizes and Fields Medals undeniably contributes to a university's prestige, contemporary metrics of international engagement and research productivity are increasingly important in defining a university's current standing and future trajectory.

Individuals on Axis 4: Low vs. Medium Modalities

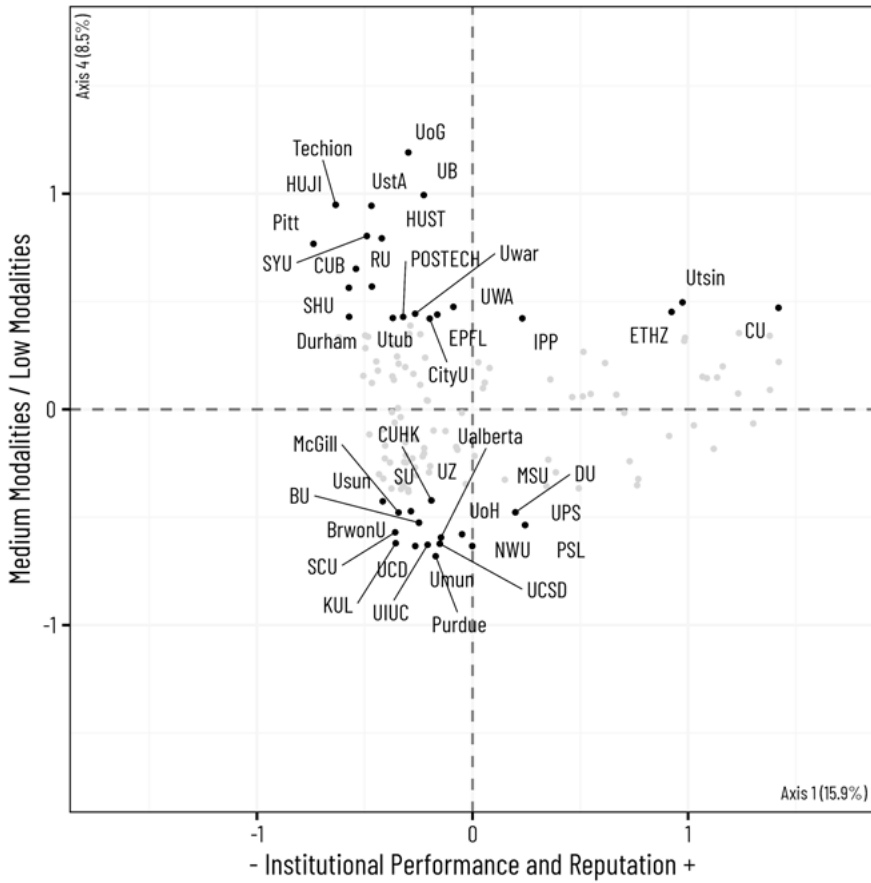
The analysis of the cloud of individuals on plane 1–4 reveals a focus primarily on medium versus low modalities. Most individuals contributing above the mean on this plane have low modalities across multiple categories (top of Figure 25). Consequently, this axis should be interpreted as a plane of axes 1 and 4, with three main groups of institutions based on their scores: low, medium, and high, where the emphasis is on the first two, low and medium.

Institutions like Paris Saclay (UPS), California San Diego (UCSD), Northwestern (NWU), and Illinois Urbana-Champaign (UIUC) with negative coordinates on Axis 4 represent medium modalities. These universities, while prestigious and high performing, align more closely with medium scores, indicating a well-rounded performance across various metrics without excelling to an extreme in any specific area.

Universities like Cambridge (CU), ETH Zurich (ETHZ), and Tsinghua (Utsin) with positive coordinates indicate a deviation towards higher overall scores, reflecting either exceptional performance or unique attributes that set these institutions apart. Universities like Geneva (UoG), Technion Israel Institute of Technology, and Hebrew University of Jerusalem (HUJI) with high positive coordinates on Axis 4 lean to the negative pole of Axis 1, likely reflecting an emphasis on lower scores. Institutions like EPFL, Rice University (RU), and the University of Western Australia (UWA) also fall within this group.

In sum, Axis 4 seems to delineate universities based on their deviation from median characteristics, either towards unique, exceptional attributes or towards a more balanced, median profile. This axis offers insights into the diversity of higher education institutions, highlighting how certain universities distinguish themselves through either extreme achievements or well-rounded performances. This analysis underscores the complexity and heterogeneity in the global higher education landscape, where institutions carve out their niches based on a range of characteristics and achievements.

Figure 25. Cloud of individuals, Plane 1–4. Highlighting individuals with a contribution above the mean on Axis 4.



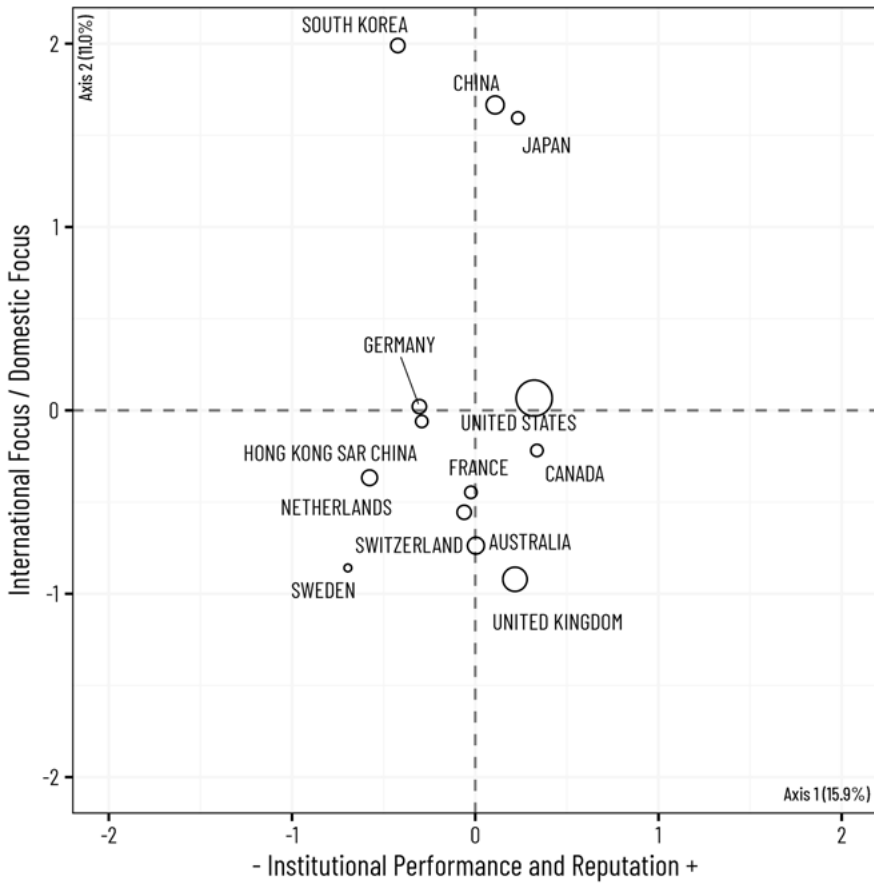
Supplementary Variables

Geography

When projecting the countries of origin of the institutions comprised by the global sub-field under examination, a few distinctions become patently clear. The US, Canada, Australia, the UK, China, and Japan exhibit positive coordinates on Axis 1, aligning with higher institutional performance and reputation. The US stands out prominently, a reflection of the diverse range of institutions it encompasses. Despite this diversity, the overall trend in the US leans towards superior performance. In contrast, countries such as Sweden, the Netherlands, South Korea, Germany, Hong Kong, France, and Switzerland are positioned on the opposite pole of Axis 1. This placement suggests a comparatively lower perfor-

mance of their institutions, providing a vital insight into the varying levels of university achievement across nations (see Figure 26).¹⁸⁷

Figure 26. Countries with more than 2 institutions in the sample, Plane 1–2. The size of the points indicates the number of universities.¹⁸⁸



Examining Axis 2, which contrasts internationalisation with domestic orientation, reveals distinctive patterns. Predominantly Asian countries—South Korea, China, and Japan—occupy the higher end of this axis, indicative of a strong domestic focus. This trend aligns with their educational systems’ linguistic and cultural traditions, which predominantly attract outbound student and faculty mobility and bolster industry income, reflecting a commitment to their national industries. An exception in this trend is Hong Kong, which leans towards interna-

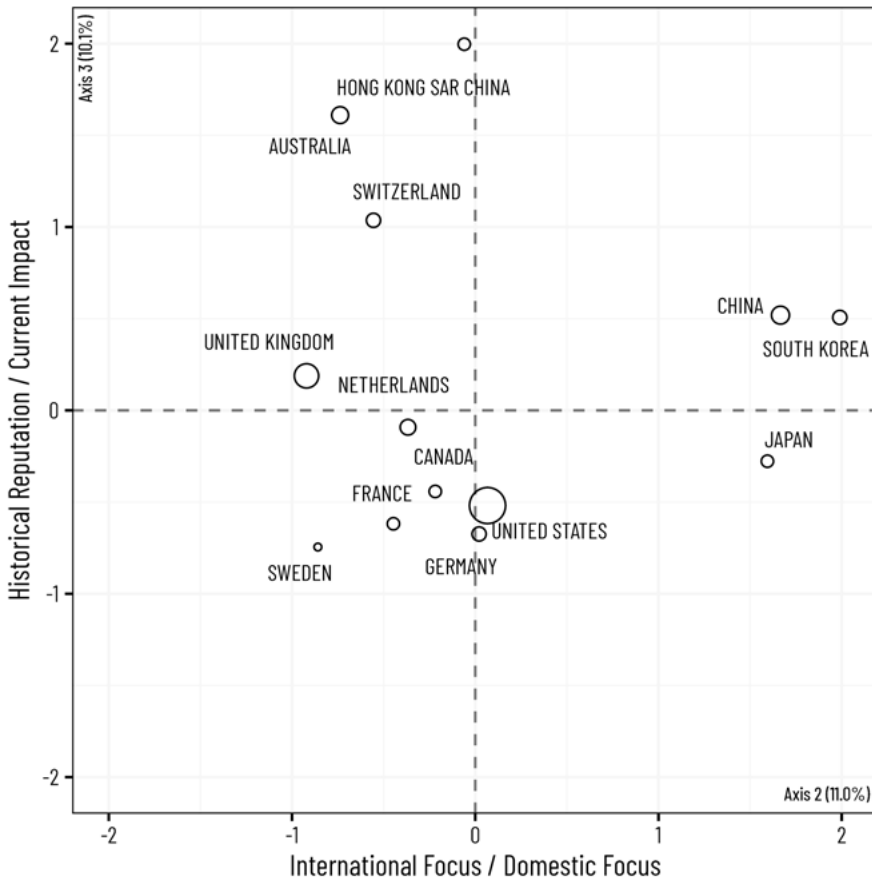
¹⁸⁷ Geographical and geopolitical regions are explored in Chapter 7. See Figures 37 and 41.

¹⁸⁸ Note that the scales in both axes have been expanded in comparison to the previous figures to accommodate all countries’ mean points. The same has been done for Figure 27.

tionalisation, likely due to its historical ties with the UK and the prevalent use of English in its education system.

Germany and the US present a more balanced profile along this axis, possibly due to the diverse range of their institutions. The Netherlands, Switzerland, France, Sweden, Australia, Canada, and the UK stand on the side of international focus as well, with the latter three Anglo-Saxon countries placing on the positive side of Axis 1 (higher performance and reputation), and the other European countries standing on the negative side (lower performance).

Figure 27. Countries with more than 2 institutions in the sample, Plane 2–3. The size of the points indicates the number of universities.



Axis 3 (see Figure 27) is particularly telling in its lower left quadrant on plane 2–3 where European countries, notably Sweden, along with France, Canada, and the Netherlands are recognised for their historical academic reputation. Sweden’s position here is underscored by its long-standing scientific tradition, evident in the relatively large number of Nobel Prizes and Fields Medals awarded to its ac-

ademics. Conversely, Hong Kong and Australia, representing relatively younger higher education systems, are situated at the top of Axis 3, indicating a focus on current impact rather than historical standing. This positioning is also shared by Switzerland, China, South Korea, and the UK, with the latter demonstrating a more balanced profile, straddling the line between historical and contemporary academic achievements.

This exercise of analysing the distribution of countries based on the performance of their institutions in global university rankings through MCA reveals significant insights about the intricate relationship between national higher education systems and their global standing. The distinct positioning of countries across the axes underscores not just the diversity of academic strategies and priorities, but also the varying impacts these approaches have on international recognition and reputation.

The stark contrast between countries like the US, UK, and Australia, which align strongly with high performance and reputation, and those like Sweden and South Korea, which demonstrate a different scale of global impact, illustrates the profound influence of national policies, cultural contexts, and historical backgrounds on the global academic stage. This disparity is not merely a reflection of institutional quality, but rather a complex interplay of factors including research priorities, language barriers, and internationalisation strategies.

Furthermore, the analysis offers a deeper understanding of how different countries navigate the balance between maintaining a strong domestic focus and engaging in the global academic community. The varied approaches towards internationalisation, as seen in the Asian context versus the more globally integrated stance of countries like Hong Kong, speak volumes about the dynamic nature of higher education systems in responding to global trends and challenges as well as how their social history also plays a role in their performance.

Age

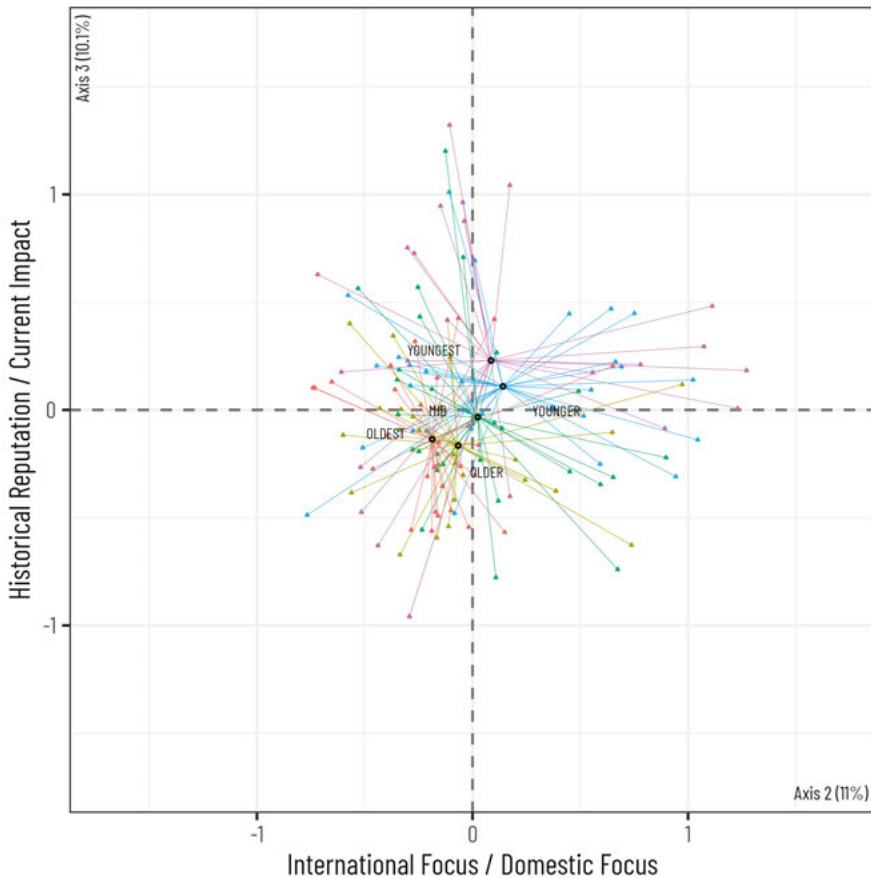
Another interesting feature that helps us understand the structure of the global sub-field of universities under scrutiny is age. This variable was calculated relative to the ages of the institutions within the sample population. Five distinct categories of age were created trying to fit a similar number of institutions into each one: oldest (established between 1096–1701), older (1724–1838), mid (1839–1876), younger (1877–1908), and youngest (1909–1991).

Given that the mean points of age tend to hover closer to the centre along Axis 1, the most informative plane is 2–3 (Figure 28). In this plane, we can see that the mean points are somewhat organised along both axes from left to right and from the bottom up. The oldest and older universities, positioned in the bottom left quadrant, highlight a profile characterised by a strong international focus and historical reputation. This positioning resonates with the traditional perception of these institutions, which are often revered for their longstanding contributions to academia and their established networks in the global educa-

tional sphere. The mid-age institutions, clustering around the origin, suggest a transitional phase in the evolution of universities, balancing elements of both historical prestige and modern impact.

On the other hand, the younger and youngest institutions, leaning towards the top right quadrant, indicate a more pronounced domestic orientation and a focus on current impact. This could reflect a strategic emphasis on addressing immediate, localised needs or a developmental phase where these institutions are still carving out their global academic identity. These results confirm the interpretation of Axis 3.

Figure 28. Star graph of age mean points, Plane 2–3.



The star graph, as illustrated in Figure 28, adds a layer of complexity to these interpretations. While the mean points of each age category suggest a certain trend, the star graph reveals a more scattered distribution of individual universities. This distribution highlights the diversity within each age group and cautions against overgeneralisation. For instance, an older institution may still demon-

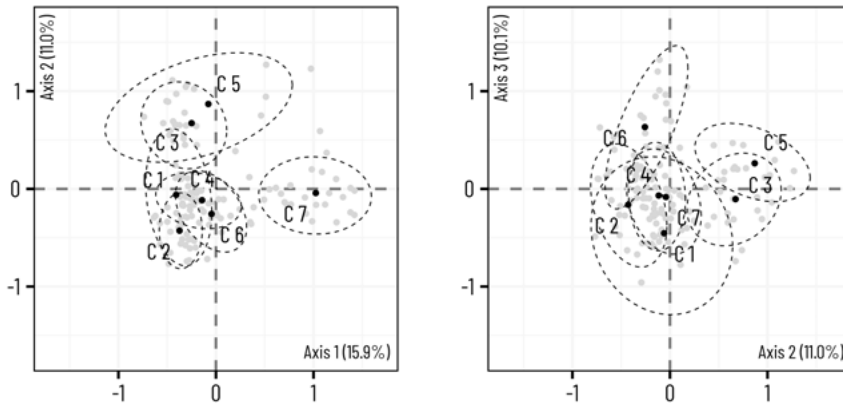
strate a strong contemporary impact, diverging from the average trend of its category. This nuanced view prevents normative interpretations and underlines the uniqueness of each institution, regardless of its age.

Reflecting on the relevance of an institution's age, it becomes clear that this variable is more than a chronological marker; it encapsulates a history of academic evolution, shifts in educational priorities, and adaptation to changing global demands. The age of an institution often correlates with entrenched traditions, the depth of academic networks, and the development of a distinctive educational ethos. However, as the star graph shows, age does not singularly define an institution's current status or its strategic orientation, underlining the dynamic nature of the academic world.

6.3 Euclidean Clustering

To investigate what distinct groups of institutions emerge according to their positions within the global sub-space of universities constructed in the previous sections of this chapter, I performed an Agglomerative Hierarchical Clustering (AHC) on the Euclidean cloud of individuals. AHC is a method of cluster analysis which seeks to build a hierarchy of classes. Initially, each data point is considered as a separate cluster, and then at each successive step, the two clusters that are closest to each other are merged, continuing until only one cluster remains.

Figure 29. All clusters, planes 1-2 and 2-3.



I used Ward's linkage method to measure the dissimilarity between clusters. Ward's method aims to minimise the total within-cluster variance at each step. Specifically, at each step, the pair of clusters that, when merged, would result in the smallest increase in the total within-cluster variance is chosen to be merged. In mathematical terms, Ward's method minimises the sum of squared differences within all clusters.

This is similar to the objective function of K-means, and as such, this method tends to produce more compact, spherical clusters. By focusing on minimising the increase in variance, Ward's linkage helps in finding clusters that are more coherent and similar in terms of the data's underlying principal components.

After the initial hierarchical clustering using Ward's method, I applied a consolidation step to further refine the clustering. This consolidation involves a k-means clustering process, which iteratively adjusts the cluster assignments to enhance their coherence and distinctiveness. Essentially, it fine-tunes the initial hierarchical clustering by reallocating data points to clusters to reduce the total within-cluster variance. This step is beneficial for achieving more defined and stable clusters, as it leverages the robustness of the k-means method to optimise the cluster partitions derived from the hierarchical approach. To determine the optimal number of clusters for the dataset, I studied the successive resulting dichotomies considering the size of the sample population ($n = 140$) and determined that a partition in 7 clusters presents the most informative output, providing a well-defined structure whilst avoiding over-segmentation of the data.

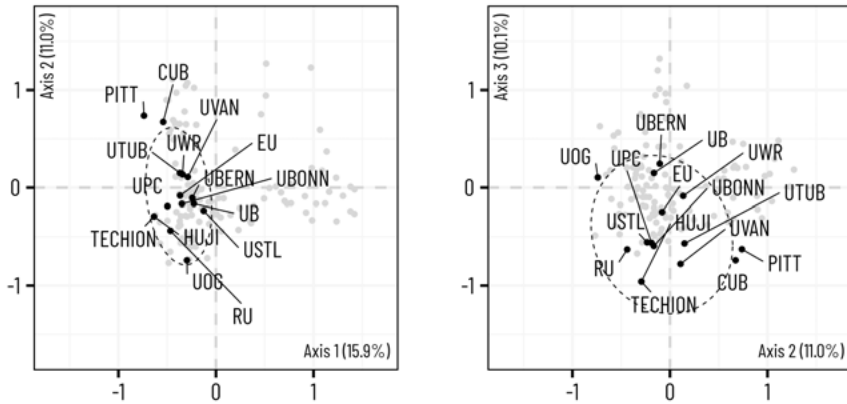
First Cluster: Global Low-Performers¹⁸⁹

Cluster 1 includes 15 universities: Washington in St. Louis, Colorado Boulder, University of Geneva, Vanderbilt, Technion – Israel Institute of Technology, University of Basel, University of Bonn, Hebrew University of Jerusalem, Rice University, Paris Cité University, University of Pittsburgh, University of Bern, Emory University, Wageningen University & Research, and University of Tübingen (see Figure 30).

Every university in Cluster 1 falls into the “low” score modality for Academic Reputation, constituting 54% of such institutions. Similarly, 93% of these universities are classified as low in Employer Reputation, encompassing half of all institutions in this category. This highlights a consistent trend across the cluster, indicating a current standing that is lower in the context of global academic and employer perceptions. Regarding Research, 73% of Cluster 1's universities present “low” scores, comprising 39% of all such institutions. For Per Capita Performance, over half of the universities in this cluster (53%) are in the “low” modality as well. This suggests a similar trend in both research output and performance metrics, relative to the larger sample.

¹⁸⁹ The reader should keep in mind that “low”, “mid”, and “high” performance or scores are relative to the group of institutions under study, which includes the highest performing institutions across all three rankings.

Figure 30. Cluster 1, planes 1–2 and 2–3.



Nearly half of the universities in this cluster (45%) fall into the “low” modality scores for Citations per Faculty, accounting for 25% of all institutions with this characteristic. This further aligns with the cluster’s overall profile in research-related metrics. Perhaps unsurprisingly given the trend so far, in terms of global ranking, 93% of the universities in Cluster 1 are positioned outside the top 100 in QS, representing 34% of all institutions in this rank category. Most of the stand-out features of this cluster are provided by indicators associated with this ranking.

The cluster’s geographical footprint is varied, spanning from North America to the Middle East. This cluster includes all Israeli universities in the sample and half of the Swiss universities included. This accounts for 13% and 20% of the cluster’s composition, respectively. Additionally, 47% of Cluster 1 comprises non-Anglo-Saxon European institutions.

Despite lower general scores in broad ranking indicators, many universities within this cluster are distinguished for their specialised contributions to academia. For instance, the Technion-Israel Institute of Technology is highly regarded for its prowess in engineering and technology, whereas Wageningen University & Research is at the forefront of agricultural sciences. Such specialisations underscore the depth of knowledge and innovative research these universities offer, which broad ranking systems may not fully acknowledge in their top tiers. The inclusion of smaller or specialised entities, such as Emory University and the University of Basel, suggests that institutional influence extends beyond sheer size and generalised reputation metrics, highlighting their substantive roles in specific academic domains.

Second Cluster: Western Oriented Low-Performers

Cluster 2 comprises 22 universities, including University of Malaya, California Santa Barbara, Utrecht, California Irvine, University of Oslo, Aarhus University,

University of Bristol, McMaster University, Stockholm University, Erasmus University Rotterdam, Uppsala University, Leiden University, University of Glasgow, University of Sheffield, University of Birmingham, Lund University, Trinity College Dublin, University of Southampton, University of Auckland, KTH Royal Institute of Technology, University of St Andrews, and Durham University.

All institutions in Cluster 2 are categorised with “low” modality in Teaching, representing a substantial 79% of such institutions in the full sample. This suggests a uniformity within the cluster regarding teaching metrics. In Research, 45% of the cluster’s institutions fall into the “low” modality, accounting for 36% of all such institutions. This indicates a lower level of research output or recognition relative to the larger dataset.

In Industry Income, 41% of Cluster 2’s universities showcase “low” modalities, encompassing 31% of all institutions with this characteristic. Conversely, in International Faculty, 91% of these universities are in the “mid”-score modality, indicating a moderate level of international faculty engagement compared to the global context.

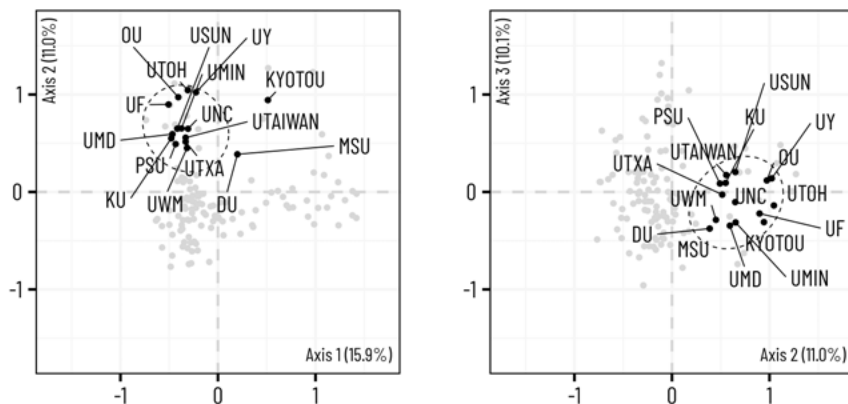
In terms of global rankings, the cluster shows varied positioning. In the QS ranking, 27% of universities within this cluster rank between 90 and 100, capturing 60% of all institutions in this bracket. The ARWU ranking sees 23% of these universities in the 80–90 bracket and 55% outside the top 100, highlighting a more diverse ranking profile within the cluster. In THE, 63% of the cluster’s institutions rank outside the top 100, representing 32% of all such institutions. Again, considering the profile described above with performance metrics, these placements are not surprising.

Cluster 2 is predominantly European, with 77% of its institutions based in this region, capturing 32% of all European institutions in the sample. This is complemented by a significant representation of Anglo-Saxon universities, including 59% from Europe and North America. The UK and Sweden are particularly notable within this cluster, with 41% and 100% of their respective institutions in the sample included. Asian representation is minimal, at only 5%. There’s also a notable presence of institutions from the Netherlands.

Notably, none of the universities in Cluster 2 are categorised with high modalities in Academic Reputation, Employer Reputation, Per Capita Performance, Research, Teaching, or Faculty/Student Ratio. This absence underlines uniformity in the cluster regarding these key performance indicators.

Faculty is also “low”, with half of its institutions featuring this modality, representing 29% of all such institutions. This could reflect certain limitations in research impact or academic influence as measured by citation metrics.

Figure 32. Cluster 3, planes 1–2 and 2–3.



A notable strength of Cluster 3 is in Industry Income, where 94% of its institutions are categorised in the “high” modality, capturing 29% of all such institutions. This suggests a strong engagement with and income from industry partnerships, possibly indicating effective technology transfer and collaboration with the business sector. However, Cluster 3 displays a lower engagement in international dimensions. A significant 94% of the universities have a “low” modality in International Faculty, constituting 54% of all institutions in this category. This is paralleled in International Outlook and International Students, where 75% and 56% of the cluster’s institutions, respectively, have “low” modalities. These numbers suggest a more domestic or regional focus rather than a global one.

In global rankings, Cluster 3 has a mixed presence. In the QS Ranking, 38% of its universities are ranked between 70–80, capturing 60% of all institutions in this bracket. In THE Ranking, a majority (63%) of the cluster’s institutions are ranked outside the top 100, representing 23% of all institutions in this category.

Geographically, Cluster 3 has a strong Asian representation. It includes 44% of its institutions from Asia, capturing 23% of all such institutions in the full sample. Notably, it encompasses a significant portion of institutions from Japan (60% of the full sample) and South Korea (50% of the full sample). In summary, Cluster 3 can be characterised as mid-range performers with strong industry links and regional focus.

Fourth Cluster: Balanced Mid-Performers

Cluster 4 encompasses 31 universities, including Paris Saclay, California San Diego, University of Washington, New York University, Northwestern, PSL,

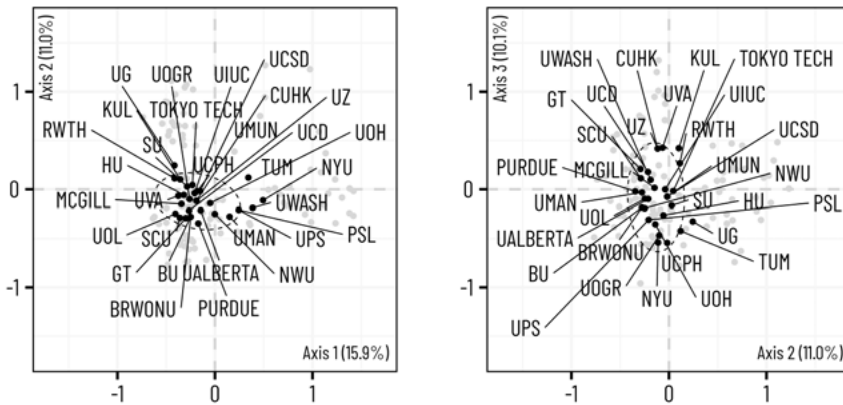
FROM CHAOS TO COSMOS: THE CONSTRUCTION OF A GLOBAL SUB-FIELD OF UNIVERSITIES

University of Manchester, University of Copenhagen, Illinois Urbana-Champaign, Sorbonne, University of Zurich, University of Southern California, Technical University of Munich, University of Munich, University of Groningen, University of Heidelberg, University of Ghent, McGill University, Brown University, Purdue University, University of Helsinki, KU Leuven, University of Alberta, Boston University, University of California Davis, University of Amsterdam, Georgia Institute of Technology, Chinese University of Hong Kong, Tokyo Institute of Technology, University of Leeds, and RWTH Aachen.

Concerning Teaching, Research, Per Capita Performance, and Academic Reputation, Cluster 4 uniformly showcases “mid” modalities. All of its institutions score “mid” in Teaching, capturing 37% of such institutions in the full sample. Similarly, a majority of the cluster’s universities, 84%, score “mid” in Research, representing 31% of all institutions in this category. This trend continues with Per Capita Performance and Academic Reputation, where 90% and 97% of the cluster’s institutions, respectively, are also classified as “mid” performers.

The cluster’s standing in Employer Reputation, International Outlook, International Students, and International Faculty further cement its “mid-range” profile. A significant majority of its universities fall into the “mid”-modality category in these dimensions, indicating a balanced, though not exceptional, global engagement and recognition in the academic and business communities.

Figure 33. Cluster 4, planes 1–2 and 2–3.



An interesting characteristic of Cluster 4 is its significant representation of award-winning staff with 77% of its institutions noted for featuring the “yes” modality in this variable, capturing 28% of all such institutions. This could be indicative of high-quality faculty and research contributions.

In terms of global rankings, the cluster has a notable presence in THE rankings, with two-thirds of all institutions ranked between 40-50 represented by

19% of Cluster 4's universities. This suggests a strong positioning within the upper mid-tier of global university rankings.

Geographically, Cluster 4 has a pronounced European focus, particularly in non-Anglo-Saxon countries. It encompasses 41% of all non-Anglo-Saxon European institutions, with 45% of the cluster's universities exhibiting this feature. Additionally, it includes a significant portion of German (67%) and all Belgian institutions in the sample.

Overall, Cluster 4 can be characterised as balanced mid-range performers with a European emphasis. This label reflects the cluster's consistently mid-range performance across various academic and institutional metrics, its notable presence of award-winning staff, and its strong representation of European, particularly non-Anglo-Saxon, institutions.

Fifth Cluster: Domestically-Oriented Asian Institutions with Stronger Research Focus

Cluster 5 groups 11 institutions, predominantly from Asia, including Tsinghua University, Zhejiang University, University of Science and Technology of China, Shanghai Jiao Tong University, Fudan University, Sun Yat-sen University, Seoul National University, Huazhong University of Science and Technology, Nanjing University, Korea Advanced Institute of Science and Technology (KAIST), and Pohang University of Science and Technology (POSTECH).

A key feature of Cluster 5 is its exceptional Per Capita Performance. A significant 73% of the institutions within this cluster are classified with "high" modalities in this aspect, capturing 29% of all institutions with "high" modalities in this variable within the full sample. This suggests that on an individual level, these institutions are highly effective and efficient in their academic outputs. Similarly, regarding Citations per Faculty, 64% of Cluster 5's universities exhibit "high" modalities, representing 25% of such institutions globally. This highlights their strong research output and academic influence, particularly in terms of the impact of their scholarly work.

Contrasting with these strengths, Cluster 5 shows a lower level of international engagement. The majority of its institutions have "low" modalities in both International Students (73%) and International Faculty (55%), and all institutions in this cluster possess a low international outlook. This pattern suggests a more domestically-focused approach to higher education, with less emphasis on attracting international talent or perspectives.

Despite their academic productivity, universities in Cluster 5 notably lack global recognition in terms of award-winning achievements. A vast majority of these institutions, 91%, have no award-winning alumni, and none have award-winning staff.

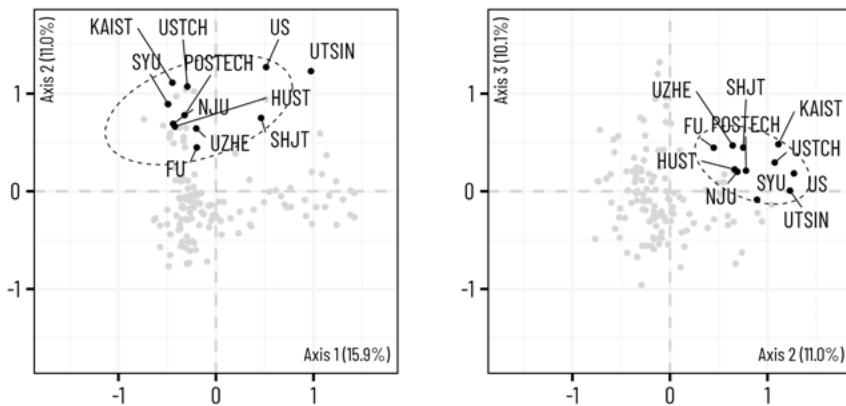
Another area of strength for Cluster 5 is its Industry Income, with 55% of its institutions having "high" modality in this category. This accounts for 21% of all

such institutions globally, indicating strong ties and successful collaborations with industry sectors.

In the context of global university rankings, Cluster 5 has a significant presence in the upper-mid tiers. Specifically, 28% of its institutions rank between 40–50 in the QS ranking and between 50–60 in THE ranking, demonstrating a competitive standing in the global academic arena.

Geographically, this cluster is solidly Asian, with all its institutions from this region. It includes a substantial representation from China, accounting for 89% of all Chinese institutions in the full sample, and 50% of all South Korean institutions. This geographic concentration underscores the cluster's regional focus and influence. In comparison to Cluster 3, which includes a more diverse array of institutions from both North America and Asia, Cluster 5 is distinctly Asian with a strong focus on domestic or regional engagement in higher education. While both clusters show lower levels of internationalisation, Cluster 5 stands out for its high performance in research and per capita metrics, in contrast to Cluster 3's mid-range research performance and strong industry links. However, Cluster 5's lack of global scientific recognition, as evidenced by the absence of award-winning alumni and staff, marks a notable difference from Cluster 3's more balanced academic profile.

Figure 34. Cluster 5, planes 1–2 and 2–3.



Sixth Cluster: Anglo-Saxon Mid-Performers

Cluster 6, consisting of 21 universities, presents an intriguing mix of institutions primarily from the Anglo-Saxon region and Oceania, including notable names like the University of Edinburgh, University of Melbourne, University of Queensland, King's College London, University of Sydney, University of New South Wales, Australian National University, EPFL, Carnegie Mellon, Monash University, Nanyang Technological University, University of Western Australia,

The high proportion of Anglo-Saxon institutions in Cluster 6, particularly when considering their performance in global rankings, may reflect the influence of the Anglo-Saxon model of higher education, which, as results so far have shown, is often emphasised in global ranking methodologies. This model, as well as the use of the English language, could be a contributing factor to the cluster's mid-range performance in Research and Teaching, as well as its strong international orientation.

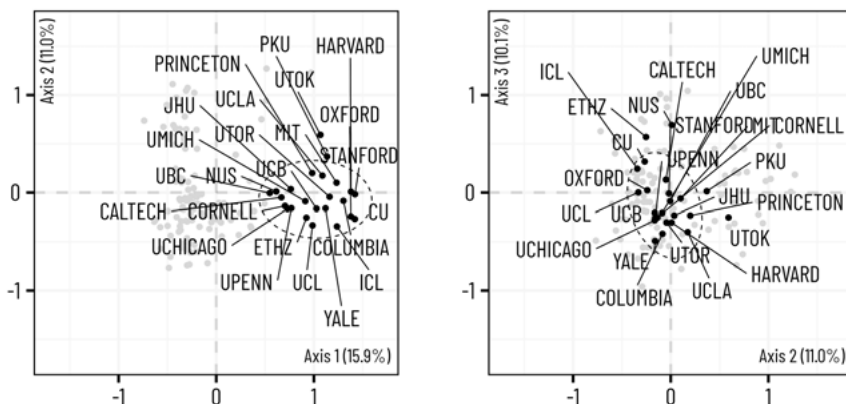
In summary, Cluster 6 represents a group of universities with a strong focus on internationalisation and consistent performance in research and teaching. Its regional concentration in the Anglo-Saxon and Oceania areas, along with its global engagement as indicated by the high percentage of international students and faculty, makes it distinct from the other clusters, which were either more regionally focused in Asia or had a broader international mix but with less emphasis on internationalisation indicators.

Seventh Cluster: Global Top-Performers

Cluster 7 comprises 24 world-renowned institutions including Harvard University, Stanford University, Massachusetts Institute of Technology, University of Cambridge, University of California Berkeley, Princeton University, California Institute of Technology, University of Oxford, University of Chicago, Columbia University, Yale University, Cornell University, University of California Los Angeles, ETH Zurich, University of Pennsylvania, Johns Hopkins University, UCL (University College London), Imperial College London, University of Toronto, University of Tokyo, University of Michigan Ann Arbor, Peking University, University of British Columbia, and the National University of Singapore, represents the top of global university rankings. This cluster stands out for its exceptional performance across all metrics, firmly placing these universities at the pinnacle of educational excellence and global recognition. It also stands out as the most distinct cluster in plane 1–2.

This group of universities showcases an extraordinary concentration of high scores in Research, with 82% of the high captured by the cluster and 96% of the universities within the cluster being characterised by this attribute. Teaching quality within this cluster is also outstanding, with 79% of the high teaching modality captured, reflecting the exceptional educational standards upheld by these institutions.

Figure 36. Cluster 7, planes 1–2 and 2–3.



Academic reputation is another defining feature, with 78% of the high academic reputation modality encapsulated within this cluster, indicating the widespread recognition and esteem these universities command. In terms of global rankings, the cluster has a monopoly on the top tier, with all universities ranked within the top 10 in THE, QS, and ARWU rankings, demonstrating their dominance. The cluster also has a strong showing in the subsequent ranking brackets, indicating a consistent presence in the highest tiers of university rankings.

Employer reputation follows suit, with over half of the high employer reputation modality and most of the universities in the cluster scoring high, which speaks to the strong industry connections and graduate employability rates of these institutions.

North American institutions, particularly from the US, are well-represented, suggesting a concentration of these elite institutions within this geographical area. Award-winning staff are highly prevalent, with nearly all institutions within the cluster having a significant number of award-winning faculty members, further cementing the cluster's reputation for academic excellence. Alumni awards are notably high, with 22% of the high alumni award modality and an overwhelming majority of institutions within the cluster having alumni who have received prestigious accolades, reflecting the influential networks and impact of their graduates. Citation rates within this cluster are also high, indicative of the impactful and widely recognised research produced by these universities.

In summary, Cluster 7 is a collection of universities that are not only leaders in research, teaching, and academic reputation but also stand as pillars of the highest global rankings, with profound impacts on academia, industry, and society. Their presence in this cluster confirms their status as benchmarks of excellence and icons of the educational landscape.

6.4 Concluding Remarks

In this chapter, I have explored the multidimensional structure of individual differences among world-class universities featured in ARWU, QS, and THE for 2022 employing an inductive approach. The results of the MCA reveal a complex interplay of factors that characterise and differentiate these institutions, identifying several axes that capture the main features of varying aspects central to a university's global standing.

A striking outcome of this analysis is that internationalisation, as represented by indicators of international recruitment and outlook, emerges as a secondary feature within the global sub-field of universities. Instead, reputation, as defined by variables like Academic Reputation, Employer Reputation, Research, and Teaching, takes precedence. These variables, driven largely by reputation surveys, form the primary differentiator. This finding challenges the traditional emphasis on internationalisation in global university rankings, suggesting a nuanced understanding where reputation and perceived quality overshadow purely international metrics.

Regarding internationalisation, an opposition between a more international focus based on international recruitment and a more domestic orientation with stronger ties to national industry stood out. Considering the geographical and cultural characteristics of these institutions, it's clear that institutions from English-speaking countries or with Anglo-Saxon cultural ties have an advantage in the recruitment of international students and faculty members, sometimes with their higher scores in these indicators making up for relatively worse performance in terms of reputation.

The MCA's uncovering of opposition between two forms of scientific recognition is particularly revealing. Older institutions, rich in historical accolades such as Nobel Prizes and Field Medals, contrast with younger institutions that excel in citations per faculty. This distinction underlines the evolving dynamics in scientific fields, where newer forms of research evaluation based on publications and citations are emerging as significant. This shift enables more dynamic competition, with younger Asian institutions strengthening their position through citation impact, while older Western institutions, especially from Northern Europe, leverage their longstanding academic trajectories.

The Euclidean clustering corroborates these findings, with distinct groups of institutions reflecting these profiles becoming apparent. For instance, clusters of Asian institutions with a domestic focus and Anglo-Saxon institutions with well-rounded performance are observed. These clusters not only reinforce the primary profile outlined by the MCA but also provide a clearer picture of how institutions are grouped based on their performance as measured by ranking indicators.

In synthesising the theoretical implications of this chapter, it is evident that applying field theory to the study of global university ranking results offers significant insights. This approach allows for a deeper understanding of the power

dynamics within the global sub-field under study. By analysing universities through the lens of field theory, we can discern how the struggles over different types of assets influence the attainment of world-class status as an indicator of a globally recognised form of symbolic capital.

This analysis highlights how global university ranking results, often criticised for their oversimplified metrics, can actually reveal complex hierarchies and power structures in higher education across the world. In particular, it underscores the importance of reputation, historical prestige, and internationalisation in shaping these structures. Furthermore, the approach illuminates the dynamic nature of these rankings, revealing how newer forms of capital, such as citation impact, are becoming increasingly significant in altering traditional academic hierarchies.

Overall, the results confirm and specify findings from previous chapters. For instance, the rising participation of Asian institutions aligns with an emphasis on domestic focus and scientific recognition through citations, while also reinforcing the notion that rankings are heavily influenced by the Anglo-Saxon model of higher education. This model not only favours institutions with this background but also imposes its standards onto others as a means to ascend in global rankings.

After their Likeness? The Inner Structure of Regional Subspaces

Having mapped out a global sub-field of universities based on ranking evaluations, questions arise regarding the relationship between the internal structures of specific groups and the structures of the global sub-field where they are embedded. Given the significance of geopolitical hierarchies and struggles underscored by the analyses discussed in the previous chapters, this chapter addresses those questions taking a regional approach: is the dimensionality in regional subspaces the same as in the global sub-field of universities? Are the oppositions and their order the same? If not, how can those discrepancies be explained and understood?

Considering the methodological approach thus far deployed, performing a separate Multiple Correspondence Analysis (MCA) on regional subsamples to uncover their internal structures could initially be considered a viable path forward; however, this strategy suffers from a fundamental limitation. A separate MCA focusing on these subspaces would look at the structures within them in isolation from the larger global sub-field. The isolation occurs because the distances between individuals in the groups and those in the general space mapped out in the original MCA would be defined separately, making it statistically challenging to compare these analytical units directly against each other.¹⁹⁰ Therefore, to find more accurate answers to the set of questions posed before, I opted for conducting a Class-Specific Multiple Correspondence Analysis (CSA).

CSA was developed as a solution to handle the very issue at hand. Unlike the traditional MCA, CSA defines the distance between individuals belonging to a specific group or subspace based on their positions across all axes from the original MCA and not just within the subspace in isolation. This method keeps the analysis anchored in the original MCA—in this case, in the global sub-field of universities. Thus, CSA makes it possible to statistically analyse whether individuals included within a given subspace are similar to or different from individuals in the general space. Since every subspace is part of the same general space, CSA allows for statistically valid comparisons, not only between a subspace and the

¹⁹⁰ Johs. Hjellbrekke, *Multiple Correspondence Analysis for the Social Sciences* (Boca Raton, FL: Routledge, 2018), 101ff.

general space but also between different subspaces.¹⁹¹ In short, CSA bridges the analytical gap described above, making it easier to align insights from lower levels (in this case, regional subspaces) with those from the macro-level (global sub-field of universities).

I will thus explore two types of regional subspaces. First, I will consider the three largest geographical regions within the global sub-field of universities, namely North America (n = 47), Europe (n = 53), and Asia (n = 31) which make up roughly 94% of the full sample. Then, I will move on to a more geopolitical type of grouping aiming at deepening the results obtained from the previous approach. For this second set of subspaces, I will consider a group of Anglo-Saxon institutions from Europe, Oceania, and former British colonies and mandates in Asia and excluding North America (n = 37), another group consisting of European institutions excluding those from Anglo-Saxon countries (n = 34), and finally a group comprising Asian institutions excluding those based in former British colonies or mandates (n = 22), which make up about 66% of the full sample.

7.1 Geographical Subspaces

I will open with a brief recount of the MCA results extensively discussed in the previous chapter. The MCA revealed a space whose three main dimensions had a cumulated importance index of 89.2.¹⁹² An inspection of the contributions to the axes by themes and variables (see Table 4) yielded the following conclusions. Axis 1 captures an opposition between high and low reputation and performance scores. Axis 2 captures an opposition between institutions with higher scores in internationalisation on one side and institutions with higher scores in industry income on the other, reflecting either a more international or domestic institutional focus. Axis 3 is a scientific recognition axis, opposing on the one hand institutions with a higher concentration of award-winning staff and alumni but lower scores in citations per faculty, and on the other hand institutions with a lower concentration of award-winning staff and alumni but high scores in citations per faculty.

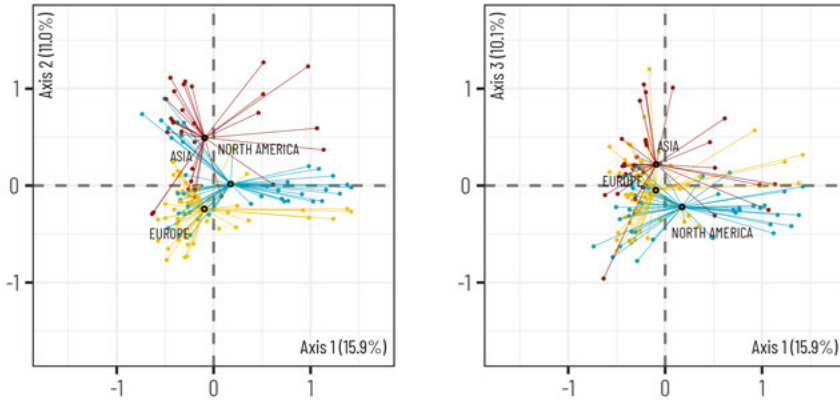
Focusing now on the geographical subspaces of interest (see Figure 37) along Axis 1 of the MCA, the mean points of Europe and Asia appear close to the centre, leaning slightly toward the pole of lower relative reputation and performance, which suggests that most institutions from these regions exhibit mid-range scores in the respective indicators and also gather the majority of institutions with lower scores overall across the full sample. This is confirmed by the higher concentration of European universities in clusters 2 and 4, and of Asian

¹⁹¹ See Frédéric Lebaron & Philippe Bonnet, 'Class-Specific Analysis: Methodological and Sociological Reflections', in *Empirical Investigations of Social Space*, ed. Jörg Blasius et al., vol. 15, Methodos Series (Cham: Springer International Publishing, 2020), 359–376.

¹⁹² As detailed in Table 3.

institutions in clusters 3 and 5.¹⁹³ Conversely, North America finds its mean point leaning toward the pole of higher relative reputation and performance, which may be partially explained by the high concentration of North American institutions in cluster 7, i.e. the Global Top-Performers.¹⁹⁴

Figure 37. Mean points of geographical subspaces, planes 1–2 and 1–3 of the MCA.



On Axis 2, the mean point of Europe can be found at the pole of international focus, indicating a larger concentration of institutions with higher scores in internationalisation-related indicators. The regional composition of clusters 1, 2, 4, and 6 corroborate this observation. North America has its mean point in the middle of this axis, indicating a more balanced presence of both domestically oriented and internationally oriented institutions, which can be confirmed by the presence of North American institutions in cluster 3. Lastly, the mean point for Asia is positioned on the side of domestic orientation, aligning with the position and composition of clusters 3 and 5.

On Axis 3, the mean points for Europe and North America lean toward the pole of higher concentration of award-winning staff and alumni; the former closer to the centre, the latter further into that pole. Asia on the other hand finds its mean point on the opposite side of the pole, with a much lower concentration of award-winning staff and alumni, but with high scores in citations per faculty.

¹⁹³ I provide a detailed analysis of these clusters in Chapter 6, section 6.3.

¹⁹⁴ For a more detailed overview of the distribution of institutions in the top 100 by region confirming these observations, see Figure 13 in Chapter 5.

Table 9. Eigenvalues (λ), variance (Var) and importance index (Index) from MCA and CSA by Region.

	MCA			CSA North America			CSA Europe			CSA Asia		
	λ	Var	Index	λ	Var	Index	λ	Var	Index	λ	Var	Index
Axis 1	.30	16%	55.9	.46	29%	82.7	.31	19%	58.0	.37	20.4%	46.0
Axis 2	.20	11%	19.0	.21	13%	11.5	.23	14%	25.0	.32	18.0%	32.4
Axis 3	.19	10%	14.0	.15	9%	3.6	.17	10%	10.0	.22	12.4%	12.0

Now, by conducting a CSA of these three regions and comparing the results to those from the MCA, some differences become clear, as shown in Table 9. All subspaces show a higher eigenvalue on Axis 1, indicating a stronger first dimension accounting for most of the variance. This is especially true for North America, where the first axis has an importance index of 82.7, suggesting a one-dimensional structure. In line with previous findings, this specific result strengthens the conclusion that at least the evaluations carried out by the three global university rankings taken into account for the year 2022 coincide with the hierarchies existing in North America, which in this sample consist mostly of institutions based in the US. In other words, these rankings seem to evaluate the degree of coincidence with the American model of the university.

For Europe and Asia, the importance is more spread out between Axis 1 and Axis 2, implying a bi-dimensional structure in these regions. These results indicate that the internal dynamics within each region bring about stronger statistical oppositions compared to the global sub-field of universities as mapped out via MCA, reflecting perhaps more pronounced regional peculiarities or distinctions in their internal structures. The fact that both of these regions comprise a larger number of higher-educational systems represented by a larger number of countries when compared to North America may also offer a good explanation for their multidimensional structure.

Internal Structures

Based on the contributions by theme and variable displayed in Table 10, the internal regional structures and their standing against the structure of the global sub-field become clearer. Whilst the first axis of the MCA captures an opposition between high and low scores in reputation and performance, the first axes in all three CSAs show either varying or more nuanced patterns.

In the case of North America, the theme of Reputation and Performance still accounts for most of the variance on Axis 1 (76%), although to a lower extent than in the MCA (88%). In turn, Geographic Orientation accounts for 18% of the variance on this same axis in this region, suggesting that there’s a slightly higher degree of balance between indicators. Meanwhile, for both Europe and Asia, Geographic Orientation accounts for a much larger share of the variance on the first axis reaching 45% in the former and 54% in the case of the latter. This is a marked departure from the 6% of the variance explained by the same set of indicators on Axis 1 of the MCA.

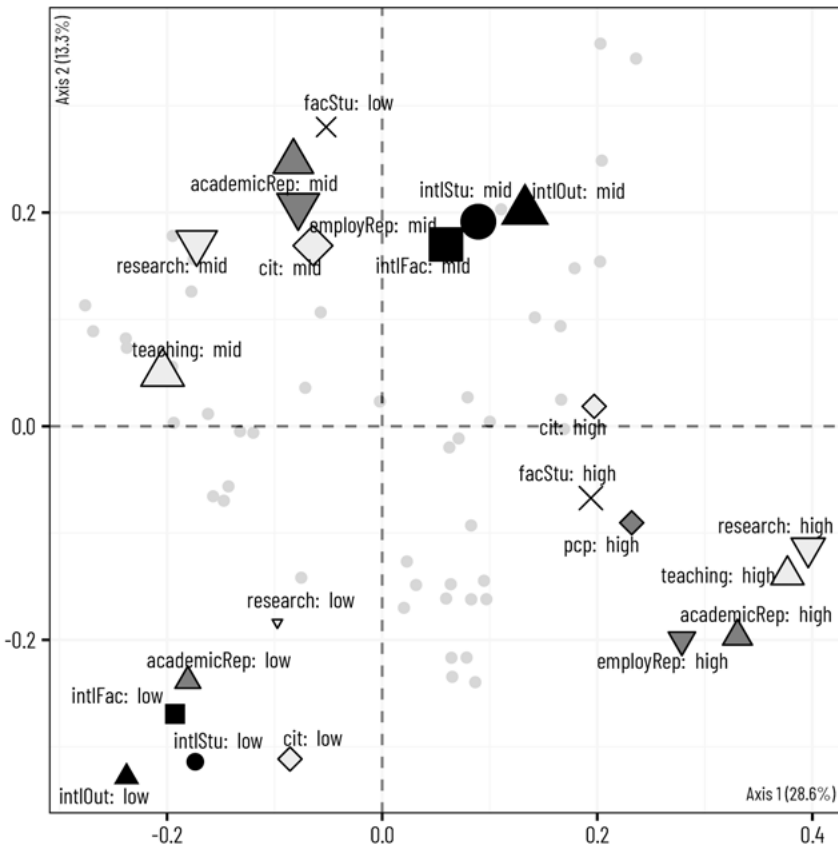
Table 10. Contribution by theme and variable to axes 1–3 from MCA vs. axes 1–2 from CSAs.

Theme	Variable	MCA			CSA North America		CSA Europe		CSA Asia	
		Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 1	Axis 2	Axis 1	Axis 2
Reputation & Performance	Research	21.0	2.0	2.8	19.6	7.7	8.3	19.9	3.4	15.0
	Teaching	19.6	7.7	2.0	18.5	2.4	8.1	9.2	9.3	12.8
	Academic Reputation	19.2	0.2	4.7	14.9	15.7	10.5	6.0	6.2	13.5
	Employer Reputation	15.1	0.3	9.3	10.5	10.8	13.0	3.6	10.0	7.3
	Faculty/Student Ratio	4.9	3.5	3.9	4.8	9.8	7.2	7.5	0.3	0.6
	Per Capita Performance	7.8	3.0	1.1	7.5	1.6	3.9	15.0	10.5	9.8
	Sum	87.6	16.7	23.7	75.8	48.0	51.0	61.2	39.7	59.0
Geographic Orientation	International Faculty	0.8	20.5	17.5	4.9	10.3	4.7	2.6	18.9	5.8
	International Students	2.0	15.2	9.7	3.9	13.6	21.0	2.8	8.9	9.2
	International Outlook	0.9	25.4	13.3	7.4	14.9	18.8	11.5	18.7	5.3
	Industry Income	2.2	10.1	1.9	2.0	0.6	0.8	9.5	7.4	8.2
	Sum	5.8	71.3	42.3	18.2	39.4	45.3	26.4	53.9	28.5
Scientific Recognition	Award-winning Alumni	1.8	3.7	11.8	0.0	0.1	1.2	0.8	4.9	1.3
	Award-winning Staff	2.7	5.2	12.1	1.3	0.0	1.3	3.4	0.0	1.8
	Citations per Faculty	2.1	3.2	10.1	5.0	12.6	1.3	8.1	1.5	9.3
	Sum	6.6	12.0	34.0	6.3	12.7	3.8	12.3	6.4	12.4

A deeper analysis of these oppositions shows that in the case of North America, because Axis 1 accounts for most of the variance, the cleavage hinges between “high” and “low” modalities across multiple themes, as an emphasised repetition of Axis 1 from the MCA. In turn, Axis 2 of this CSA opposes extreme modalities to mostly mid-range modalities with no clear topical dominance (see Table 10). By inspecting plane 1–2 as a whole, it becomes clear that the quadrants more heavily populated are the ones representing high and mid score modalities, emphasising the strong overall performance and reputation of this region and hinting once more at its correspondence with the university model evaluated by global university rankings.

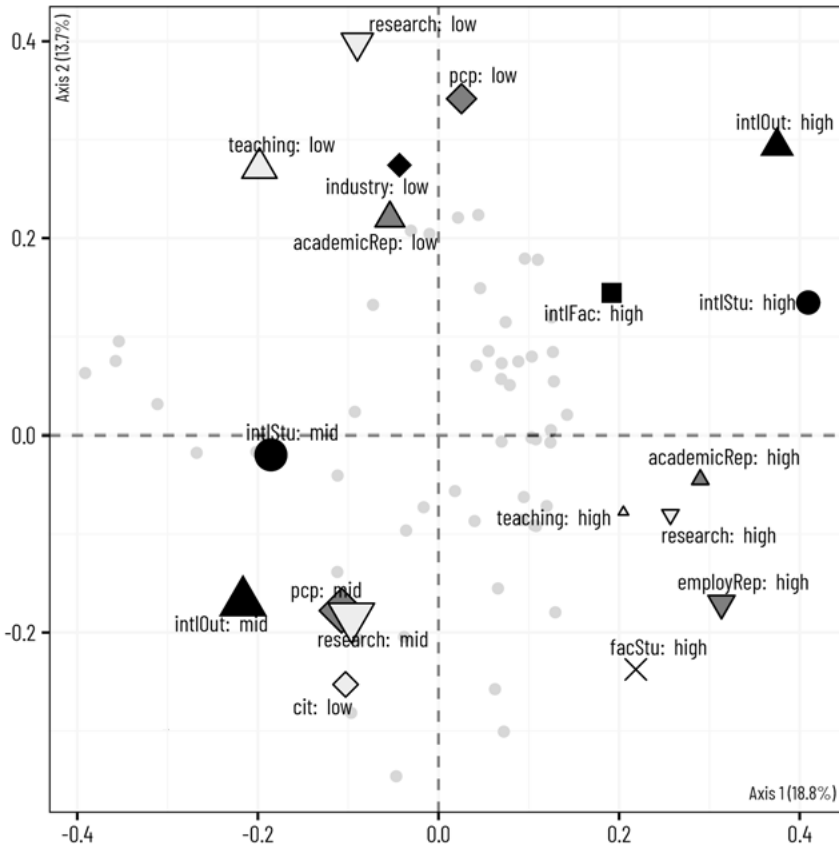
In the case of Europe, the distinction on Axis 1 is made between high internationalisation scores on one side (with a clear prominence of International Students and International Outlook) and mid-range scores on the same set of variables on the other (see Figure 39). The absence of low score modalities from these variables contributing above the mean on this axis speaks to the prevalence of international recruitment and collaboration strategies within the European space. Interestingly, within this same dimension, reputation and performance also appear as relevant indicators for the region, particularly concerning Academic and Employer Reputation as well as Teaching and Faculty/Student Ratio; high scores in these indicators are paired up with high scores in internationalisation and low scores in the former are paired up with mid-range scores in the latter.

Figure 38. CSA, North America. Categories contributing above the mean in Plane 1–2. Point size according to weight.



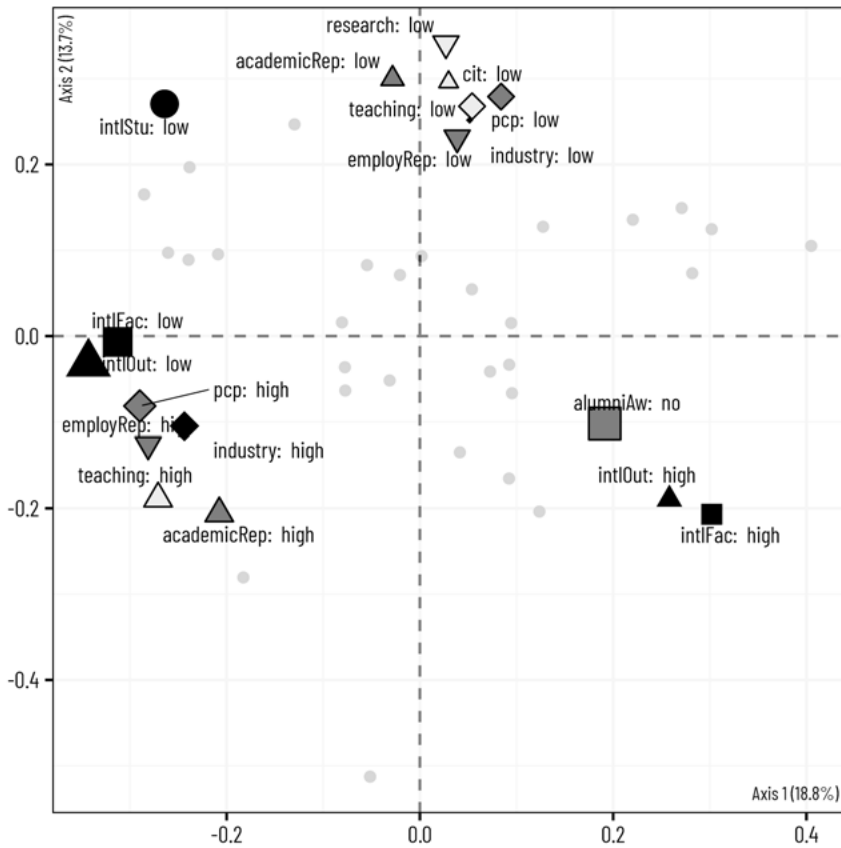
Axis 2 shows a higher contribution of variables related to performance and reputation indicators, opposing “high” to “low” modalities. On one side of this dimension, there are institutions with lower scores in Research, Per Capita Performance, Industry Income, Teaching, and Academic Reputation, paired with high scores in International Outlook. On the other side, there are institutions with high scores in Faculty/Student Ratio and Employer reputation, paired up with mid scores in Industry Income and International Outlook as well as with low scores in Citations per Faculty. Considering plane 1–2 as a whole, this cleavage seems to present at least two general institutional profiles: institutions whose strong focus on internationalisation makes up for their relatively worse overall performance and institutions with a more balanced mix of relative strengths and weaknesses.

Figure 39. CSA, Europe. Categories contributing above the mean in Plane 1–2. Point size according to weight.



Moving on to Asia, the first axis opposes “low” modalities in internationalisation to “high” modalities in the same theme. The former scores (“low” modalities in International Faculty and Outlook) are paired up with high scores in Per Capita Performance, Employer and Academic Reputation, Teaching, and Industry Income, while the latter (“high” modalities in internationalisation) are accompanied by the “No” modality for award-winning Alumni. This suggests a regional trend where internationalisation tends to negatively correlate with academic excellence indicators. Results also show an interesting contrast to this international dimension in Europe. Whereas for Europe the variable contributing most in this dimension is International Students (21%), for Asia it is International Faculty (19%) which may suggest a regional difference in international recruitment strategies. Perhaps the existence of a European Higher Education Area with longstanding programmes of student exchange like Erasmus represents a good explanation for this differentiation.

Figure 40. CSA, Asia. Categories contributing above the mean in Plane 1–2. Point size according to weight.



The second dimension of the CSA on Asia captures an opposition between “high” and “low” modalities in Reputation and Performance as well as Geographic Orientation. Those institutions with high scores in Teaching and Academic Reputation also perform highly in International Faculty and International Outlook, and the opposite is true for the other pole of this dimension when we consider plane 1–2 as a whole. This axis seems to oppose overall performance, which is emphasised within this region by the aforementioned indicators of reputation and internationalisation.

CSA and MCA Comparison

To compare the comprehensive, overarching structure captured by the original MCA with the more detailed, class-specific structures revealed by CSA, one effective method is to calculate the cosine of the angles between corresponding axes in these spaces. Cosine values¹⁹⁵ range from -1 to +1, with their magnitudes indi-

¹⁹⁵ Cosine values are available in Appendix C.

cating the degree of similarity or divergence between the axes in question. A cosine value close to +1 or -1 signifies a very small angle between the MCA axis and its corresponding CSA axis, implying a high degree of similarity in the way they represent data relationships. In simpler terms, this means the general trends or patterns identified in the overall dataset (MCA) align closely with those observed within specific classes (CSA). Conversely, a cosine value of 0 denotes that the axes are orthogonal, or at a right angle to each other. This indicates a complete divergence in the relationships captured by the MCA and CSA axes. In practical terms, it means the patterns or trends identified within specific classes do not mirror those found in the overall dataset.¹⁹⁶

North America

Starting with North America, Axis 1 from the CSA—which opposes high score modalities in Research, Teaching, Academic Reputation, Employer Reputation, Per Capita Performance, Citations per Faculty, and Faculty/Student Ratio to low modality scores in International Outlook, International Faculty, International Students, and Academic Reputation paired up with mid score modalities in Research and Teaching—presents a strong alignment with Axis 1 from the MCA, which distinguishes between high and low reputation and performance scores. Such a high degree of similarity suggests that the primary factors influencing variation in North American institutions tend to coincide with the main global trends identified by the MCA. In contrast, this same axis from the CSA shows a divergence from the secondary axis from the MCA, which opposes international and domestic orientations. The relationship with the third axis from the MCA is negligible, implying a minimal influence of this last dimension on the primary axis of North America’s CSA.

The second axis of North America’s CSA—which opposes on one side low score modalities in Faculty/Student Ratio coupled with mid-score modalities in Academic Reputation, Employer Reputation, International Outlook, International Students, International Faculty, Research, and Citations per Faculty to high score modalities in Academic and Employer Reputation coupled with low score modalities in International Outlook, International Students, Research, Academic Reputation, and Citations per Faculty—presents a weak degree of similarity with Axis 1 from the MCA, showcasing a stronger relationship with Axis 2 instead. More specifically, this dimension of the CSA seems to capture the degree of international orientation of the institutions, opposing “mid” to “low” modalities in these categories. Even as one of the main importers of internationally mobile students, it’s quite striking that the internal structures of the relationships between higher education institutions in North America within the global sub-field of universities under study are not characterised by high scores in internationalisation.

In sum, North America’s CSA demonstrates a strong alignment with the primary global trend on its first axis and a significant similarity with the secondary

¹⁹⁶ Hjellbrekke, *Multiple Correspondence Analysis for the Social Sciences*, 107.

global trend on its second axis. The tertiary global trend seems to have a moderate influence on the secondary axis but minimal impact on the primary axis. This analysis underscores the close ties between North American higher education institutions and the broader global patterns, particularly in their primary and secondary dimensions of variation.

Europe

The first axis of the CSA of Europe—which opposes high score modalities in International Faculty, International Outlook, International Students, Academic and Employer Reputation, Research, Teaching, and Faculty/Student Ratio to mid-score modalities in International Outlook and Students paired up with low scores in Teaching—shows a strong alignment with the primary global trend as well, suggesting that the main factors driving variation in European institutions are closely related to those at the global level. This similarity is not a perfect coincidence; in the case of the CSA there's a clear emphasis on internationalisation indicators that is not present in the first axis of the MCA. Interestingly however the relationship of Axis 1 from the MCA with the second axis of the MCA—the axis of the global sub-field capturing geographical orientation—is minimal, perhaps because of the lack of indicators with high contributions reflecting a domestic orientation in the CSA. In comparison to the third axis of the MCA there is again a fair degree of association, mostly because of the high contribution of high modalities in internationalisation indicators.

For the second axis of this CSA—which captures high-score modalities in International Outlook paired up with low-score modalities in Research, Teaching, Academic Reputation, Industry Income, and Per Capita Performance on one side to mid-score modalities in International Outlook, Research, and Per Capita Performance coupled with high score modalities in Employer Reputation and Faculty/Student Ratio as well as low score modalities in Citations per Faculty—the relationships with the MCA axes are more nuanced. There is a moderate divergence from the primary global trend and a stronger similarity with the second and third global trends.

These findings suggest that while the primary axis of Europe's CSA aligns strongly with the primary global trend, the secondary axis diverges moderately from the primary global trend and more significantly from the secondary global trend. The tertiary axis of the MCA is moderately reflected in both axes of Europe's CSA, indicating that while there are shared elements with global trends, Europe also exhibits unique regional characteristics, particularly concerning its emphasis on “high” modalities in internationalisation indicators. This highlights the importance of understanding both global influences and regional specificities in the European higher education sector.

Asia

The first axis of the CSA of Asia—which opposes “low” modalities in International Faculty, International Outlook, and International Students coupled with

“high” modalities in Academic and Employer Reputation, Per Capita Performance, Teaching, and Industry Income to “high” modalities in International Outlook and Faculty paired up with the “No” modality for award-winning alumni—show a fair degree of association with the primary and secondary global trends. Indeed, this axis seems to capture performance and reputation with a hint of global orientation. However, the relationship with the third global trend is less notable. This suggests a divergence from the tertiary global trend, indicating that the aspects captured by the third axis of the MCA are less representative of the variations within the Asian context.

The second axis of this CSA—which opposes “high” modalities in International Faculty, International Outlook, Academic Reputation, and Teaching to “low” modalities in Research, Academic and Employer Reputation, Teaching, International Students, Per Capita Performance, Industry Income, and Citations per Faculty—has a stronger relationship with the primary and tertiary global trends while its relationship with the second axis from the MCA is weaker.

Overall, compared with the similitude showcased by the CSAs for North America and Europe, Asia shows the least degree of similarity with the results from the MCA. Looking at the results, the high contribution of “high” modalities in Industry Income and the high contribution of “low” modalities in International Students seem to be the distinctive feature of this region.

7.2 Geopolitical Subspaces

Thus far the analysis of subspaces has relied upon geographical subspaces. The results following this analysis coupled with results from previous chapters, confirm a high degree of importance of the Anglo-Saxon model of the university across all studied regions: Axis 1 has an importance index of over 80 in the CSA for North America, opposes “high” to “low” modalities across multiple indicators, and shows the highest degree of similitude to Axis 1 from the MCA; the highest-performing institutions from Europe are based mainly in the UK; and a specific institutional profile of universities from former British colonies and mandates stands out in Asia. To refine our understanding of the structures at play, I will now adjust the groupings to highlight geopolitical proximity.

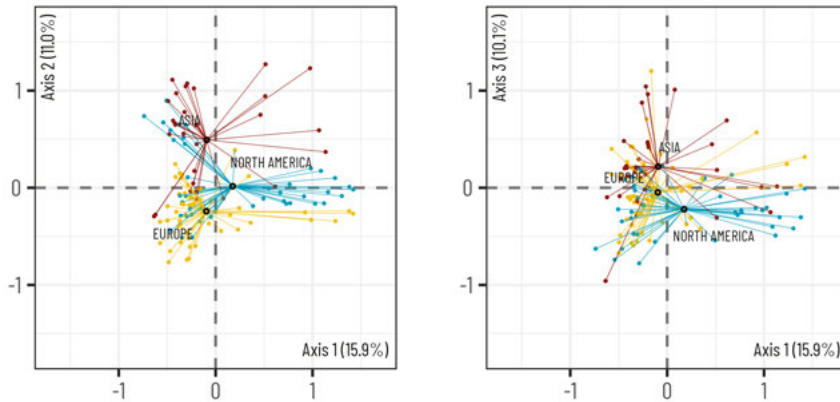
Let there be three geopolitical subspaces. The first subspace, composed of Anglo-Saxon institutions, encompasses universities from Anglo-Saxon countries from both Europe and Oceania as well as from the territories linked to their colonialist history in Asia—excluding those based in North America. This subspace therefore comprises institutions from the UK, Ireland, New Zealand, Australia, Hong Kong, Singapore, Malaysia, and Israel. The second subspace, Non-Anglo Europe, is formed of European universities, deliberately omitting those from Anglo-Saxon countries, leaving Belgium, Denmark, Finland, France, Germany, the Netherlands, Norway, Sweden, and Switzerland within this group. The third and final geopolitical subspace, Non-Anglo Asia is composed of Asian universities,

specifically from China, Japan, South Korea, and Taiwan, as well as Russia, thus excluding institutions based in regions formerly colonised by Anglo-Saxon powers.

Along Axis 1 from the MCA, the mean points of these three geopolitical subspaces sit relatively close to the centre, with only No-Anglo Europe leaning further into the side of lower reputation and performance and the other two leaning into the opposite side. Along Axis 2, the mean points of Anglo-Saxons and No-Anglo Europe lean toward the pole of international focus, whereas No-Anglo Asia can be found on the side of domestic focus. Finally, along Axis 3, only the mean point of No-Anglo Europe can be found on the side of historical prestige, whilst the other two are on the opposite pole.

A comparison between Figure 37 and Figure 41 illustrates how the removal of institutions from Anglo-Saxon countries from Europe and Asia emphasises their distinction along Axis 2, pushing No-Anglo Asia further into the pole of domestic orientation and No-Anglo Europe closer to the centre. This suggests that the opposition between domestic and international focus has a strong relationship with language and cultural backgrounds.

Figure 41. Mean points of geopolitical subspaces, planes 1–2 and 1–3 of the MCA.



A summary of the general results of the MCA and the three new CSAs is displayed in Table 11. Across the first axis, the CSA for Anglo-Saxon institutions displays the highest eigenvalue at 0.42, accounting for 25% of the variance and achieving an importance index of 62.8. This suggests that for this subspace, the first axis is the most informative in capturing the variance within the dataset. In comparison, the first axis from the MCA has a lower eigenvalue of 0.3, accounting for 16% of the variance with an importance index of 55.9. The CSAs for No-Anglo Europe and No-Anglo Asia show eigenvalues closer to those from the MCA reaching 0.27 and 0.35 respectively, accounting for 18% and 22% of the variance, and featuring importance indices of 47.1 and 49.0.

Table 11. Eigenvalues (λ), raw variance (Var) and importance index (Index) from MCA and CSA by Cultural Group.

	MCA			CSA Anglo-Saxon			CSA No-Anglo Europe			CSA No-Anglo Asia		
	λ	Var	Index	λ	Var	Index	λ	Var	Index	λ	Var	Index
Axis 1	.30	15.9%	55.9	.42	25.0%	62.8	.27	17.5%	47.1	.35	22.2%	49.0
Axis 2	.20	11.0%	19.0	.29	17.4%	25.0	.21	13.4%	22.5	.30	19.0%	32.8
Axis 3	.19	10.1%	14.0	.19	11.3%	7.4	.18	11.4%	13.8	.19	12.0%	8.7

For the second axis, No-Anglo Asia registers the highest eigenvalue at 0.3, a variance contribution of 19%, and an importance index of 32.8, indicating a strong second dimension within this grouping. Anglo-Saxon’s second axis has an eigenvalue of 0.3 as well and accounts for 17% of the variance with an importance index of 25.0. The original MCA and No-Anglo Europe present lower eigenvalues of around 0.2, variance contributions of 11% and 13%, and importance indices of 19.0 and 22.5, respectively. These figures suggest that the second axis is relatively more prominent in No-Anglo Asia, highlighting distinctive regional characteristics not as pronounced as in the MCA or No-Anglo Europe.

The third axis shows a more uniform distribution of eigenvalues among the CSAs and MCA, all around 0.19, indicating a consistency in the level of additional variance captured by this axis across the groups. No-Anglo Europe exhibits a slightly higher variance percentage at 11% and an importance index of 13.8, compared to a 10% variance and a 14.0 importance index for the MCA. Anglo-Saxon and No-Anglo Asia report variance contributions of 11% and 12% with lower importance indices of 7.4 and 8.7, respectively. This suggests that the third axis is of similar relevance across the analyses, contributing additional but less significant insights beyond the first two axes.

Overall, an inspection of these general results reveals that Anglo-Saxon’s first axis is the most informative, No-Anglo Asia’s second axis is the most prominent, and the third axis provides consistent but lesser additional information across all analyses. Moreover, it’s clear that the geopolitical grouping of institutions yields clearer results than its geographical counterpart, most likely because of the alignment of ranking evaluations with the values and practices associated with the Anglo-Saxon model of the university.

Internal Structures

As a reminder, in the MCA, the theme of Reputation and Performance dominates the first axis, contributing 88% to its formation, with Research being the most significant variable. Geographic Orientation and Scientific Recognition are less influential on this axis, contributing 6% and 7%, respectively. The second axis is shaped considerably by Geographic Orientation at 71%, indicating a strong influence of international factors, whereas Reputation and Performance and Scientific Recognition play a secondary role with contributions of 17% and 12% respectively. Axis 3 shows a more balanced dominance of the three themes,

though after thorough inspection we determined it to be capturing an opposition between types of Scientific Recognition.

Table 12. Contribution by theme and variable to axes 1–3 from MCA vs. axes 1–2 from CSAs by geopolitical group.

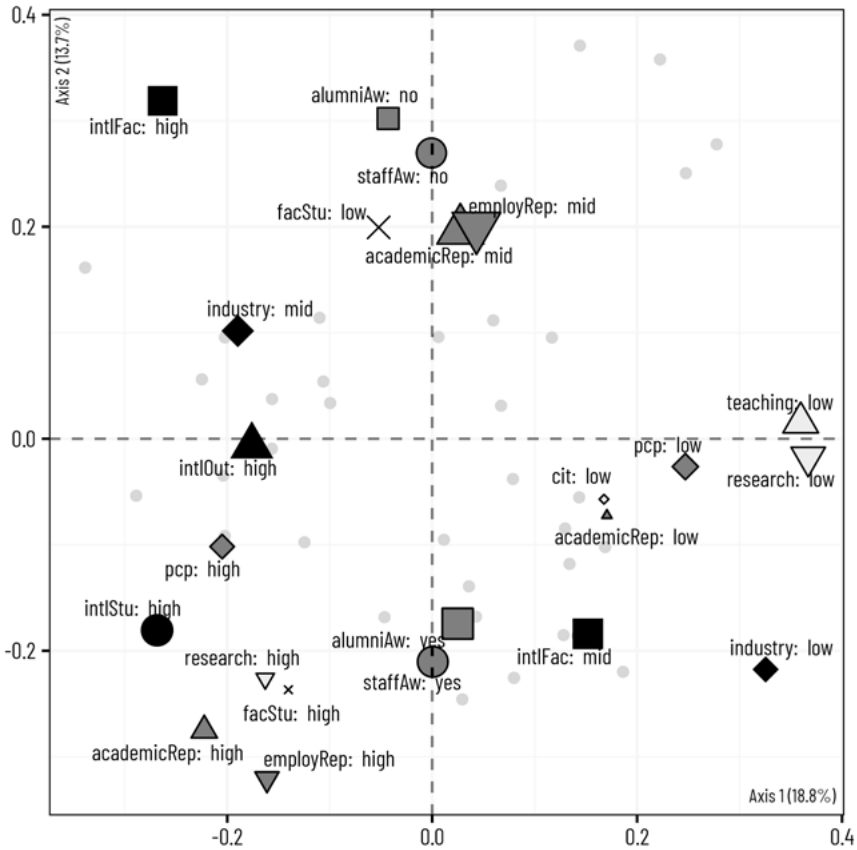
Theme	Variable	MCA			CSA Anglo-Saxon		CSA No-Anglo Europe		CSA No-Anglo Asia	
		Axis 1	Axis 2	Axis 3	Axis 1	Axis 2	Axis 1	Axis 2	Axis 1	Axis 2
Reputation & Performance	Research	21.0	2.0	2.8	17.6	7.1	3.0	10.4	12.5	2.3
	Teaching	19.6	7.7	2.0	16.5	3.2	1.8	16.9	25.5	1.6
	Academic Reputation	19.2	0.2	4.7	7.9	12.0	12.9	3.3	21.6	6.0
	Employer Reputation	15.1	0.3	9.3	3.5	14.4	0.1	32.1	19.3	5.6
	Faculty/Student Ratio	4.9	3.5	3.9	3.5	9.6	0.8	1.2	0.9	2.6
	Per Capita Performance	7.8	3.0	1.1	10.4	1.6	19.5	4.3	8.8	16.9
	Sum	87.6	16.7	23.7	59.4	47.9	38.1	68.2	88.6	35.0
Geographic Orientation	International Faculty	0.8	20.5	17.5	9.2	13.6	19.0	0.4	0.1	2.4
	International Students	2.0	15.2	9.7	9.2	5.7	9.5	5.8	0.1	10.5
	International Outlook	0.9	25.4	13.3	4.1	0.0	19.7	0.0	0.0	8.7
	Industry Income	2.2	10.1	1.9	14.2	5.9	2.3	7.3	1.2	12.2
	Sum	5.8	71.3	42.3	36.7	25.2	50.5	13.5	1.4	33.8
Scientific Recognition	Award-winning Alumni	1.8	3.7	11.8	0.3	12.1	0.4	9.1	6.1	6.3
	Award-winning Staff	2.7	5.2	12.1	0.0	11.7	1.3	6.5	1.6	2.1
	Citations per Faculty	2.1	3.2	10.1	3.7	3.1	9.6	2.7	2.2	23.0
	Sum	6.6	12.0	34.0	4.0	26.9	11.3	18.3	9.9	31.4

As shown in Table 13, the Anglo-Saxon group shows a different pattern on the first axis when compared to the MCA; the theme of Reputation and Performance still leads but with a lower total contribution of 59%, and Geographic Orientation holds a more substantial influence at 37%. The variables within the first theme are more evenly spread, suggesting a less hierarchical structure. This may be explained by the inclusion of Australian and New Zealander universities, which similarly to the institutions based in the UK, tend to stand out in the MCA for their high scores in internationalisation indicators, especially in International Students. On the second axis, Reputation and Performance seems more influential than in the MCA with a contribution of 47.9%, while Scientific Recognition increases its influence significantly to 26.9%, surpassing the contribution noted in the MCA.

Looking at these results in more detail, the “low” modalities in Research, Teaching, and Industry Income are among the top contributors for the first dimension, indicating that institutions scoring lower in these areas are prominent in defining this axis. In turn, “high” modalities in International Faculty and International Students are defining characteristics on the opposite end of the axis. On the second axis, “high” modalities in Employer Reputation and Academic Reputation stand out as significant contributors, while “high” modalities in International Faculty appear to differentiate the opposing end.

Considering the plane 1–2 as a whole, one can see a triangular distribution of the individuals (Figure 42), with all “high” modalities grouped in the lower-left quadrant, emphasising the coincidence between ranking evaluations and the Anglo-Saxon model of the university.

Figure 42. CSA, Anglo-Saxon & Commonwealth. Categories contributing above the mean in Plane 1–2. Point size according to weight.

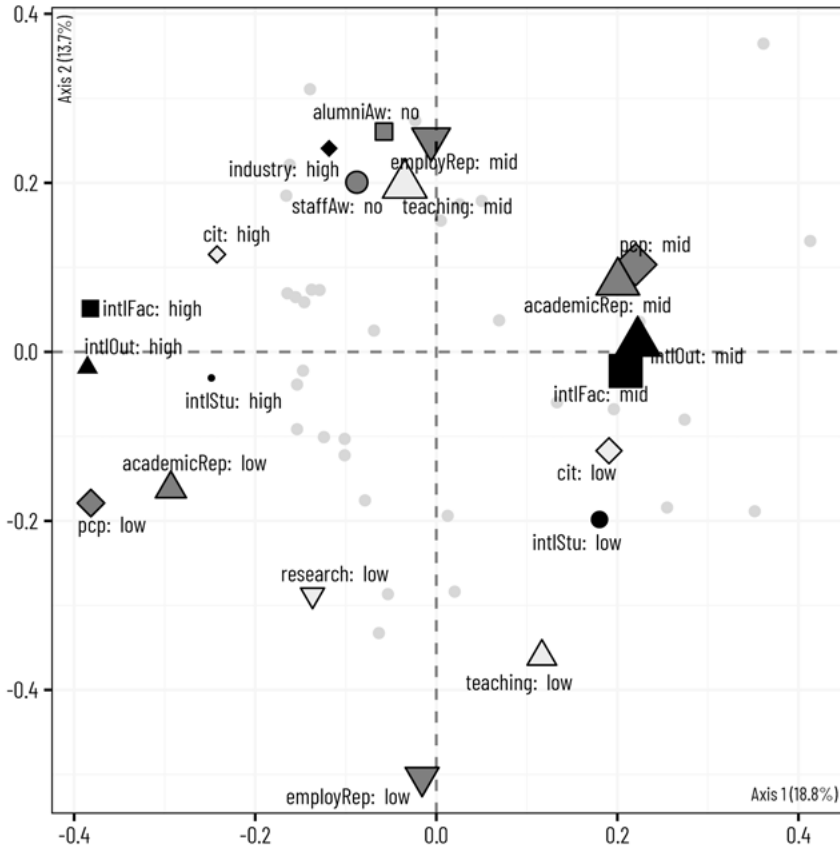


Moving on, No-Anglo Europe’s first axis is characterised by a more balanced contribution between Reputation and Performance and Geographic Orientation, at 38% and 51% respectively. This balance indicates that European institutions without Anglo-Saxon countries weigh these themes more equally in their variance. The second axis is predominantly influenced by Reputation and Performance at 68%, with Geographic Orientation only contributing 14%, suggesting a pronounced focus on performance factors for the second dimension within these European institutions.

The first axis is strongly defined by “high” modalities in International Outlook and International Faculty, suggesting that international recruitment practices and collaboration are a defining feature of this group. Conversely, “low” modalities in Academic Reputation and Citations per Faculty characterise the opposite end. The second axis is heavily influenced by “low” modalities in Employer Reputation, indicating that institutions with this characteristic are significant in shaping this dimension. As an interesting note, the contribution of the Geographic Ori-

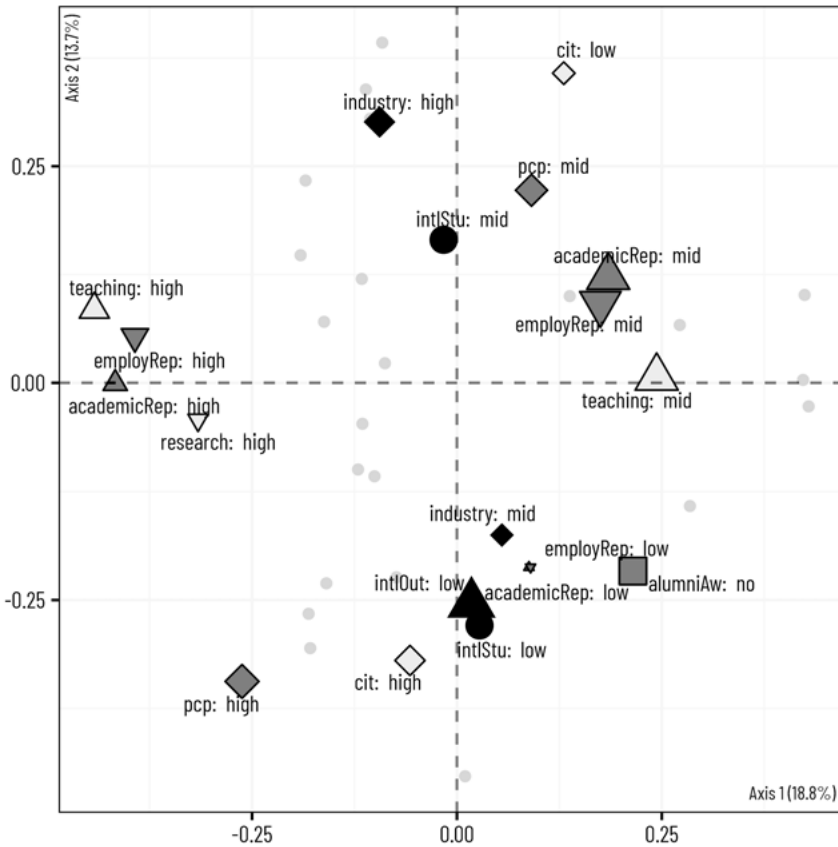
entation for Non-Anglo Europe is not only higher than in the MCA, but also and most interestingly it's higher than in the CSA for Europe as a whole.

Figure 43. CSA, No-Anglo Europe. Categories contributing above the mean in Plane 1–2. Point size according to weight.



Finally, No-Anglo Asia presents a stark contrast in the first axis, where the theme of Reputation and Performance again is paramount, but with an even higher contribution of 89%, driven particularly by variables such as Teaching and Academic Reputation. Geographic Orientation has a minimal impact at 1%, indicating that for Asian institutions excluding former British colonies, local performance metrics far outweigh international outlooks. The second axis sees a more distributed contribution with Reputation and Performance at 35%, Geographic orientation at 34%, and Scientific Recognition at 31%, showing a diverse interplay of themes.

Figure 44. CSA, No-Anglo Asia. Categories contributing above the mean in Plane 1–2. Point size according to weight.



The analysis shows that for this CSA the first axis is largely characterised by “high” modalities in Teaching, Academic Reputation, Employer Reputation, Research, and Per Capita Performance. This suggests that institutions with high performance in these areas are defining features of this axis in the Asian context. In opposition, mid-range scores in Teaching, Academic Reputation, and Employer Reputation, as well as a lack of award-winning alumni, are significant but less influential, reflecting a contrast within the region between institutions with high and mid-level performance.

The second dimension presents a varied picture, with low scores in Citations per Faculty and high scores in Industry Income being significant on the positive side, whereas “high” modalities in Per Capita Performance and Citations per Faculty, along with “low” modalities in International Students, International Outlook define the negative side. This axis in Non-Anglo Asia seems to capture a dichotomy between research intensity and internationalisation versus domestic focus and performance.

The analysis of this group shows an emphasis on high academic and reputational performance on its first axis, contrasting with mid-level performance and less emphasis on awards. The second axis shows a contrast between research intensity and higher domestic performance versus international orientation. The MCA, in contrast, highlights a global division between high and low performance in academic and reputational aspects on the first axis, a focus on international orientation on the second axis, and a further emphasis on international engagement versus specific academic and reputational aspects on the third axis. These comparisons illuminate the distinct priorities and characteristics of institutions within Asia and globally, reflecting regional specificities and global trends in higher education.

Overall, while Reputation and Performance consistently emerges as a key theme across all analyses, its internal variables and the relative importance of other themes vary between regions. Anglo-Saxon and No-Anglo Europe analyses demonstrate a more balanced thematic distribution across axes, while No-Anglo Asia highlights a strong regional focus on performance-related variables. These findings illustrate that the axes of the CSAs and MCA are defined by distinct sets of modalities, with each axis reflecting a specific tension between different sets of characteristics. The first axis of the different CSAs tends to reflect the balance between research and teaching performance against internationalisation, whereas the second axes are more varied, indicating different regional emphases in the areas of reputation, faculty-to-student ratio, and industry income.

CSA and MCA Comparison

Anglo-Saxon & Commonwealth

Turning now to the analyses based on cosine similarity, in the case of Anglo-Saxon, Axis 1 has a strong relationship with the same axis from the MCA, suggesting that the primary factors driving variation in the Anglo-Saxon region are closely related to those in the general dataset. The relationship of Axis 1 from this CSA with axes 2 and 3 from the MCA shows a lesser degree of association with the global trends of these axes.

For Axis 2 from the CSA, there's a moderate relationship with the first axis from the MCA. This suggests that the second axis has a fair degree of commonality with the global pattern of the first axis from the MCA. The relationship with the other two axes from the MCA is less pronounced.

Overall, these metrics reveal that the primary axis of Anglo-Saxon is strongly associated with the primary global trend, while its secondary axis has a more moderate connection. The relationships with axes 2 and 3 from the MCA are less significant, indicating that these global trends do not align as closely with the regional specifics of the Anglo-Saxon institutions. The analysis suggests that while there are shared elements between the Anglo-Saxon region and the global dataset, there are also distinct regional characteristics, particularly in the secondary dimensions.

No-Anglo Europe

The first axis from No-Anglo Europe has a relatively weak relationship with axes 1 and 2 from the MCA. The most notable similarity can be found with Axis 3 from the MCA, suggesting that after removing institutions from Anglo-Saxon countries, scientific recognition becomes the most important theme explaining the internal structure of this group. In light of previous results, whereby mostly older European institutions populated the quadrant of historical reputation and lower reputation and performance in plane 1–3 from the MCA, this argument becomes stronger.

The second axis shows a moderate similarity to Axis 1 and a closer resemblance with axes 2 and 3 from the MCA, once more emphasising the relevance of internationalisation indicators when discussing the relationship between European universities based on their ranking performance. Overall, the analysis suggests that the regional characteristics of Europe excluding Anglo-Saxon countries as captured by this CSA have distinct associations with the global trends, particularly with the patterns represented in the third axis from the MCA.

No Anglo-Asia

There is almost a perfect coincidence between Axis 1 from this CSA and the MCA. This indicates an exceptionally strong alignment with the primary global trend, suggesting that the main factors influencing variation in No-Anglo Asian institutions are almost identical to those at the global level. Conversely, the similarity with the second and third axes from the MCA are negligible, demonstrating almost a complete divergence, especially from Axis 2. This suggests that the secondary and tertiary global trends have little relevance to the primary axis of variation in No-Anglo Asia.

The second axis from the CSA shows a weak relationship with all three axes from the MCA, indicating some degree of uniqueness in this dimension. By inspecting the modalities contributing above the mean on Axis 2 from the CSA, we see that on one end there are “low” modalities in Citations per Faculty, “mid” modalities in Per Capita Performance and International Students, and “high” modalities in Industry Income, whereas on the other side there are “high” modalities in Per Capita Performance and Citations per Faculty paired up with “low” modalities in International Students, International Outlook, Academic and Employer Reputation, “no” award-winning alumni, and “mid” modalities in Industry Income. Based on these results, one can conclude that this dimension showcases overall highly productive institutions relative to their size with stronger ties to their national industry (there are no “low” modalities in Industry Income or Per Capita Productivity). The main distinction between these institutions hinges on the number of citations their works have received. Because “low” modalities in Citations per Faculty are paired with “high” modalities in Industry Income and “high” modalities in Citations per Faculty are paired with “mid” modalities in Industry Income, perhaps a division between institutions with a focus on the

industry as opposed to institutions with a heavier focus on academic publications can explain this distribution.

7.3 Concluding Remarks

The implementation of a CSA on regional groups within the global sub-field of universities I'm studying yielded quite interesting results. Considering only the geographical regions of North America, Europe, and Asia, there appears to be an overall correspondence between the dimensionality in these regional subspaces and the general space, particularly concerning the theme of reputation and performance. Of course, the correspondence is not perfect in all cases; whilst the internal structure of North America showcases an emphasised version of the opposition described by Axis 1 from the MCA, both Europe and Asia show a higher degree of importance on international and domestic orientations, respectively.

In the case of Europe, the existence of the ERA and the EHEA including longstanding exchange programmes for students assist in the understanding of these results. Every year, there is a large number of internationally mobile students visiting institutions across Europe, which, in addition to students from other countries pursuing higher education in European countries, bolster the scores in these indicators for European institutions. Meanwhile, Asian institutions, especially hailing from China, tend to attract less internationally mobile students, and have instead strong ties to their national governments and industry.

Results become more nuanced when studying geopolitical subspaces. By entirely removing North American institutions from the analysis and isolating the remaining Anglo-Saxon universities in their own group, the specificities of Europe and Asia become even more prominent. This exercise confirmed a special sensitivity of global university rankings to the Anglo-Saxon model of the university, and even more so to the American one, for no other regional space showed a closer resemblance to the oppositions captured by Axis 1 of the MCA.

From a geopolitical perspective, it became clear that for No-Anglo European institutions scientific recognition has a much higher importance as a differentiator in its first two axes, highlighting the position of older institutions with a notable scientific trajectory indicated by a robust number of citations per faculty as well as more award-winning staff and alumni. Scientific recognition also plays an emphasised role for No-Anglo Asia, where the distinction hinges more only on Citations per Faculty.

No-Anglo Asia also stands out for its stronger similarity to the first dimension from the MCA. Considering that, as discussed in Chapter 4, the very first global university ranking was produced in China with government support, together with the fact that China is the country with the largest growth in rankings overall including within the top 100, one must conclude that this is not a random outcome. The specific efforts made by this nation to emulate and thus compete with specifically North American institutions have been fruitful.

In summary, while results show a general alignment in dimensional structures across geographical regions, distinct variations emerge when these regions are examined more closely, especially in the context of geopolitical groupings. These variations reflect the unique educational, cultural, and political landscapes of each region. The influence of historical trajectories, government policies, and regional priorities in shaping these institutional characteristics cannot be overstated. As such, these findings not only provide a deeper understanding of global university dynamics but also highlight the diverse paths institutions take in striving for excellence and recognition on the world stage.

Chronicles of Collaboration: European Research Partnerships in the Wake of Global University Rankings

In the previous chapters of this dissertation, I developed a general historical account of the emergence of a global sub-field of universities and then carried out a detailed study of its structure. These analyses have uncovered the pivotal role of global university rankings in organising the struggles among higher education institutions over a globally recognised form of symbolic capital commonly signified by the “world-class” status. Building on these previous findings, this final empirical chapter extends the focus of the study beyond the confines of ranking results by dissecting a more dynamic aspect of academic relationships: the cross-border collaborative practices between universities. To ensure alignment with the methodological approach thus far employed, this chapter will specifically investigate trans-institutional collaboration, focusing on scholarly articles authored by affiliates of two or more higher education institutions. By scrutinising the nature and dynamics of these collaborations, this analysis aims to shed light on the complex relationships that underpin the attainment and maintenance of world-class status.

The evaluation of research has increasingly come to hinge on specific, quantifiable metrics. Paramount among these is the number of articles published and indexed in renowned journals and databases as well as the number of citations these articles garner. This trend towards quantification has been thoroughly documented in the scholarly literature, noting the growing reliance on such metrics for academic evaluation.¹⁹⁷ Particularly in the context of global university rankings—like the Academic Ranking of World Universities (ARWU), QS World University Rankings, and Times Higher Education (THE) World University Rankings—these bibliometric indicators have become critical benchmarks. The ARWU, for example, heavily weighs the number of articles published in prestigious journals such as *Nature* and *Science*, considers Highly Cited Researchers, and assesses the number of papers indexed in Science Citation Index-Expanded and Social Science Citation Index. Meanwhile, the QS rankings emphasise citations per faculty as a measure of research impact, and THE includes similar metrics in its methodology. This focus on indexed articles and citations as key indi-

¹⁹⁷ Pardo-Guerra, *The Quantified Scholar*.

cators of academic excellence has not only shaped the current landscape of research evaluation but has also steered the strategic priorities of universities worldwide. The inclination towards such quantifiable metrics inevitably affects collaboration patterns, as universities strive to enhance their visibility and prestige in these global rankings.

Several key questions guide this part of my study: first, how have university collaborations transformed since the rise of these rankings, and which institutions have emerged as central collaborators? Additionally, I examine whether there is a discernible trend linking the strength and quantity of partnerships to higher positions in global university rankings. A significant aspect of this investigation is the comparison between collaborations in natural sciences (Science, Technology, Engineering, Mathematics, and Medicine—STEMM) and those in humanities and social sciences (SSH). The methodology employed is social network analysis, which offers a structured and empirical approach to mapping and interpreting these complex relationships.

I have chosen Europe as the focal point for this inquiry; it is a deliberate choice motivated by the region's unique academic integration and historical interconnectedness. Europe is home to the European Higher Education Area (EHEA) and the European Research Area (ERA), institutional frameworks that foster collaboration, mobility, and policy alignment across national boundaries, embodying the region's commitment to a collective educational and research ethos. Moreover, my previous findings underscore European institutions as a relevant group within the global sub-field of universities under scrutiny, presenting a distinct model of academic excellence that parallels yet diverges from the North American archetype which the rankings predominantly reflect. This comparative analysis is poised to reveal how Europe's cohesive yet diverse academic landscape shapes and is shaped by the global hierarchy of university rankings. The analysis also considers the role and impact of international partnerships with non-European institutions. This aspect is crucial in understanding the global interconnectivity of European universities and its influence on their collaboration patterns and standing in the global academic community.

It is crucial to keep in mind that this part of the study is conducted within the constraints of the Web of Science (WoS) database's free version, which limits query results to a cap of 100,000 records and lacks the association of standardised institution names with their respective countries. This means that I need to find a workaround to retrieve a corpus which exceeds that number of records as well as a way to match each institutional affiliation with their countries. To adapt to these limitations, the analysis is tailored to pivotal years—2002, representing the era before global rankings; 2012, a decade within the ranking framework; and 2022, offering a more current perspective and encapsulating a twenty-year trajectory of these rankings—and a smaller, though still representative group of countries.

Beyond the limitations already mentioned there are additional factors within WoS that impact the analysis. Primarily, the core collection of WoS exhibits a linguistic bias, predominantly featuring publications in English. This bias is crit-

ical in the context of European research, where a significant portion of academic output is in other languages. This could lead to a skewed representation of non-English language research, affecting the perceived collaboration patterns and dynamics among European universities. In addition, WoS tends to favour certain research areas, often giving more weight to natural sciences, technology, and medicine over the humanities and social sciences. This bias is crucial in our comparative analysis, as it may result in an overrepresentation of STEMM fields, potentially overshadowing collaborations in SSH fields.

These limitations of the WoS database, particularly in terms of language bias and research area focus, must be factored into the interpretation of the study's findings. The impact of these biases on the portrayal of collaborative patterns, especially in the global ranking context, remains a significant consideration. Therefore, the insights and conclusions drawn should be contextualised within these acknowledged limitations of the data source.

To circumvent the limitation in the number of query results, the focus is set on three European countries, namely Sweden, England, and Germany, chosen for their distinctive university models. England's system is characterised by a competitive, autonomous ethos, aligning with the Anglo-Saxon conception of the university. The German university model integrates teaching and research, strongly backed by state support, a reflection of Humboldtian values. Sweden's system is seen as a middle ground, blending the competitive drive of the Anglo-Saxon model with the state-supported structure of the German model.¹⁹⁸

Following these specifications, I explore the collaboration patterns for each country, across the selected years, and within the two aforementioned broad academic domains: STEMM and SSH. The study will map out the geographical spread of academic collaboration using the non-standardised institution names found in author addresses and affiliations, to trace the main international partnerships and their evolution or stability over time. Later, I will map out the institutional spread of academic collaboration based on standardised institution names identifying and describing the central nodes in these collaborative networks, both national and international, and observing the changes or consistencies through the years.¹⁹⁹

¹⁹⁸ Robert D. Anderson, 'The German (Humboldtian) University Tradition', in *The International Encyclopedia of Higher Education Systems and Institutions*, ed. Pedro Nuno Teixeira & Jung Cheol Shin (Dordrecht: Springer, 2020), 546–551; Catherine Coron, 'Reshaping the Model: Higher Education in the UK and the Anglo-Saxon Neo-Liberal Model of Capitalism since 1970', *Revue LISA/LISA e-Journal* 14, no. 1 (2016).

¹⁹⁹ Parts of the data processing for these analyses were made using the R package bibliometrix. See Massimo Aria & Corrado Cuccurullo, 'Bibliometrix: An R-Tool for Comprehensive Science Mapping Analysis', *Journal of Infometrics* 11, no. 4 (2017): 959–975.

8.1 General Results

The analysis of academic collaborations in Sweden, England, and Germany reveals several key trends within the scope of STEMM compared to the SSH, as shown in Table 13. As a reminder, in the context of this exercise, a given article is considered a collaboration when among its authors there are two or more distinct institutional affiliations.

Table 13. National and international collaboration ratios (in % of published articles) by research area for Sweden, England, and Germany.

<i>Country</i>	<i>Year</i>	<i>Research Area</i>	<i>National Collaboration</i>	<i>International Collaboration</i>
Sweden	2002	STEMM	26.9	70.5
		SSH	1.2	1.5
	2012	STEMM	19.9	74.1
		SSH	1.7	4.3
	2022	STEMM	14.8	75.2
		SSH	2.5	7.5
England	2002	STEMM	25.9	67.2
		SSH	2.5	7.5
	2012	STEMM	17.3	71.2
		SSH	3.0	8.5
	2022	STEMM	11.6	73.2
		SSH	2.9	12.2
Germany	2002	STEMM	27.4	70.4
		SSH	0.8	1.4
	2012	STEMM	25.6	68.6
		SSH	1.7	4.0
	2022	STEMM	23.2	67.6
		SSH	2.7	6.6

Across all three countries and for each year within the dataset, STEMM disciplines consistently dominate in the number of collaborative articles, suggesting a robust interconnectivity within STEMM fields across international borders. International partnerships outnumber national ones in every year of the study for all three countries. This is indicative of a broader trend towards globalisation in research, with academic networks stretching beyond national borders. International collaborations account for a vast majority of total collaborations, which suggests a global trend in academic research that values and fosters cross-country partnerships.

However, this initial observation doesn't capture the entire narrative. A closer examination reveals a significant growth in the SSH disciplines (see Table 14), with a notable expansion in England, where articles increased by 130% from 2002 to 2012 and by 82% from 2012 to 2022. Sweden also exhibits considerable growth, with SSH articles rising by 206% in the first decade and by another 138% in the second. Germany's SSH output is not far behind, marking increases of 160% and 118% across the same periods, respectively.²⁰⁰

²⁰⁰ The growth percentage is calculated based on the increase in the number of articles from one period to the next. For example, the growth from 2002 to 2012 is determined by taking the number of articles in 2012, subtracting the number of articles in 2002, dividing by the number of articles in 2002, and then multiplying by 100 to get a percentage. This method is applied to each period (2002–2012 and 2012–2022) and each area (SSH and STEMM) for all three countries.

Sweden's SSH growth is particularly remarkable, outpacing that of the other two countries. This may be due to several factors, such as the country's educational policies, funding mechanisms, and a strong tradition of research in humanities and social sciences that is well-integrated with global research agendas. The Swedish research environment possibly provides more supportive conditions for SSH disciplines, allowing them to thrive and expand more significantly than in England and Germany.

Table 14. Relative change (in % of frequency variation) by research area for Sweden, England, and Germany.

<i>Country</i>	<i>Research Area</i>	<i>Relative change between 2002–2012</i>	<i>Relative change between 2012–2022</i>
Sweden	STEMM	37.0	52.5
	SSH	206.0	138.4
England	STEMM	35.9	57.1
	SSH	130.1	82.0
Germany	STEMM	37.3	37.4
	SSH	159.5	118.0

The disparities observed in SSH growth among Sweden, England, and Germany may be partially attributed to linguistic considerations. The prevalence of English as the lingua franca of academic publishing creates an interesting dynamic. England, with its already established English-language scholarship, may have less room for expansion in SSH fields simply because it is already participating fully in the global academic dialogue. The existing robust body of English-language literature in SSH can lead to a saturation effect, where adding significantly to the existing corpus becomes increasingly challenging.

In contrast, Sweden and Germany, where native languages are less dominant in international scholarship, may find that transitioning into English-language publication opens up new avenues for academic discourse and dissemination. For Sweden, especially, where the native language is spoken by a much smaller population, the shift towards publishing in English would dramatically expand the potential audience and impact of their research. This can lead to rapid growth in SSH as scholars seek to contribute to and engage with wider international debates and discussions. German academics, while also benefiting from this shift, may not experience as pronounced an expansion due to the more extensive international presence of German-language scholarship compared to Swedish.

Expanding on these last ideas, the growth in SSH disciplines may also reflect the subtle yet powerful influence of global university rankings and research evaluation practices, which have traditionally favoured the publication strategies more common in STEMM fields. As discussed in previous chapters, these evaluation systems, which emphasise article publication and citation metrics, exert a form of symbolic violence on the scientific field, pressuring disciplines in subordinated positions to conform to a model that may not necessarily suit their traditional modes of scholarship. Researchers from SSH disciplines, traditionally reliant on monographs and comprehensive studies published less frequently, may

now feel compelled to increase article output to maintain visibility and prestige in a research landscape increasingly dominated by such metrics.

This push towards greater article publication in SSH could be seen as a response to the pressures of a strengthening global knowledge economy, where research is driven by market-like behaviours and competition for ranking and funding. In adapting to these pressures, SSH disciplines might be undergoing a transformation in their research practices, potentially at the expense of the depth and breadth that characterise their scholarship.²⁰¹ This shift could have profound implications for the nature of research in SSH, affecting everything from the types of questions asked to the methods of investigation and analysis employed. It raises critical questions about the values and objectives that guide academic research and the possible long-term effects of conforming to a STEMM-centric model of scholarship assessment.

8.2 Collaborations by Region and Country

Having examined the general production of collaborative articles by Sweden, England, and Germany in 2002, 2012, and 2022, let's now specify the geographical distribution of these collaborations. In this section, I describe trends in international collaborations first by region and then by focusing on partner countries. This exercise aims to reveal geographical patterns and their evolution throughout the period under examination.

As a note, the collaboration rates I will inspect reflect the percentage of articles where a given geographical affiliation is present. Therefore, considering that in one article more than two geographical affiliations may be present, percentages do not add up to 100%. In turn, the relative change between decades has been calculated based on the total frequency increase from one period to the next in percentage form.

Sweden

For Sweden's STEMM collaboration rates by region, the data presents several noticeable patterns (see Table 15). In 2002, Europe was already the predominant collaborator with Sweden, a trend that persisted over the two decades, albeit with a marginal decrease in 2022, suggesting a high level of sustained interaction within the European research community. Contrastingly, Asia's collaboration rate with Sweden experienced a remarkable surge, indicating a pivot towards the rapidly growing scientific capacity and research output of this region. The slight

²⁰¹ Raf Guns, Joshua Eykens, & Tin C. E. Engels, 'To What Extent Do Successive Cohorts Adopt Different Publication Patterns? Peer Review, Language Use, and Publication Types in the Social Sciences and Humanities', *Frontiers in Research Metrics and Analytics* 3, no. 38 (2019).

CHRONICLES OF COLLABORATION: EUROPEAN RESEARCH PARTNERSHIPS IN
THE WAKE OF GLOBAL UNIVERSITY RANKINGS

increase in collaboration with Northern America denotes a stable and possibly strategic alliance, reflecting longstanding academic and research connections.

Table 15. Swedish collaboration rates and change by region in STEMM.

<i>Region</i>	Collaboration Rates (%)			Relative Change (%)		
	2002	2012	2022	2002–2012	2012–2022	2002–2022
Africa	2.4	5.2	7.0	118.6	34.8	153.3
Americas	3.3	5.9	8.1	77.7	37.3	114.9
Asia	12.4	21.5	34.9	73.8	62.1	135.9
Europe	70.8	73.7	72.4	4.1	-1.7	2.4
North America	29.0	31.7	32.0	9.1	1.8	10.3
Oceania	4.2	7.6	9.8	80.1	29.8	109.9

Interestingly, regions with initially lower collaboration rates, such as the Americas, Africa and Oceania, demonstrated significant growth. The tripling of Africa’s collaboration rate, despite it still being the smallest, could be a reflection of Sweden’s increasing engagement with developing research infrastructures on that continent. Oceania’s growth points to enhanced interactions with this region, possibly due to shared research interests and initiatives.

When analysing the growth in collaborations, the data tells a story of differential expansion. Africa stands out with the highest overall percentage increase in collaboration, which could suggest a concerted effort by Sweden to engage with and support the scientific development in African countries. Oceania’s and Asia’s substantial growth rates likely reflect Sweden’s diversification of its research partnerships to include these high-potential regions. Europe’s modest growth reflects a mature, well-established network where large percentage increases are naturally harder to achieve. Yet, the slight decline from 2012 to 2022 raises questions about the dynamics of intra-European research collaborations, possibly hinting at a shift in Sweden’s focus towards more global engagements. Northern America’s modest overall growth aligns with the pattern of steady but conservative increases, maintaining a solid research relationship without dramatic changes.

The overall increase in collaboration rates across all regions underscores Sweden’s expanding global research footprint. The variations in growth rates may suggest a strategic development of Swedish researchers’ international collaborations, possibly in response to the evolving global research landscape and the shifting centres of knowledge production. This recalibration also reflects the broader trends of globalisation in the scientific community, where traditional regional hierarchies are being redefined by emerging research powers and new collaborative networks.

The collaboration rates by country with Sweden in STEMM disciplines resonate with the broader regional trends just observed. The regional table indicated Europe as the predominant collaborator, which aligns with the high collaboration rates seen with countries like Germany, the UK, and France. These European nations, despite their varying growth rates, maintain a solid foundation of collaboration with Sweden, indicative of the strong interconnectivity within the European research community.

Table 16. Swedish collaboration rates and change by country in STEMM.

<i>Country</i>	Collaboration Rates (%)			Relative Change (%)		
	2002	2012	2022	2002–2012	2012–2022	2002–2022
Australia	3.6	6.9	9.2	88.9	33.3	122.3
Austria	2.0	5.1	5.1	153.5	1.2	154.7
Belgium	3.4	4.9	6.2	44.4	27.7	72.1
Canada	4.2	7.5	8.3	77.8	11.2	89.0
China	3.0	8.3	16.4	179.7	96.6	276.3
Denmark	8.2	11.6	11.0	42.4	-5.5	36.9
Finland	8.4	9.0	9.2	6.9	3.1	9.9
France	9.6	13.2	12.2	38.1	-7.5	30.6
Germany	15.1	20.8	21.6	37.5	4.1	41.7
Italy	7.0	11.4	12.9	62.2	13.7	75.9
Japan	4.7	5.5	6.2	16.2	12.5	28.7
Netherlands	6.5	11.3	11.9	73.3	5.1	78.3
Norway	6.8	10.2	9.8	50.3	-3.8	46.5
Poland	3.2	4.7	5.2	46.4	10.8	57.2
Russia	7.2	4.7	4.0	-35.3	-13.5	-48.8
Spain	4.6	10.3	11.3	123.6	9.4	132.9
Switzerland	3.9	7.5	8.2	90.4	9.8	100.2
United Kingdom	15.5	21.1	23.4	35.9	11.0	46.9
United States	26.4	28.5	28.7	7.9	0.8	8.7

The standout growth in collaboration with China parallels the significant rise seen in the Asia region overall, emphasising the continent’s growing influence in global research and its increasing academic exchanges with Sweden. The collaboration with the United States, while showing modest growth, is consistent with the stable figures seen in the Northern American region, suggesting that existing collaborations are well-established and perhaps nearing saturation. In contrast, Russia’s notable decline in collaboration is not entirely reflected in the broader regional trends, indicating that this might be an exception due to country-specific factors rather than a regional shift in academic partnerships.

The collaboration trends between Sweden and various countries, when juxtaposed with global university rankings, reveal a correlation between academic partnerships and the presence of institutions within the top 100 of ARWU, QS, and THE rankings. The stable and significant collaboration rates with European countries and the United States reflect the historical dominance of these regions in the top tiers of global rankings. This long-standing presence in the rankings has likely fostered a culture of research excellence, encouraging sustained and deep-rooted academic collaborations with Sweden. It also suggests that Swedish institutions may be leveraging these partnerships to bolster their own standings in global rankings, given the weight that collaborative research and citations have in these evaluations.

The expanding collaboration rates with Asia, particularly the notable increase with China, align with the region’s ascent in global university rankings over the studied period. As Asian institutions, particularly Chinese universities as demonstrated in previous chapters, have grown in the top 100 of major rankings, so too has their international collaboration network. This dynamic points to a strategic alignment between emerging research powers in Asia and established research institutions in Sweden. The growth in collaboration rates can thus be seen as both a contributor to and a consequence of the improved ranking positions of Asian universities. Such partnerships are mutually beneficial; they enhance the research

profile and prestige of the involved institutions and also contribute to the global dissemination and impact of their research findings.

Let's now turn our attention to SSH disciplines. Europe remains the principal collaborator in SSH, similar to STEMM, with an increase from 66% in 2002 to 76% in 2022. This enduring and growing connection underscores the historical and cultural ties within the continent, and possibly the ease of collaboration within shared linguistic and institutional frameworks.

Table 17. Swedish collaboration rates and change by region in SSH.

<i>Region</i>	Collaboration Rates (%)			Relative Change (%)		
	<i>2002</i>	<i>2012</i>	<i>2022</i>	<i>2002–2012</i>	<i>2012–2022</i>	<i>2002–2022</i>
Africa	1.4	4.8	6.9	249.0	42.6	291.7
Americas	0.7	2.2	3.8	219.1	74.0	293.1
Asia	2.8	10.9	14.9	293.9	36.9	330.8
Europe	65.5	68.2	75.8	4.1	11.1	15.2
North America	38.6	28.1	25.0	-27.3	-10.9	-38.3
Oceania	4.8	7.2	10.3	48.2	43.4	91.5

In contrast to the stable collaboration rates within Europe, Asia's collaboration rates with Sweden in SSH have risen sharply, from a modest 3% in 2002 to 15% in 2022. This growth aligns once more with the region's pronounced emergence in global university rankings, suggesting that as Asian institutions climb the rankings, their SSH faculties are also becoming more integrated into the international research community, mirroring trends seen in STEMM.

The Americas and Africa, while starting from lower collaboration rates, have shown extraordinary growth percentages, indicating an expanding scope of research partnerships. This expansion might reflect Sweden's strategic initiatives to diversify its research collaborations and engage with a broader spectrum of global perspectives in SSH research.

Notably, North America presents a contrasting trend, with a decrease in collaboration rates from 37% in 2002 to 25% in 2022. This decline in collaboration percentage could be reflective of the region's already high baseline of collaboration in SSH, or it may signal a shift in research priorities or funding within either region. The collaboration rates with Oceania indicate strengthening ties, albeit from a smaller base, suggesting an increased recognition of the unique contributions that this region can offer to SSH fields.

The divergence between SSH and STEMM collaboration rates, particularly in regions like North America, where STEMM collaborations remain stable or grow modestly while SSH collaborations decline, might reflect differing academic focuses, funding landscapes, or impacts of university ranking metrics that may favour STEMM outputs.

Table 18. Swedish collaboration rates and change by country in SSH.

Country	Collaboration Rates (%)			Relative Change (%)		
	2002	2012	2022	2002–2012	2012–2022	2002–2022
Australia	4.8	6.2	8.9	28.2	42.9	71.1
Canada	5.5	4.1	5.6	-25.2	36.5	11.3
Denmark	9.0	8.5	8.8	-4.9	3.2	-1.7
Finland	6.2	6.5	11.6	4.2	79.7	83.9
France	3.5	4.8	5.5	39.6	13.4	53.0
Germany	9.7	10.9	11.8	12.6	9.0	21.5
Italy	5.5	5.4	7.0	-2.8	29.6	26.9
Netherlands	10.3	7.3	9.7	-29.5	32.8	3.3
Norway	9.7	11.0	13.6	14.0	24.0	38.0
Spain	1.4	4.4	6.2	219.1	40.0	259.1
United Kingdom	24.1	19.8	22.2	-18.5	12.8	-5.7
United States	35.2	25.0	21.1	-28.8	-15.8	-44.6

Taking a closer look at the results by country, the collaboration with the United Kingdom has seen some fluctuation but ultimately shows a resilient academic partnership that persists. This could reflect the cyclical nature of research priorities and funding within the UK's SSH community. Meanwhile, the United States, which has traditionally held strong ties with Sweden, shows a noticeable decline in collaboration rates in SSH, diverging from the steady presence it maintains in STEM fields. This suggests that the SSH research agenda in the United States may be evolving in ways that lead to fewer collaborative ventures with Sweden.

In contrast to the declines, Sweden's Nordic neighbours, Finland and Norway, have intensified their SSH research collaborations with Swedish researchers, whereas Denmark has a more stable rate. This regional closeness is likely bolstered by shared cultural and research priorities, as well as possibly similar responses to global academic trends. Spain's remarkable growth signifies an emergent focus on SSH disciplines, potentially as part of a broader national strategy to elevate its international academic profile.

Overall, the SSH collaborations reflect Swedish researchers' strategic adaptability and perhaps a deliberate effort to expand their academic horizons. The significant growth in collaboration with countries like Spain and Australia indicates that Sweden is reaching out to develop new research partners, likely driven by the desire to diversify scholarly perspectives and expertise.

The shifting patterns of collaboration in SSH also hint at the influence of global university rankings, which have started to recognise and reward the diversity and breadth of research outputs. As Asian and Oceanian institutions rise in the rankings, Sweden's increasing collaborations with these regions suggest a recognition of emerging scholarly hubs that are becoming pivotal in the SSH landscape.

The analysis of Sweden's collaboration practices in both STEM and SSH over the past two decades provides valuable insights into the Swedish researchers' evolving academic strategies in the context of the emergence and evolution of global university rankings. In STEM, Sweden's collaborations have been characterised by a stable and robust partnership with North American and European institutions, regions that have consistently held a strong presence in the top 100 of global rankings like ARWU, QS, and THE. These enduring alliances suggest a mutual rein-

forcement of research excellence, where high-ranking institutions collaborate to further solidify their positions within the global academic hierarchy.

However, the landscape of SSH tells a somewhat different story. While Europe continues to be a key collaborator in SSH, there has been a notable expansion in partnerships with countries and regions that are rising in the global university rankings. This expansion into Asia, Africa, and Oceania reflects a clear diversification of Sweden's academic ties, possibly in anticipation of or response to these regions' increasing prominence in global rankings.

The overall growth in SSH collaborations, particularly with countries that have historically been less represented in top rankings, suggests that Swedish researchers are not only responding to current ranking metrics but are also proactively engaging with regions that are expected to play a larger role in future academic evaluations. By building these partnerships, researchers affiliated to Swedish institutions are positioning themselves at the forefront of a more inclusive and globally oriented research community. In sum, Sweden's collaboration practices in both STEMM and SSH reflect a nuanced engagement with the global academic landscape, shaped by the traditional dominance of certain regions in global rankings as well as the evolving criteria that recognise the value of broader international research networks.

England

In 2002, Europe was England's most significant collaborative partner, accounting for over 60% of its international collaborations in STEMM. This predominance has somewhat diminished by 2022, potentially indicative of a diversifying global focus within England's STEMM research agenda. The slight reduction in collaboration with Europe, along with a modest increase with Oceania, suggests a recalibration of academic partnerships, with English researchers seeking to broaden their research connections.

England's collaboration rate with Asia has more than doubled, signifying a pronounced and continuous engagement. This steep increase is reflective of the region's rising prominence in global scientific output and innovation, resonating with Asia's growing representation in the upper tiers of global university rankings. Collaborations with Africa and the Americas have also seen substantial growth, with Africa, in particular, nearly tripling its collaboration rate. This could be attributed to England's strategic initiatives to develop research links with emerging academic institutions and networks in these regions. Conversely, collaboration rates with North American institutions show a slight overall growth, despite a dip in the second decade. This could be due to evolving research interests, funding priorities, or existing partnerships that have reached a plateau in terms of collaborative output.

Table 19. English collaboration rates and change by region in STEMM.

Region	Collaboration Rates (%)			Relative Change (%)		
	2002	2012	2022	2002–2012	2012–2022	2002–2022
Africa	3.7	6.0	9.0	65.4	49.1	114.5
Americas	4.1	5.9	7.8	43.4	32.3	75.6
Asia	16.1	24.2	41.0	50.2	69.2	119.3
Europe	62.5	63.6	57.5	1.7	-9.5	-7.8
North America	30.4	33.5	31.4	10.4	-6.5	3.9
Oceania	6.3	10.3	11.5	62.6	11.8	74.4

The overall increase in collaboration rates across most regions suggests that England's STEMM fields are actively extending their international reach. This extension is likely driven by the quest for diverse research partnerships, the globalisation of science and technology disciplines, and the pursuit of innovation through a wider array of international inputs. The growth patterns underscore England's response to the changing landscape of global research, where traditional academic powerhouses are adapting to the rise of new centres of research and development across the world.²⁰²

Focusing on the evolution of these collaborations by country, China stands out with a remarkable increase from a modest 4% in 2002 to a substantial 20% in 2022. This surge aligns with China's ascent in global university rankings and its increasing influence in the international research community. The considerable growth of over 275% underscores England's recognition of China as a critical partner in pursuing cutting-edge STEMM research.

European countries like Germany, despite a slight decrease in the latter part of the study period, along with France and the Nordic countries, have generally maintained strong collaborative ties with England. However, the decline in collaboration rates with France and the reduction in the growth rate with Germany could suggest a realignment of research interests or funding shifts within these countries or England itself.

India's impressive growth, nearly doubling its collaboration rate, indicates an expanding research relationship, likely driven by the country's growing emphasis on STEMM and its enhanced capacity for high-quality research. Conversely, Japan and Russia have seen their collaboration rates with England decline. For Japan, the decline might be reflective of the country's internal research focus or competition from other international collaborators. For Russia, the decrease could be influenced by broader geopolitical and economic factors that have impacted international research cooperation.

²⁰² Jonathan Adams & Karen Gurny, 'Bilateral and Multilateral Coauthorship and Citation Impact: Patterns in UK and US International Collaboration', *Frontiers in Research Metrics and Analytics* 3, no. 12 (2018); Caroline Wagner, Han Woo Park, & Loet Leydesdorff, 'The Continuing Growth of Global Cooperation Networks in Research: A Conundrum for National Governments', *PLoS ONE* 10, no. 7 (2015).

Table 20. English collaboration rates and change by country in STEMM.

Country	Collaboration Rates (%)			Relative Change (%)		
	2002	2012	2022	2002–2012	2012–2022	2002–2022
Australia	5.2	8.8	10.3	68.3	16.9	85.2
Austria	1.4	3.0	3.2	105.5	8.7	114.3
Belgium	3.3	4.6	5.0	41.8	8.5	50.2
Brazil	1.8	3.2	4.0	75.7	25.8	101.4
Canada	5.3	7.6	8.1	45.5	5.6	51.1
China	3.5	8.5	19.8	142.5	133.0	275.5
Denmark	2.6	4.0	4.4	54.6	10.5	65.1
France	10.7	12.6	10.5	18.3	-16.9	1.5
Germany	13.4	16.8	15.9	25.1	-5.4	19.7
Greece	1.9	3.0	2.7	57.4	-11.3	46.2
India	1.4	2.5	4.9	75.3	96.1	171.4
Italy	8.3	10.6	11.5	27.6	8.7	36.2
Japan	5.0	4.6	4.2	-7.8	-8.9	-16.7
Netherlands	6.4	9.6	9.1	48.9	-4.5	44.4
Norway	1.6	2.9	3.1	76.3	12.3	88.6
Poland	1.8	3.0	3.0	68.1	-1.4	66.6
Russia	3.6	2.8	2.4	-20.5	-15.8	-36.4
South Africa	1.2	2.4	3.2	99.6	31.9	131.4
Spain	5.3	9.2	9.1	74.7	-1.0	73.7
Sweden	4.4	5.6	5.9	27.3	4.6	31.9
Switzerland	4.1	6.8	7.2	67.1	6.7	73.8
United Kingdom	13.5	12.7	11.1	-6.2	-12.4	-18.6
United States	27.1	29.8	27.8	9.9	-6.7	3.2

The collaborations with traditionally strong partners, such as the UK (excluding England) and the US, have experienced fluctuations. The US, while remaining a significant collaborator, has seen a slight downtrend, which may be due to the maturation of existing research partnerships or the emergence of alternative research alliances. These shifts in collaboration rates are not merely reflections of changing academic interests but also indicators of the broader strategic responses to the global landscape of STEMM research. As university rankings increasingly factor in international collaboration as a measure of research impact and quality, England’s STEMM partnerships reflect a keen awareness of the need to integrate diverse international perspectives and expertise to maintain and enhance its standing in the global academic community.

Moving on to collaboration practices in SSH over the past two decades, there’s been a significant deepening of ties with Asia, a marked rise in collaborations with Africa and the Americas, and a notable decrease with North America. The partnership with Asia has experienced a dramatic surge, more than tripling by 2022. This substantial expansion mirrors the trends seen in STEMM, suggesting that Asia’s increasing prominence in global university rankings is fostering deeper collaborative connections across all academic fields. The region’s rise is likely driven by the growing recognition of its research output and the strategic alignment of England’s SSH research with emerging Asian academic institutions.

Africa and the Americas have also seen impressive growth in their SSH collaborations with England, with Africa more than doubling and the Americas significantly increasing their rates. Conversely, the declining collaboration rates with North America in SSH contrast with the stable presence it maintains in STEMM. This reduction may reflect a shift in research priorities or funding landscapes,

indicating that England's SSH researchers are seeking new collaborative networks beyond traditional partnerships. In Europe, the slight decrease in collaboration rates could suggest a realignment of research interests or the impact of increased competition for collaborative partnerships within the continent.

Table 21. English collaboration rates and change by region in SSH.

Region	Collaboration Rates (%)			Relative Change (%)		
	2002	2012	2022	2002–2012	2012–2022	2002–2022
Africa	3.2	3.5	7.1	9.7	101.6	111.3
Americas	2.5	2.0	5.0	-21.4	155.2	133.8
Asia	8.9	14.9	28.4	67.3	89.9	157.2
Europe	51.2	56.9	55.0	11.2	-3.4	7.9
North America	37.4	30.8	26.7	-17.4	-13.6	-31.0
Oceania	12.2	11.4	11.2	-6.7	-1.7	-8.4

Overall, England's SSH collaborations are indicative of a responsive and evolving approach to international research partnerships, aligning with global academic trends and the changing landscape of global university rankings. The growth in SSH collaborations with Asia, Africa, and the Americas, alongside the decline with North America, highlights England's adaptive strategy in fostering a diverse and inclusive research environment that extends across a broad spectrum of regions.

Delving now into the collaboration rates in SSH by country, once again we see that China's collaboration rate has seen a meteoric rise, going from a mere 2% in 2002 to 12% in 2022. The enormous leap in collaboration mirrors China's strategic expansion in higher education and research, positioning itself as a global powerhouse in SSH as well as STEM. India's collaboration rate has also seen an exponential increase, though starting from a lower base. This reflects the broader engagement with emerging research economies and indicates England's recognition of India's growing academic stature and its potential as a rich source of SSH research collaborations.

Interestingly, the traditional hub of the US has seen a reduction in its collaboration rate with England in SSH. This decline might suggest a shift within England towards seeking new perspectives in SSH, possibly as a response to changing global research priorities or as a strategic move to diversify academic partnerships. The collaboration patterns with European countries such as Germany and France show a steady increase, reinforcing traditional academic ties within the region. These connections may be facilitated by shared cultural and linguistic affinities, as well as similar academic traditions and priorities.

In contrast, countries like Belgium and Canada have experienced a decrease in collaboration rates. The reasons behind these declines could be multifaceted, including shifts in funding priorities, the emergence of new research clusters within England, or evolving research interests that seek different international counterparts. Overall, England's SSH collaborations reflect its shifting academic landscape, characterised by a desire to integrate a broader range of international insights and expertise. This adaptability is likely in part a strategic response to the evolving criteria of global university rankings, which increasingly value international collaboration and the diversity of research contributions. The growth in

SSH collaborations, particularly with rapidly developing countries, highlights England’s proactive engagement with the global academic community, seeking to foster a rich and varied research environment that transcends traditional geographic and cultural boundaries.

Table 22. English collaboration rates and growth by country in SSH.

Country	Collaboration Rate (%)			Relative Change (%)		
	2002	2012	2022	2002–2012	2012–2022	2002–2022
Australia	9.9	9.6	9.7	-2.0	1.1	-0.8
Belgium	3.4	3.0	3.0	-11.4	-1.7	-13.0
Canada	6.7	6.3	6.0	-6.8	-5.2	-12.0
China	2.3	4.7	11.6	102.9	144.5	247.4
France	3.9	4.5	5.7	16.6	24.5	41.0
Germany	6.2	9.7	10.1	56.0	3.9	59.9
India	0.4	0.9	2.8	112.8	206.1	318.8
Italy	4.5	5.7	7.3	25.4	28.2	53.6
Netherlands	6.8	7.5	6.8	9.9	-9.8	0.2
Norway	1.6	2.0	3.4	19.6	75.6	95.3
South Africa	1.5	1.7	3.2	13.5	86.4	99.9
Spain	3.7	4.6	5.2	26.0	10.9	37.0
Sweden	2.3	2.6	3.4	10.0	32.8	42.8
Switzerland	1.4	3.0	3.6	111.3	19.0	130.3
United Kingdom	13.9	12.6	10.2	-9.1	-19.1	-28.2
United States	32.3	26.0	22.7	-19.7	-12.6	-32.3

The analysis of England’s STEM and SSH international collaborations over the last two decades highlights a strategic evolution reflecting to some degree the changing landscape of global research and university rankings. In STEM, England’s collaboration patterns show a proactive extension toward Asia, reflecting the region’s rapid ascent in global rankings and burgeoning research output. This shift demonstrates England’s agility in partnering with emerging scientific powerhouses, reinforcing the trend observed in Sweden’s collaborations, where both countries are increasingly engaging with Asia’s dynamic academic institutions.

In SSH, England’s collaboration trends are characterised by a significant diversification of partnerships. The considerable rise in collaborations with China and India underscores a strategic pivot towards these countries, mirroring their enhanced positions in global academic standings. While Sweden has also increased its engagement with these regions, England’s collaborations have seen a particularly pronounced growth, suggesting a dedicated effort to integrate the rich and varied perspectives these countries offer in SSH research.

Additionally, the decline in collaboration rates with traditional partners like the United States and within Europe in SSH points to a recalibration of England’s research alliances. This contrasts with the steady or growing partnerships observed in Sweden’s STEM fields, indicating potentially different strategic responses to global academic trends between the two countries.

Overall, England’s approach in both STEM and SSH reflects a nuanced response to the evolving metrics of global university rankings, emphasising internationalisation and research impact. The strategic partnerships England is forging, particularly in SSH, show a commitment to fostering a more globally inte-

grated and diverse research environment, aligning with the broader push towards inclusivity and collaboration in the international academic community.

Germany

Germany's collaboration trends in STEMM at the regional level have been characterised by both steadfast relationships and significant growth in various parts of the world. Europe has remained the most consistent collaborative partner, with rates hovering around two-thirds of Germany's total collaborations across the two decades. This enduring connection is likely due to geographical proximity, shared cultural and academic traditions, and established networks within the European research community.

Looking further afield, Asia's collaboration rate with Germany has seen a noteworthy rise, doubling from 16% in 2002 to 33% in 2022. This trend indicates a strengthening of ties with Asian countries, which may be influenced by Asia's expanding role in global scientific research and its heightened visibility in university rankings, as already noted when analysing international collaborations for Sweden and England.

Table 23. German collaboration rates and change by region in STEMM.

<i>Region</i>	Collaboration Rates (%)			Relative Change (%)		
	2002	2012	2022	2002–2012	2012–2022	2002–2022
Africa	2.1	3.1	6.5	48.3	110.0	158.3
Americas	4.1	4.7	8.3	15.4	77.3	92.7
Asia	15.6	19.8	32.8	27.4	65.3	92.6
Europe	65.9	65.9	68.2	-0.0	3.5	3.5
North America	31.6	30.1	31.7	-4.9	5.3	0.4
Oceania	3.0	4.7	7.4	53.4	58.5	111.9

Collaboration with Africa, while starting from a smaller base, has experienced the most substantial relative increase, tripling in rate over the two decades. This significant uptick could reflect Germany's increased investment in research initiatives and partnerships in Africa, recognising the continent's potential as a growing hub of scientific inquiry. The Americas and Oceania also show robust increases in collaboration rates, indicating Germany's proactive outreach and the development of transatlantic and transpacific research connections. These rising rates may highlight Germany's strategic diversification of its research collaborations, aiming to tap into a wide range of international expertise and innovation.

The relatively flat growth in collaboration with Europe alongside the dramatic increases in partnerships with other regions reflects Germany's response to an evolving global research landscape. As the country seeks to maintain its prominence in STEMM fields, these dynamic collaborative trends underscore a commitment to fostering diverse international research networks and engaging with emerging scientific communities worldwide.

An examination of the collaboration rates by country reveal that Germany has increasingly partnered with China as well, with its collaboration rate in STEMM more than quadruple from 2002 to 2022. This confirms once more China's ris-

CHRONICLES OF COLLABORATION: EUROPEAN RESEARCH PARTNERSHIPS IN THE WAKE OF GLOBAL UNIVERSITY RANKINGS

ing prominence in the global research community and underscores Germany’s strategic initiative to align with this growth. Similarly, substantial increases in collaboration with countries like Brazil and India suggest Germany’s keen interest in broadening its research network to include nations with burgeoning scientific capabilities and a growing presence in global university rankings.

Within Europe, Germany’s collaborations with France and the UK have shown an upward trajectory, albeit with varying degrees of growth. This could be attributed to the shared academic traditions and strong research infrastructures within these countries, coupled with the consistent emphasis on fostering regional ties within the EU’s framework of research and innovation.

Conversely, collaboration with the US has remained relatively stable, with a minor overall decrease noted. This steadiness, against the backdrop of significant growth with other regions, might suggest that Germany’s STEMM collaborations are maturing, with established partnerships evolving in response to the changing global research landscape.

Table 24. German collaboration rates and change by country in STEMM.

Country	Collaboration Rates (%)			Relative Change (%)		
	2002	2012	2022	2002–2012	2012–2022	2002–2022
Australia	2.7	4.1	6.7	53.3	63.0	116.3
Austria	4.6	5.6	8.2	29.4	38.7	68.1
Belgium	3.3	3.5	5.5	4.4	59.4	63.9
Brazil	1.7	1.8	4.1	2.6	128.8	131.4
Canada	4.0	4.8	7.1	19.1	49.6	68.7
China	3.5	5.8	14.6	65.1	153.1	218.2
Denmark	2.6	2.8	4.8	7.3	75.5	82.8
France	11.2	10.5	13.2	-6.3	25.3	19.0
India	2.0	1.9	4.0	-4.0	106.8	102.8
Italy	8.0	7.9	12.9	-0.7	62.7	62.1
Japan	5.4	4.1	5.5	-23.7	33.3	9.6
Netherlands	6.5	7.5	10.9	15.3	46.7	62.0
Poland	3.8	2.7	4.8	-28.6	76.8	48.2
Russia	9.4	4.2	4.6	-55.4	9.9	-45.4
Spain	4.7	6.4	10.0	37.5	56.1	93.6
Sweden	4.0	4.1	6.7	1.4	63.8	65.2
Switzerland	7.8	9.1	12.1	16.5	33.3	49.8
United Kingdom	12.8	14.1	19.6	9.6	39.3	48.9
United States	29.2	27.3	28.7	-6.6	5.0	-1.5

The growth patterns in Germany’s international collaborations reflect a nuanced strategy of maintaining strong ties within Europe while proactively engaging with emerging research economies. This balanced approach indicates Germany’s recognition of the importance of both preserving traditional research alliances and embracing new collaborative opportunities to drive scientific innovation and maintain its competitive edge in a globally interconnected research environment.

Moving on to the analysis of collaboration rates in SSH, results show that Europe represents the core for Germany’s SSH collaborations, seeing a moderate increase and maintaining a strong majority share. This could be attributed to shared cultural and academic frameworks that make Europe a natural first point of collaboration. The slight growth over the two decades in collaboration with

Europe may also suggest a saturation in the established networks, leaving less room for dramatic increases.

Table 25. German collaboration rates and change by region in SSH.

<i>Region</i>	Collaboration Rates (%)			Relative Change (%)		
	2002	2012	2022	2002–2012	2012–2022	2002–2022
Africa	1.6	1.7	4.4	9.0	157.1	166.1
Americas	1.6	1.9	4.8	20.9	152.5	173.4
Asia	6.3	9.0	16.0	44.0	77.8	121.8
Europe	60.4	69.4	71.3	15.0	2.7	17.7
North America	42.2	30.0	27.3	-28.9	-9.1	-38.0
Oceania	2.7	5.6	7.7	104.5	37.9	142.4

In contrast, significant increases in collaboration with Asia, Africa, and the Americas highlight Germany's active expansion of its SSH research connections. Asia's collaboration rate, in particular, has more than doubled, which may reflect the region's rising global academic influence and the increasing value placed on Asia's contributions to the humanities and social sciences. The growth rates in Africa, the Americas, and Oceania are particularly striking in SSH compared to STEM, indicating a strategic shift to broaden the scope of collaborative efforts. Africa and the Americas, starting from a lower base, have seen their collaboration rates with Germany multiply, pointing towards an effort to tap into diverse research perspectives and foster partnerships in regions experiencing dynamic growth in academic output.

Oceania's significant relative growth reflects an intensified interest in the unique academic contributions from this region. While starting from a smaller base, the collaboration rate has more than doubled, suggesting that Germany values Oceania's distinct SSH research insights.

A noticeable decline in collaboration with North America contrasts sharply with the patterns observed in STEM, where the collaboration rates have remained relatively stable. This decrease in SSH may be due to a realignment of research interests, funding priorities, or a strategic decision to diversify research partnerships beyond traditional Western-centric models.

An inspection of collaborations by country reveals a significant increase in collaborations with Australia and China, indicating Germany's recognition of these nations as rising contributors to SSH. Australia's collaborations have more than doubled, and China's have nearly tripled, highlighting Germany's commitment to engaging with diverse research traditions and perspectives. These increases suggest an appreciation for the unique contributions of these countries to the SSH disciplines, alongside their growing prominence in global academia.

Table 26. German Collaboration Rates and Growth by Country in SSH.

Country	Collaboration Rates (%)			Relative Change (%)		
	2002	2012	2022	2002–2012	2012–2022	2002–2022
Australia	2.3	5.2	6.9	119.7	33.6	153.2
Austria	5.1	6.6	7.9	29.8	20.2	50.0
Belgium	2.5	3.3	3.9	31.3	17.6	48.9
Canada	5.7	4.5	4.9	-20.2	9.3	-11.0
China	2.0	2.4	5.1	23.3	112.6	135.9
Denmark	3.1	2.8	3.9	-9.9	39.2	29.3
France	5.9	4.7	6.8	-19.1	43.0	23.9
Italy	3.5	5.4	8.2	54.9	50.6	105.5
Netherlands	9.0	11.9	11.4	32.3	-4.2	28.2
Norway	1.8	1.3	4.0	-26.3	210.9	184.7
Spain	3.7	4.1	5.7	10.8	38.8	49.5
Switzerland	7.8	12.0	10.2	53.6	-14.7	38.9
United Kingdom	20.9	20.2	21.2	-3.6	5.0	1.4
United States	38.3	26.6	24.1	-30.6	-9.4	-40.0

Italy and Norway have notably increased their collaboration rates with Germany, with Italy’s rate more than doubling and Norway’s increasing fourfold, possibly due to shared research interests or targeted initiatives. In contrast, the collaboration between the US and Germany in SSH has seen a decline. This could be influenced by the global academic trend towards prioritising fields with direct economic benefits particularly prevalent in the US and the UK, leading to reduced emphasis and funding for humanities-focused research, and consequently affecting international collaborations in these areas.²⁰³ Despite this trend however, the UK has remained a major collaborator with Germany in SSH, maintaining a consistent rate over the two decades. This underscores the strong academic bond between the two countries, likely facilitated by shared academic practices and geographical proximity.

These patterns in Germany’s SSH collaborations highlight a broader trend towards increasing internationalisation in research partnerships. The growth in collaboration with countries that have enhanced their global academic standing suggests that Germany is strategically positioning itself in the SSH research landscape, fostering ties with countries that are expanding their influence and offering new insights and perspectives. This approach is reflective of a global research environment that is becoming increasingly inclusive and diverse, driven by the changing criteria of university rankings and the importance of international collaboration in fostering rich, multidisciplinary academic discourse.

Summary of Major Trends

The analysis of international collaborations in both STEMM and SSH for Sweden, England, and Germany has revealed major trends that reflect these countries’ responses to a shifting global academic environment, where language, culture, and university rankings seem to influence partnership strategies.

²⁰³ Rosario Couto Costa, ‘The Place of the Humanities in Today’s Knowledge Society’, *Palgrave Communications* 5, no. 38 (2019).

A notable trend across all three countries in STEMM and SSH is the growing significance of collaborations with China. Institutions from this country have shown impressive growth in collaboration rates over the past two decades. This surge aligns with their rising representation in the top 100 of major global university rankings such as ARWU, THE, and QS. The increase suggests a strategic recognition of these countries as emerging centres of academic excellence and innovation. These growing collaboration rates demonstrate an acknowledgement of its substantial investment in research and education, which has led to its heightened status in global rankings and as a coveted research partner.

Another important trend is the fluctuation in collaboration with the United States across all three European nations, particularly in SSH where there has been a noticeable decline. This could be indicative of several factors, including the maturation of existing research networks, shifts in funding priorities, or a strategic pivot towards other regions that offer new opportunities for collaboration. Language and culture play crucial roles in these dynamics, with the European countries possibly seeking to diversify their partnerships beyond the English-speaking world and to engage with non-Western perspectives and methodologies more deeply.

While Europe remains a strong collaborator within STEMM, there is a slight departure in SSH, with a more pronounced expansion of partnerships outside the traditional Western-centric academic sphere. In summary, the major trends in international collaborations for these European countries underscore a strategic and responsive approach to the evolving landscape of global research, as indicated by shifts in university rankings. The increased engagement with countries experiencing a rise in academic prominence suggests a forward-looking stance, aiming to foster a diverse and inclusive research environment that transcends linguistic, cultural, and traditional geographic boundaries.

8.3 Collaborations by Institution

In this section, the examination progresses from a broader perspective of regional and national trends to a more detailed analysis of institutional collaborations within STEMM and SSH disciplines, with a focus on Sweden. The decision to concentrate on Sweden is supported by previous results that indicate overarching patterns of collaboration, which are largely consistent across Sweden, England, and Germany. These patterns suggest that while there are unique aspects to each country's academic partnerships, they share commonalities in their international research collaboration profiles.

This institutional-level analysis will illuminate the specific academic entities that serve as central hubs in Sweden's research networks. By identifying the key institutions that have consistently appeared as influential nodes across the studied years, we can discern the enduring relationships as well as the evolving partner-

ships that characterise the Swedish academic landscape and their relationship with the emergence and evolution of global university rankings.

Central to this investigation is the concept of “Largest Connected Components” (LCC) within a network. In the language of social network analysis, a connected component is a group of nodes that are all linked to each other. The LCC in a network is the biggest subset of interconnected nodes, thereby representing the most extensive and cohesive cluster of, in this case, collaborative activity. Analysing the LCCs provides valuable insights into the core of the academic collaboration network, highlighting the most influential institutions and the intensity of their interactions. Instead of focusing on whole networks, I will study their LCCs, which in all cases capture almost the totality of each network.

Swedish STEM Collaboration Networks

I will start with an examination of the networks’ composition and connectivity by studying node count, edge count, and edge density (see Table 27). Nodes in this context represent individual institutions involved in STEM research, while edges represent the collaborative links between them. Edge density offers a measure of how interconnected these institutions are within the network, providing an indicator of the networks’ overall cohesiveness. This analysis serves to map out the growth and intensification of Sweden’s research collaborations, reflecting broader trends in scientific cooperation and the country’s academic integration within the global scientific community.

From 2002 to 2022, the complete collaboration network of Sweden’s STEM collaboration has experienced significant growth. The node count, indicating the number of institutions, has more than doubled, highlighting the expansion of the academic network. Concurrently, the edge count has seen an exponential increase, suggesting not just an increase in the number of institutions but also a surge in the collaborative efforts between them. This is further reinforced by the rise in edge density, which has more than tripled over two decades, signalling that the network is becoming denser and more interconnected.

Table 27. Collaboration network statistics for Sweden in STEM.

<i>Network</i>	<i>Year</i>	<i>Node Count</i>	<i>Edge Count</i>	<i>Edge Density</i>
Complete Network	2002	2,970	52,374	0.01
	2012	5,043	347,849	0.03
	2022	7,900	1,163,026	0.04
LCC	2002	2855	52,272	0.01
	2012	4,990	347,804	0.03
	2022	7,845	1,162,987	0.04

The LCC of the networks shows a parallel trend of growth and intensifying interconnectivity. The LCC represents the core of the network, where the largest group of institutions is interlinked through direct collaboration paths. Here, the

edge density outpaces that of the complete network, indicating that within the core, institutions are even more closely connected.

These metrics reveal a significant increase in the size and density of Sweden's STEMM collaborations, with the LCC displaying even higher levels of integration. The data points to a thriving and cohesive research community, increasingly characterised by rich and numerous collaborative ties. This mirrors the global trend towards enhanced scientific collaboration and reflects the strategic importance of such networks in driving innovation and research excellence. Let's now turn to the analysis of each network by year.

STEMM 2002

In 2002, just before the introduction of global university rankings, a trio of Swedish institutions—Lund University, Karolinska Institutet, and Uppsala University—already had a robust collaborative profile. Interestingly in the context of this study, the three of them would later occupy positions among the highest ranked Swedish institutions across multiple rankings, including ARWU, QS, and THE.

Lund University emerges as a pivotal node in this context. Its high strength score of 7,017 signals its extensive involvement in collaborative research and academic activities, indicating a dominant presence. The university's role as a connector is highlighted by its substantial betweenness score, meaning that it often serves as a bridge for research collaborations, linking various subgroups within the network and facilitating the flow of ideas and resources. The high score in closeness centrality of Lund University points towards its efficient access to other nodes in the network, suggesting its ability to rapidly disseminate and acquire knowledge. Additionally, by achieving the maximum eigenvector centrality score, it demonstrates its association with other influential institutions, reinforcing its status as a leading entity in the STEMM network.

Karolinska Institutet also stands out with its significant strength score of 6,028, illustrating its active engagement in the network, albeit to a slightly lesser degree than Lund University. The betweenness score of Karolinska Institutet surpasses that of Lund, indicating its even more central role in connecting disparate parts of the network. This institution plays a critical role in bridging and integrating various research communities, acting as a vital link for interdisciplinary collaborations. Its closeness centrality is akin to Lund's, showcasing a similar level of efficiency in network interactions. The eigenvector centrality, slightly lower than Lund's, still underscores Karolinska Institutet's connections with key players in the network, marking it as a highly influential institution.

Uppsala University, with a strength score of 4,662, marks its presence as an influential yet slightly less dominant institution compared to Lund and Karolinska. Its betweenness centrality is almost at par with Karolinska, suggesting a crucial role in connecting different segments of the network. Uppsala University serves as a vital intersection in the network, crucial for the integration and dissemination of research across various disciplines in STEMM. Interestingly, its

closeness centrality is the highest among the top three, indicating the most direct and efficient lines of communication with other network nodes. This positions Uppsala University as a central hub for collaboration and knowledge exchange. However, its eigenvector centrality, while substantial, is lower, suggesting its influential connections are not as strong as the top two institutions.

Beyond this leading trio, other institutions like Gothenburg University and Skåne University Hospital played significant roles despite having fewer collaborations. Their involvement pointed to specialised or region-specific research strengths. Similarly, Stockholm University, Umeå University, the KTH Royal Institute of Technology, and Linköping University manage to stand out as relevant nodes considering their involvement in collaborations, yet in a much smaller capacity in comparison with the previously mentioned institutions. Gothenburg, Stockholm, and KTH would later be featured in global university rankings and even hospital rankings (in the case of Skåne University Hospital) with various levels of performance. As a rule of thumb however the higher the rank, the higher their importance in the network.

Outside Sweden, a number of institutions manage to position themselves as important nodes within this network. In Europe, several French institutions, including the Centre National de la Recherche Scientifique (CNRS), Paris Cite University, the University of Paris, and Sorbonne Université, led in terms of collaborations. From the UK, the University of London, along with the University of Manchester and Oxford, stood out due to their extensive collaborative efforts. Nordic collaboration also saw noteworthy participation from the University of Copenhagen, the University of Helsinki, and the University of Oslo, likely influenced by cultural and geographic proximity.

The US was also notably represented among the top 10% of institutions with more collaborations. Harvard University, with its substantial strength score of 980, was already a key player in 2002, indicative of its future prominence in global academic rankings. Similarly, the Massachusetts Institute of Technology (MIT), California University (multiple branches), Stanford University, Columbia University, California Institute of Technology, and Johns Hopkins University displayed varying degrees of network involvement. Needless to say, all of these institutions would become highly-ranked universities in the coming years.

Additionally, the Russian Academy of Sciences emerged as a central node. Its high level of engagement with Swedish institutions in STEMM disciplines for the year 2002 indicated a strong, reciprocal relationship in research. This institution was a central point where many paths converged, making it an important bridge for Swedish research into this region. Although it doesn't currently hold a

top-tier position in any of the largest global university rankings, it is featured within the top 10 institutions in SCImago.²⁰⁴

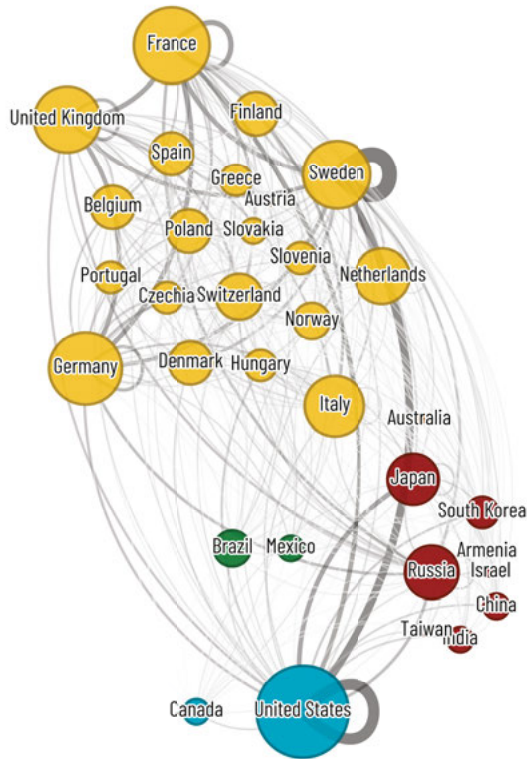
Institutions from Asia, Oceania, the Americas, and especially Africa were less relevant to the network. Still, Asian representation in the network was marked by the significant presence of Japanese institutions, including the University of Tokyo, Kyoto University, RIKEN, and others. Their involvement in the network suggested an evolving influence in the Asian region. China's Institute of High Energy Physics (IHEP) emerged as a significant contributor, hinting at its rising academic prominence. In Oceania, the University of Sydney in Australia stood out. Its participation in the network, though modest compared to other regions, positioned it as a key institution, likely influencing its future standing in global academia. Latin America saw notable participation from institutions such as Universidade de Sao Paulo and Universidade Federal do Rio de Janeiro in Brazil, along with CINVESTAV in Mexico. Their involvement in the network reflected their regional significance and suggested an upward trajectory in global academic recognition.

Figure 45 represents a summary of the institutional collaboration network by country, with colour coding representing different world regions: yellow for Europe, red for Asia, orange for Oceania, green for the Americas, and blue for North America. The figure emphasises the prominence of North American institutions in this network, particularly in their extensive and dense collaborations with Swedish universities. This dominant presence of North American institutions could be reflective of their strong representation in global university rankings, suggesting a possible correlation between academic prestige and the intensity of international collaborations.

European institutions, represented in yellow, form a significant portion of the network, indicating a robust pattern of collaboration within the STEMM disciplines for the year 2002. This widespread European involvement may mirror the region's commitment to research and development, as well as its historical ties and geographical proximity to Sweden.

²⁰⁴ The SCImago Institutions Rankings (SIR) is a classification of academic and research-related institutions ranked by a composite indicator that combines three different sets of indicators based on research performance, innovation outputs and societal impact measured by their web visibility.

Figure 45. Swedish STEMM collaboration network in 2002, summarised by country. The size of the nodes indicates amount of institutions from each country; the width and opacity of the edge lines indicate strength. Displaying top 10% nodes.²⁰⁵



The presence of Asian institutions, though less pronounced than their North American and European counterparts, is nonetheless noteworthy. The spread of these collaborations across a diverse range of countries in Asia may point to an emerging pattern of international engagement and a growing interest in global scientific cooperation. This aspect could reflect the rising influence of Asian universities in the global academic landscape, as they increasingly make their mark in various fields of study.

Oceania and the Americas, represented by orange and green respectively, though smaller in terms of their collaborative footprint with Swedish institutions, add to the diversity of the network. This variety in collaboration reflects the global nature of academic collaboration in Sweden.

²⁰⁵ In SNA visualisations, the placement of nodes is arbitrary and does not convey meaningful information. Instead, the relevant data lies in the geodesic distances between nodes, indicating the strength and directness of connections, contrasting with the geometric distances in MCA.

STEMM 2012

In 2012, the Swedish STEMM collaboration network underwent notable changes compared to 2002. This period saw significant shifts in network metrics, reflecting the evolving dynamics of collaboration and influence. Lund University continued to lead with a strength score of 54,459, a substantial increase from 2002, indicating its sustained prominence in collaborative research. Its betweenness centrality decreased slightly, suggesting a somewhat reduced role as a connector within the network. However, its closeness centrality increased, indicating more efficient access to other network nodes. The high eigenvector centrality score maintained its position as one of the most influential institutions in the network.

Uppsala University also showed remarkable growth in its strength score, reaching 50,298, closely following Lund University. Its betweenness centrality was slightly higher than in 2002, indicating an increased role in bridging different parts of the network. Its closeness centrality also increased, reflecting its enhanced position within the network's communication dynamics. Finally, its eigenvector centrality score, similar to Lund's, confirmed its status as a key influential institution.

Stockholm University emerged as a more prominent player in STEMM this year with a strength score of 43,786, making a substantial leap from 2002. Its betweenness centrality, though lower than Lund and Uppsala, yet higher than Karolinska's this year, suggested a notable role in the network's connectivity. Its closeness centrality indicated a solid position within the network, while its eigenvector centrality underscored its increasing influence.

The KTH Royal Institute of Technology also displayed an enhanced involvement in the network. Its strength score of 37,673 indicated an active role in collaborative research. Its betweenness and closeness centrality scores reflected its positions as significant nodes within the network. Karolinska Institutet remained important, although its importance within the network appeared to have diminished slightly, showing a decrease in its eigenvector centrality score and a relatively lower strength.

Umea University, University of Gothenburg, and Skåne University Hospital also demonstrated their continued involvement in the network. Umea University and the University of Gothenburg had similar strength scores and centrality measures, suggesting their roles as active yet not dominant players in the network. Skåne University Hospital, with a lower strength score and betweenness centrality, indicated a more focused regional influence.

Looking at international collaborations, the University of California marked a significant expansion, boasting the second-highest strength in the network even considering the national institutions. This elevation from its position in 2002 indicates a notable growth in its collaborative reach and academic influence with Swedish institutions. The fact that an international institution takes second place regarding collaborations in this network reveals a strong influence of the global landscape of institutions in the national Swedish context. Most branches from the University of California System (including Berkeley, Los Angeles, Santa

Barbara, San Diego, and Davis) occupied positions within the top 100 of all three global rankings.

The Centre National de la Recherche Scientifique (CNRS) in France maintained its role as a key player, with its eigenvector centrality underscoring its role as a pivotal node. This reflects a consistency in its position as a central and influential participant in international research partnerships. Likewise, the University of Texas, Harvard University in the US, and the University of Cambridge and University of Oxford in the UK remained prominent. Their network centrality and strength reflect not just a higher volume of collaborative links but also indicate partnerships with other central institutions, reinforcing their global research. Germany's Helmholtz Association and Max Planck Society show sustained prominence in the international research network as well. Their network positions in 2012 are indicative of Europe's solid presence and active engagement in scientific collaborations with Sweden.

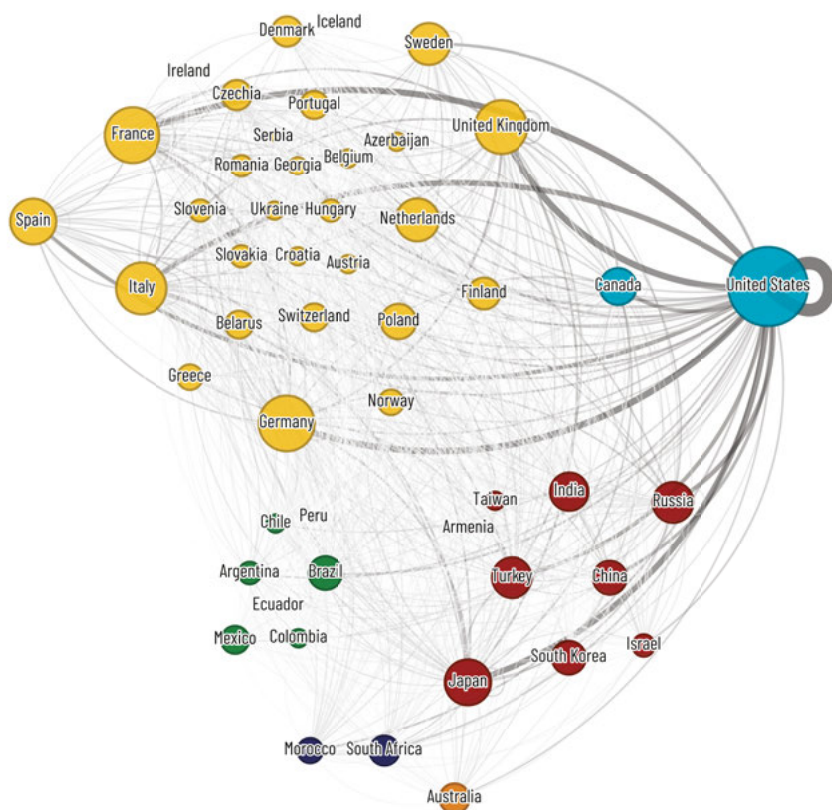
The Chinese Institute of High Energy Physics and the Chinese Academy of Sciences marked a significant rise in their involvement with Swedish institutions, indicative of China's growing prominence and investment in global scientific research. This partnership reflects the increasing importance of East-West collaboration in shaping the global research landscape and the strategic role of Chinese institutions in international science networks.

Similarly to Figure 45, Figure 46 shows an updated summary of the institutional network in STEMM by country as of 2012. This visualisation strikingly highlights the escalating prominence of American institutions in the context of international collaborations in Sweden. These institutions not only maintain their central role but also intensify their presence, now representing the country with the highest count of institutions in the top 10% of collaborative efforts with Swedish universities. This trend stresses the growing influence and outreach of American academia in international research partnerships.

Despite the rising American prominence, Europe, depicted in yellow, continues to be Sweden's primary region for collaborative engagement. The persistent strength of European partnerships signifies a stable and enduring academic relationship, possibly buoyed by shared cultural, historical, and geographical ties.

Notably, the figure also reveals a marked diversification and expansion of Sweden's international partnerships beyond its traditional Euro-American axis. Asian institutions are now more visibly integrated into the network, indicating an increasing openness and interconnectedness in global research collaborations. Similarly, the presence of institutions from Oceania and the Americas, though not as dominant as Europe and North America, has become more pronounced.

Figure 46. Swedish STEMM collaboration network in 2012, summarised by country. The size of the nodes indicates amount of institutions from each country; the width and opacity of the edge lines indicate strength. Displaying top 10% nodes.



A significant development in 2012 is the emergence of African institutions within the group of collaborators at the top decile, albeit with representation from only two countries. This inclusion, though modest, marks an important step in the global reach of Sweden’s academic partnerships, highlighting the gradual integration of often underrepresented regions.

In terms of connection strength, the network is unequivocally dominated by links to American institutions. This dominance not only speaks to the depth and intensity of Swedish–American collaborations but also possibly reflects the strategic positioning of American institutions in the global sub-field under study, leveraging their resources, prestige, and networks to foster robust international ties.

STEMM 2022

In 2022, the Karolinska Institutet reaffirmed its status as a central figure in the Swedish and international STEMM community, indicated by its number of collaborations (52,574). This figure represents not just a volume of research activity

but also the breadth and depth of its connections within the academic network. Karolinska's substantial role reflects a history of sustained excellence and influence, mirrored by its consistently high rankings in ARWU, QS, and THE. The institute's extensive collaborations signify a commitment to leading-edge research and a diverse range of partnerships, affirming its position as a pivotal player in global science and medicine.

Lund University, with collaborations closely rivalling Karolinska, continues to assert its prominence. Its extensive network of partnerships underscores its role as a critical hub for research and innovation in Sweden and abroad. The volume and quality of Lund's collaborations reflect its strategic commitment to maintaining a dynamic and internationally competitive research environment, positioning it as both a national leader and an important figure in the global academic community.

Uppsala University, while displaying a slightly lower volume of collaborations, remains a key institution in the network. Its connections across various domains illustrate its integral role in fostering interdisciplinary dialogue and cooperation. Uppsala facilitates the exchange of knowledge and resources, contributing to the advancement of complex, multifaceted research agendas.

Stockholm University and the University of Gothenburg, though possessing lower weighted degrees (number of collaborations), still play important roles in this academic network. Their research output and partnerships suggest a focus on specialised or region-specific areas, contributing to the diversity and richness of Sweden's scientific landscape. These institutions maintain their significance by driving research and innovation in their respective fields and regions.

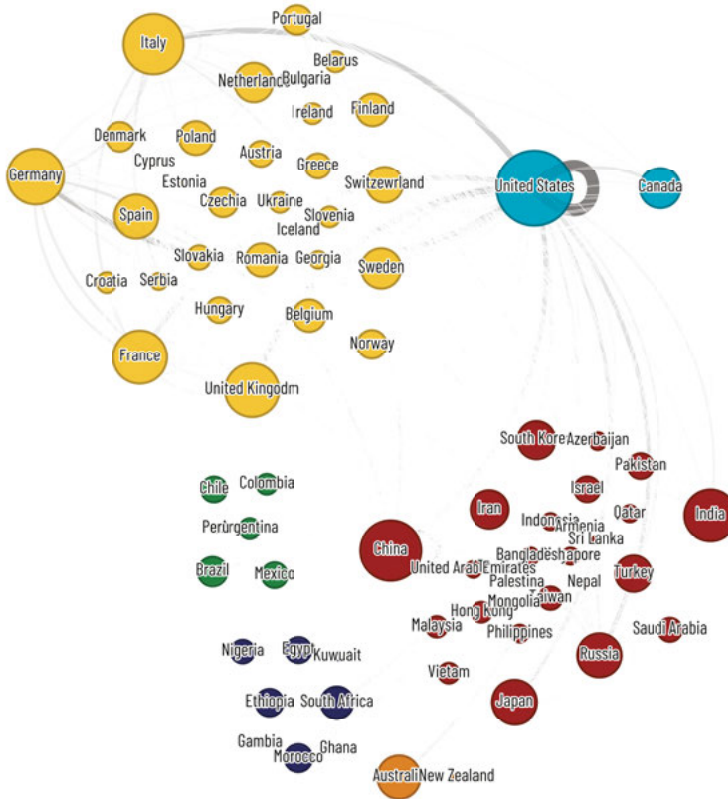
The general national trajectories from 2002 and 2012 to 2022 illustrate a narrative of growth, strategic adaptation, and enhanced global presence. These institutions have not only strengthened their national standing but have also expanded their international influence, as evidenced by their performance in global university rankings.

Turning now to the analysis of international partners, the University of California remains a prominent collaborator with Swedish institutions, reflecting the depth and stability of this institution's role in the network. Its consistent engagement and high volume of interactions underscore a robust partnership that has been reinforced over the years. The prestige of the University of California, as evidenced by its standing in global rankings, continues to facilitate a rich exchange of ideas and resources, signifying a sustained and influential connection in the realm of research and innovation.

Harvard University's collaboration with Swedish institutions has deepened as well, reflecting a partnership that leverages Harvard's global standing. This evolving relationship underscores a mutual commitment to high-quality research and a shared pursuit of scientific excellence. Harvard's role as a leading institution globally translates into valuable opportunities for Swedish researchers to engage with cutting-edge research and a broad, influential network.

The Centre National de la Recherche Scientifique (CNRS) in France remains a cornerstone in the network, with its enduring connections to Swedish academia. The CNRS’s centrality in the network and its consistent collaboration with Sweden highlight a strong, ongoing commitment to fostering transnational research ties. The institution’s high regard in international research circles enhances the strategic value and impact of its partnership with Swedish entities.

Figure 47. Swedish STEMM collaboration network in 2022, summarised by country. The size of the nodes indicates amount of institutions from each country; the width and opacity of the edge lines indicate strength. Displaying top 10% nodes.



Germany’s Max Planck Society and the Helmholtz Association continue to hold significant positions in the international research landscape, maintaining robust collaborations with Swedish institutions. Their involvement reflects Germany’s enduring role as a hub of scientific inquiry and innovation. The prominence of these institutions in global rankings underscores the quality and influence of their research, contributing to a fruitful and sustained exchange of knowledge and resources.

The University of Oxford and the University of Cambridge maintain their stature as key collaborators, reflecting the UK’s strong academic tradition and its on-

going strategic importance to Swedish research. The high rankings and global prestige of these universities enhance the value of their partnerships, fostering a rich academic exchange and contributing to the international reach of Swedish research.

China's rise in the global research community is marked by the increasing involvement of the Chinese Academy of Sciences in collaborations with Sweden. By 2022, this partnership signifies not only China's growing research capabilities but also its rising influence in the international academic sphere. The academy's engagement with Swedish institutions highlights a trend towards a more diverse and multipolar research world, where new players are asserting their presence and contributing to the global exchange of scientific knowledge.

The summary network updated to 2022 displayed in Figure 47 reinforces the enduring dominance of American institutions in the Swedish collaboration network in STEMM. This consistent pattern shows the pivotal role of American institutions in shaping international academic partnerships, particularly in the context of Sweden's collaborations. However, a notable development in this latest depiction is the dramatic surge in collaborations between Sweden and Asian institutions, with Chinese entities emerging as frontrunners within this region. This explosion of activity reflects the increasing global influence and academic prowess of Asian universities, particularly those in China, signifying a shift in the epicentre of international research collaborations.

The representation of other regions in this network, including Europe, Oceania, Africa, and the Americas, also exhibits growth, with a notable increase in the number of institutions participating in the top decile of collaborations. However, this expansion is not as rapid or pronounced as that witnessed in Asia, indicating diverse rates of change and engagement across different global regions.

In summary, the networks in STEMM from 2002 to 2022, as depicted in Figures 45 to 47, narrate a compelling story of the evolving landscape of international institutional collaborations in Sweden. This narrative highlights the sustained dominance of North American institutions, the rising prominence of Asian, particularly Chinese, universities, and the steady yet diverse engagement of European, Oceanian, American, and African institutions. It paints a picture of an increasingly interconnected global academic community, one that is dynamic, diverse, and reflective of shifting patterns of influence and collaboration in the world of science and technology, which tend to align at different levels (regional, national, institutional) with global university ranking results.

Swedish SSH Collaboration Networks

In 2002, the network analysis of Sweden's Social Sciences and Humanities (SSH) sector presented a distinctly smaller landscape compared to the STEM field. With 231 nodes and 592 edges, the network was less dense, indicating more focused and perhaps more specialised collaborations within this domain. The largest connected component (LCC) encompassed 92% of the nodes and 97% of the edges,

demonstrating a high level of interconnectedness among the majority of the nodes.

Table 28. Collaboration network statistics for Sweden in SSH.

<i>Network</i>	<i>Year</i>	<i>Node Count</i>	<i>Edge Count</i>	<i>Edge Density</i>
Complete Network	2002	231	592	0.02
	2012	776	3,626	0.01
	2022	1,931	97,336	0.05
LCC	2002	212	573	0.03
	2012	762	3,616	0.01
	2022	1,905	97,319	0.05

SSH 2002

The network analysis of Swedish collaborations in the Social Sciences and Humanities (SSH) for the year 2002 reveals a fascinating interplay of academic influence and connectivity among national institutions, drawing interesting parallels with their standings in global university rankings. At the forefront of this network are the University of Gothenburg, Stockholm University, Uppsala University, and Karolinska Institutet, each distinguished by exceptionally high eigenvector centrality scores, all surpassing the 0.9 mark. This indicates not only their central positions in the network but also their connections to other highly influential institutions. Their strength scores—79 for Gothenburg, 70 for Stockholm, 60 for Uppsala, and 54 for Karolinska—further underscore their prominent roles in fostering robust academic collaborations within and outside Sweden.

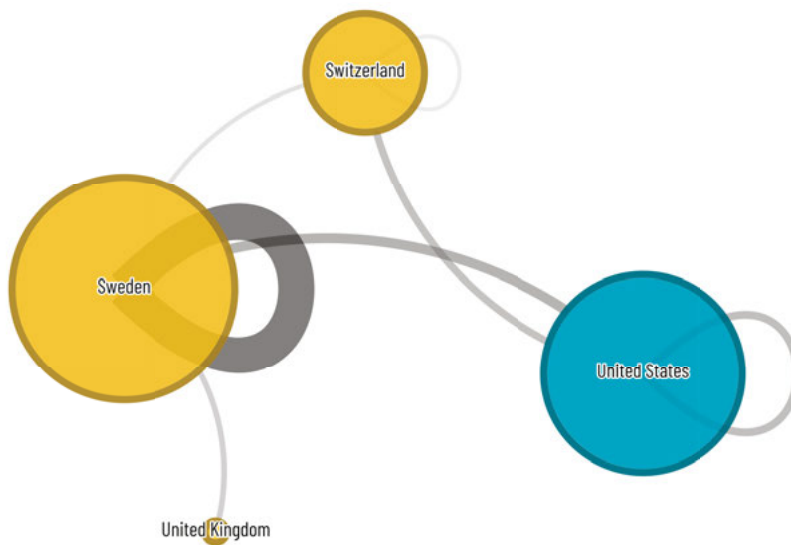
In terms of betweenness centrality, which measures the extent to which a node acts as a bridge along the shortest path between two other nodes, Gothenburg and Stockholm again stand out. However, in this metric, they are closely followed not by Uppsala and Karolinska, but by the Stockholm School of Economics and Lund University. The Stockholm School of Economics, noteworthy for its highest closeness centrality, indicates its accessibility and efficiency in the network, suggesting a pivotal role in connecting various nodes within the SSH collaboration landscape. Other notable national institutions include the KTH Royal Institute of Technology and Umeå University. Both institutions exhibit relatively higher measures of closeness centrality, reflecting their strategic positioning within the network, enabling quicker and more direct interactions with other nodes.

The positioning and influence of these institutions within the network relate to their respective standings in global university rankings. Institutions like the University of Gothenburg and Stockholm University, known for their high academic standards and research output, not only secure top positions in global rankings but also mirror this excellence in the centrality and strength of their collaborative networks. Similarly, specialised institutions like the Stockholm School of Economics demonstrate their niche influence and connectivity, aligning with their international recognition in specific academic domains.

In the international context of the Swedish SSH collaboration network for 2002, the University of California System, comprising its multiple branches, emerges as a significant global partner. This institution stands out not just in

terms of strength, but also in its betweenness and closeness centrality measures, although these metrics are somewhat lower than those of the leading Swedish institutions. Following in strength, but exhibiting a distinct profile, is the ETH Domain from Switzerland. This collective includes two federal institutes of technology (ETH Zurich and the EPFL in Lausanne) along with four specialised research institutes: the Paul Scherrer Institute, the Swiss Federal Institute for Forest, Snow and Landscape Research, the Swiss Federal Laboratories for Materials Science and Technology, and the Swiss Federal Institute of Aquatic Science and Technology. Governed by the ETH Board, these institutions together form a considerable force in the network. However, they show much lower betweenness, closeness, and eigenvector centrality compared to their Swedish counterparts, indicating a different pattern of connectivity and influence within the network.

Figure 48. Swedish SSH collaboration network in 2002, summarised by country. The size of the nodes indicates amount of institutions from each country; the width and opacity of the edge lines indicate strength. Displaying top 10% nodes.



In terms of betweenness centrality, which reflects the ability of nodes to act as bridges within the network, Columbia University, Vrije Universiteit Amsterdam, and the University of London stand out. The University of London, in particular, also presents one of the highest eigenvector centrality scores among international institutions, signifying its role as not only a central connector but also its connection to other influential nodes in the network.

The University of Oslo is noteworthy for its high closeness centrality, indicating its efficiency in facilitating connections and interactions within the network.

This measure suggests that the University of Oslo occupies a strategically advantageous position in the network, enabling it to access and disseminate information and resources effectively.

An inspection of the summary of the institutional network presented in Figure 48 reveals interesting contrasts and parallels when compared to its STEM counterpart from the same year. One of the most notable differences is the significantly lower number of institutions that reach the top decile of collaborations in SSH. This results in a reduced representation of countries in this segment of the network, reflecting a more concentrated pattern of collaboration within a smaller group of institutions.

In this network, Sweden emerges not only as the country with the most institutions in the top decile but also demonstrates the densest connections both within its national institutions (as indicated by a self-loop in the figure) and in its interactions with other nodes. This prominent position of Swedish institutions in the SSH network aligns with their strong presence in global university rankings, indicating their significant impact and prestige in the academic world, particularly in the humanities and social sciences.

European countries, notably Switzerland and the UK, are also key players in this network, with their institutions forming crucial nodes of collaboration. The presence and role of these European institutions correlate with their global academic standings, where they are frequently recognised for their excellence in SSH disciplines.

However, it is the US that stands out for its sheer number of institutions occupying the upper echelons of collaborative efforts with Sweden, surpassing both the UK and Switzerland in this regard. This American dominance in the network aligns with the country's robust representation in global university rankings. The large count of American institutions in this top collaborative tier underscores the country's extensive reach and influence in the global academic landscape, particularly in this case in the humanities and social sciences.

SSH 2012

In the 2012 analysis of Swedish collaborations in SSH, a shift in the landscape of national institutions is evident when compared to 2002. Karolinska Institutet and Stockholm University emerge as the leaders in eigenvector centrality, with scores of 1 and 0.9, respectively. These scores not only underscore their central roles in the network but also suggest their significant influence through connections with other key institutions.

In terms of strength, Karolinska Institutet tops the chart with a remarkable score of 346, followed closely by Lund University at 299 and Stockholm University at 297. The University of Gothenburg also demonstrates a strong presence with a strength score of 294. This represents a notable change from 2002, reflecting the dynamic nature of institutional collaborations over the decade.

The same four institutions—Stockholm University, the University of Gothenburg, Lund University, and Karolinska Institutet—dominate in terms of betweenness centrality, with Stockholm University at the forefront. This indi-

cates their crucial roles as intermediaries in the SSH collaboration network, facilitating connections between various nodes. In closeness centrality, these institutions again show similar prominence, indicating their accessibility and efficiency in the network. This continuity from the 2002 data suggests a sustained strategic positioning within the network over time.

Other national institutions that stand out in terms of strength include Uppsala University (210), Umeå University (160), and Linköping University. These institutions also mark their presence with high betweenness and closeness centrality scores, indicating their growing influence in the network compared to 2002. Regarding closeness centrality, the KTH Royal Institute of Technology and the Stockholm School of Economics also make notable appearances. This suggests their importance in the network, despite their more specialised focus compared to the more broadly oriented universities.

Overall, the 2012 SSH network analysis for Swedish national institutions not only highlights the continued prominence of certain universities but also reveals the rise of others, indicating evolving collaborative practices. This evolution mirrors the broader shifts in the global academic sphere, as institutions adapt and grow in response to changing research priorities and collaboration opportunities.

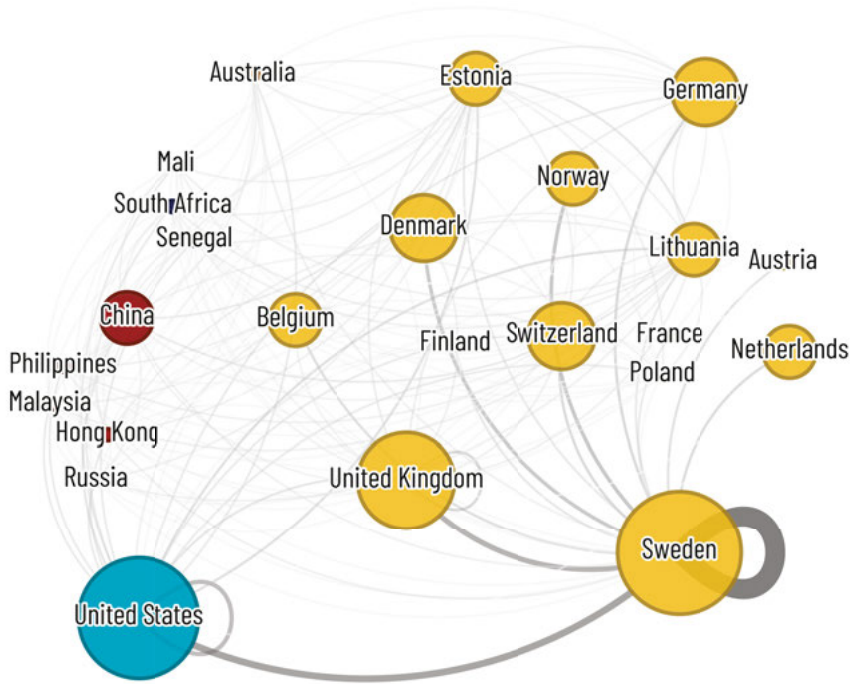
International institutions exhibit a nuanced interplay of influence and connectivity, with notable shifts from 2002. The University of London and the University of Tartu emerge as significant nodes, with strength scores of 96 and 78 respectively. Although these scores are lower than those of the leading Swedish institutions, they represent a considerable presence in the network.

The University of London, in particular, stands out with the highest eigenvector centrality among international institutions, indicating its strong connections with other influential institutions. Norwegian universities, specifically the University of Oslo and the University of Bergen, follow with notable centrality measures. The cultural proximity between Norway and Sweden likely facilitates these strong collaborative ties, highlighting the influence of regional connections in shaping academic networks.

In terms of betweenness centrality, the University of London leads again, followed by the University of Copenhagen, KU Leuven, and the University of California (considering its multiple branches). This indicates their roles as key intermediaries in the network, bridging various nodes and facilitating collaborations. The prominence of these institutions in the network aligns with their standing in global university rankings, where they are recognised for their academic strength and research impact.

Closeness centrality presents a slightly different picture, with the University of Copenhagen at the top. This is closely followed by Columbia University, the University of London, and the University of California, though the differences between them are marginal. High closeness centrality suggests these institutions are efficiently positioned within the network, enabling quick and direct interactions with other nodes.

Figure 49. Swedish SSH collaboration network in 2012, summarised by country. The size of the nodes indicates amount of institutions from each country; the width and opacity of the edge lines indicate strength. Displaying top 10% nodes.



Compared to 2002, these results illustrate a dynamic shift in the international landscape of SSH collaborations. The emergence of institutions like the University of Tartu and the increased prominence of Norwegian universities reflect changing patterns in global academic partnerships. The consistent performance of universities like the University of London and the University of California, across both the 2002 and 2012 networks, highlights their sustained influence and adaptability in the ever-evolving realm of international academic collaborations. These shifts and continuities in the network underscore the complex interplay between academic prestige, as mirrored in global rankings, and the strategic positioning of institutions within global collaboration networks.

A study of the summary network for Swedish collaborations in STEMM in 2012 as depicted in Figure 49, shows an enhanced participation of institutions from various European countries in the top decile of collaborations. The UK, in particular, has now surpassed Switzerland, indicating a shift in the epicentre of European academic influence within the SSH network.

The US continues to maintain its significant presence and robust ties with Swedish institutions. However, in contrast to the STEMM network of the same year, it is Sweden that exhibits the densest connections both within its national

institutions and in its collaborations with international partners. This suggests a more centralised role for Swedish institutions in SSH, underlining their critical importance in shaping the network's structure and dynamics.

An emerging trend in the 2012 SSH network is the growing prominence of Asian institutions, notably those from China. The Renmin University of China, for instance, emerges with a strength score of 28 and exhibits relatively high betweenness and closeness centrality. This not only underscores its growing influence within the network but also highlights its potential role as a vital connector between Swedish institutions and other Chinese entities. The rising presence of Chinese institutions aligns with the broader trend of China's increasing visibility and impact in global academic and research spheres, including global university rankings.

Institutions from Africa and Australia also make appearances in the 2012 network, although their presence is not as pronounced as that of institutions from Europe, the US, and Asia. Their inclusion, however, signifies the expanding diversity and reach of the SSH network, reflecting a more globalised academic landscape. Interestingly, despite the broader geographical inclusion, the Americas remain notably absent from the network. This absence suggests a potential area for further development and engagement in future collaborations within the SSH domain.

Overall, the 2012 SSH network analysis indicates a gradual convergence with the STEMM network in terms of the diversity and geographical spread of collaborations. It highlights the dynamic nature of global academic networks, where shifts in influence and connectivity patterns reflect broader trends in research priorities, funding priorities, and geopolitical relationships. The presence of emerging players like China and the sustained prominence of traditional academic powerhouses like the UK and the US underscores the constantly evolving nature of international scholarly collaborations.

SSH 2022

In the 2022 SSH network, Stockholm University and Karolinska Institutet maintain their leading positions among Swedish institutions, both exhibiting high eigenvector centrality scores of 0.9. This reflects their continued influence and central roles within the network. Their strength scores are exceptionally high, with Stockholm University at 1,749 and Karolinska Institutet closely following at 1,741, indicating the volume and intensity of their collaborations.

In betweenness centrality, these institutions are accompanied by the University of Gothenburg, which takes a prominent position with a notable strength of 1,224. Stockholm University and Lund University, the latter with a strength of 1,443, also feature prominently in this metric. Uppsala University and Linköping University follow in betweenness centrality, with strength scores of 959 and 660 respectively. However, Karolinska Institutet, despite its high eigenvector centrality, has the lowest strength among those with high betweenness centrality. This group of universities also leads in closeness centrality, suggesting their strategic roles in facilitating interactions within the network.

Comparatively, in SSH 2012, Stockholm University and Karolinska Institutet were already key players, but the 2022 data shows a consolidation and growth in their network influence. The University of Gothenburg's rise in betweenness centrality is particularly noteworthy, indicating an increased role as a connector within the network. Institutions such as the Stockholm School of Economics, Umeå University, and the KTH Royal Institute of Technology, which were more prominent in previous years, show a relative decline in their positions according to strength in 2022, with scores of 277, 274, and 190 respectively placing them further away from the leading group. However, they maintain relatively higher betweenness centrality, and the Stockholm School of Economics even retains high closeness centrality, underscoring their continued strategic importance in the network.

Emerging in the 2022 analysis are Örebro University and Linnaeus University, with strength scores of 345 and 358, respectively. Their higher betweenness, closeness, and eigenvector centrality compared to institutions like KTH and Umeå highlight their rising prominence in the SSH network. This shift indicates a dynamic change in the landscape of Swedish academic collaborations, with new institutions gaining influence and existing ones evolving in their roles.

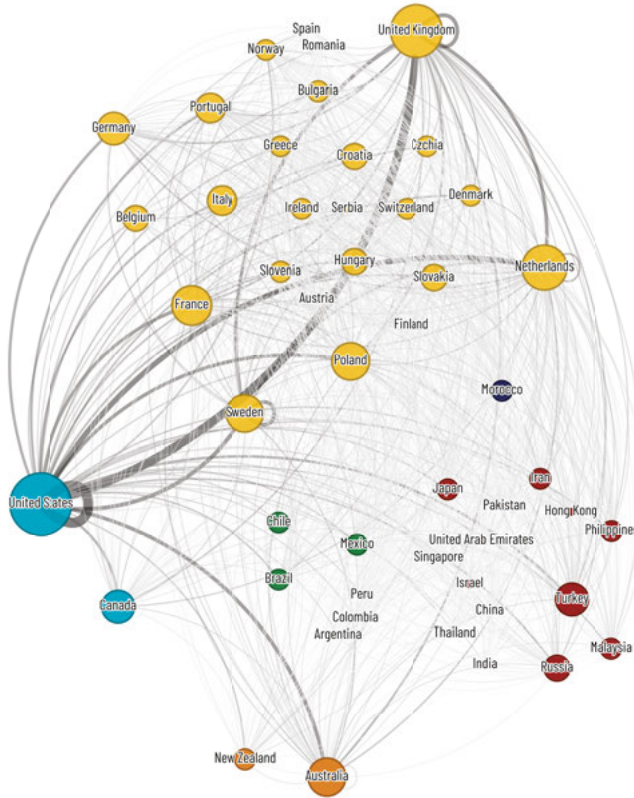
Overall, the 2022 SSH network reflects both continuity and change within the Swedish academic landscape. The enduring influence of established universities like Stockholm and Karolinska is juxtaposed with the evolving roles of other institutions, painting a picture of dynamic collaboration practices in Sweden.

Internationally, the University of London emerges with the second-highest strength in the entire dataset, boasting a remarkable score of 1,747. This is closely followed by the University of California with a strength of 1,257 and University College London (UCL) at 1,238, marking them as the only international institutions to surpass a strength score of 1,000. This reflects their substantial involvement and influence in global SSH collaborations.

These institutions, including the University of London, the University of California, and UCL, also share high betweenness and eigenvector centrality scores. Notably, the University of London achieves an eigenvector centrality that surpasses even the top Swedish institutions, underscoring its central and influential position within the network. Other institutions like UCL, the University of California, the University of Oxford, the University of Oslo, the University of Amsterdam, Aarhus University, and the London School of Economics also demonstrate relatively high eigenvector centrality, though not exceeding the highest Swedish institutions.

In betweenness centrality, the University of London stands out as the leader, followed by the University of California, UCL, the University of Copenhagen, the University of Helsinki, the University of Oslo, and Harvard University. This measure highlights their roles as key connectors and intermediaries in the network, facilitating the flow of information and collaborations.

Figure 50. Swedish SSH collaboration network in 2022, summarised by country. The size of the nodes indicates amount of institutions from each country; the width and opacity of the edge lines indicate strength. Displaying top 10% nodes.



Closeness centrality presents a slightly different hierarchy, with the University of California leading, followed by notable institutions like Stanford and Harvard. High closeness centrality indicates these institutions' efficient positioning within the network, enabling them to rapidly interact and collaborate with other nodes. The prominence of traditionally highly ranked institutions such as Oxford, Harvard, and Stanford is evident in this year's network. Their appearance aligns with their global reputations and standings in university rankings.

Asian, and particularly Chinese institutions also show an increased presence in the 2022 network, marking a trend towards greater international diversification. However, their metrics in strength, betweenness, closeness, and eigenvector centrality are not particularly high, suggesting that while their involvement is growing, they are still developing their positions within the global SSH network.

An inspection of the summary network for SSH 2022 featured in Figure 50 reveals a few important changes. A striking feature of the 2022 SSH network is

the heightened prominence of US-based institutions. These institutions, as indicated by the size of their node, form a large group within the network. More notably, they exhibit the densest edges both within their own connections and in interactions with other nodes. This trend reflects a consolidation of American academic influence in the space of Swedish SSH collaborations, echoing the country's strong presence in global university rankings and its historical role as a hub of scholarly activity and innovation. The UK also sees an enhancement in its network position, albeit to a lesser extent than the US. The strengthened position of UK institutions in the network resonates with the country's longstanding tradition of excellence in SSH disciplines, as frequently evidenced in global academic standings.

A particularly noteworthy aspect of the 2022 network is the diversification in terms of the countries and regions represented in the top decile of collaborations. This expansion paints a much more diverse picture of the global SSH collaboration landscape, with a broader range of institutions from various geographies engaging in significant partnerships with Swedish institutions. This trend indicates a move towards a more inclusive and globally interconnected academic community, where boundaries are increasingly transcended in the pursuit of knowledge and research excellence.

Overall, this analysis not only captures the specific dynamics of the 2022 SSH network but also reflects the broader narrative of change and continuity in international academic collaborations in Sweden. From the enduring influence of traditional academic powerhouses to the emerging presence of diverse global players, the network mirrors the complex and evolving nature of scholarly interactions. It highlights the ongoing shifts in the centres of academic influence and the increasing interconnectivity of institutions across the world.

8.4 Concluding Remarks

The results from the social network analysis conducted on the academic collaborative practices of Swedish, English, and German higher education institutions show both constants and transformations. The analysis reveals that institutions from all three countries, both in the STEMM and SSH fields, traditionally found their strongest collaborative ties within Europe. This enduring trend observed consistently across all years, speaks to the longstanding cultural, historical, and academic connections within the continent. However, this internal European focus has not remained static; slight fluctuations over the years subtly reflect the changing academic priorities and alignments within the region.

Initially, North America trailed closely behind Europe as a major collaborator, especially in the early years of the study. This alignment is perhaps indicative of the longstanding transatlantic academic relationships that have shaped much of modern research and higher education. Yet, a striking shift is observed by 2022. In most instances, the once-dominant North American influence gives way to a

rising tide of Asian partnerships. This shift, with the notable exceptions of Sweden and Germany in SSH where North America maintains its position, mirrors a broader global realignment towards the Asian academic sector. The growth of Asia as a significant partner is in harmony with its increasing prominence in global university rankings, both in terms of quantity and performance, marking today a notable chunk of the top 100 institutions in ARWU, QS, and THE.

While regions like Africa, the Americas, and Oceania have also seen expansion in collaborations, their growth pales in comparison to Asia's. This differential growth rate underscores Asia's rapidly expanding role in the global academic landscape, a trend that has significant implications for future research collaborations and educational exchanges.

At the country level, the US has consistently been the primary partner in this evolving narrative. This is with the sole exception of Sweden's SSH collaborations in 2022, where the UK, often the second most frequent collaborator, takes the lead. The sustained dominance of the US and UK in international academic collaborations, partially owed to the inherent bias of the Web of Science towards English-speaking countries, highlights the enduring influence of the Anglo-Saxon model of the university. However, an intriguing pattern emerges over the years. In STEMM, the share of collaborations involving these two countries does not fluctuate significantly, yet in SSH, there's a notable decrease. This decline can be attributed to several factors, including language saturation and a strategic shift in US institutions towards more financially lucrative research avenues.

Meanwhile, other countries have risen significantly on the collaboration horizon. China, in particular, emerges as a standout in terms of growth in STEMM collaborations with all three European countries. This surge is complemented by notable growth from countries like India, Austria, and Australia. In SSH, China's growth is also evident but is often matched or even overshadowed by other countries. Spain emerges as a key collaborator with Sweden, India with England, and Norway with Germany, reflecting a more diversified collaboration landscape. An interesting aspect of this evolving collaboration narrative is the noticeable decline in partnerships with Russia in STEMM, likely a consequence of ongoing geopolitical tensions. This decline serves as a reminder of how external political and economic factors can influence the course of academic collaborations.

There is compelling evidence to suggest a relationship between the prominence of regional and country collaborators and the ranking of their universities on a global scale. Europe and North America have long been the bedrock of academic excellence, consistently housing institutions that not only lead in global university rankings but also stand at the core of international research collaborations. This trend aligns with my findings, where these regions remain the main contenders in both STEMM and SSH networks. However, the narrative is not static. A notable ascent of Asia in recent years, along with a modest but significant growth in Oceania, hints at a shifting global academic landscape. This rise of Asian institutions in global university rankings coincides with their increasing

prominence in collaborative networks, reflecting a broader trend of rising academic prowess in the region.

At the country level, this pattern holds. American and British institutions, which occupy a substantial portion of the top tiers in global university rankings, also feature prominently in our analyses of collaborative networks. Their enduring position at the apex of these networks is a testament to their sustained academic influence and the global recognition of their research output.

The Swedish case offers an intriguing insight into this correlation at the institutional level. In the realm of STEM, the most significant Swedish institutions—Uppsala University, Lund University, and the Karolinska Institutet—are not only central to the collaborative network but also highly ranked in ARWU, QS, and THE. This centrality predates the establishment of global university rankings, suggesting an enduring legacy of academic excellence that these rankings have subsequently affirmed and enhanced.

The narrative in SSH, however, initially presents a different picture. Stockholm and Gothenburg Universities, despite their lower ranks in global university rankings, initially occupy more prominent positions in the network. Yet, as time progresses, this trend begins to align more closely with that of STEM. Institutions like Lund, Uppsala, and even Karolinska, which boast higher global rankings, have started to ascend in the SSH network. This gradual alignment suggests that current research evaluation practices, which heavily influence global university rankings, might also be reshaping the traditional landscape of academic disciplines. It appears that these practices not only impact the disciplinary traditions but also exert a subtle influence over the order of institutions within these domains in terms of collaboration.

Internationally, the prominence of Ivy League and Oxbridge institutions in the networks is in keeping with their esteemed positions in global university rankings. These institutions have long been bastions of academic excellence, and their significant roles in our analyses reflect their global academic influence. Most interestingly, the rise of Asian institutions in these networks mirrors their ascent in global rankings. This emergence is not merely a regional shift but a testament to the global diversification of academic excellence and influence.

In sum, the exploration into the nexus of academic collaborations and global university rankings reveals a complex and evolving story. While traditional powerhouses in the US and UK maintain their dominance, the rise of institutions in Asia and other regions signals a gradual but significant shift in the global academic order. This evolving narrative highlights the dynamic interplay between longstanding academic traditions and emerging global trends, painting a picture of an academic world in flux, where historical prestige coexists with rising global influences.

Conclusions

This chapter synthesises the findings of this thesis, summarising answers to each research question and exploring their further implications for higher education studies. Straying away from normative approaches that sought to define the “world-class university” by taking a more semantic or technical approach, I started this work with a core sociological question: why and how are certain universities categorised as “world-class” institutions? At first glance, one might instinctively interpret this denomination as the objective outcome of global university rankings’ evaluations, aimed at identifying top-tier institutions. However, the evidence provided by my research suggests a richer, more complex answer. In truth, this classification emerges not merely from objective metrics, but from a concerted push by specific stakeholders who have crafted and propagated a global narrative, delineating what constitutes ideal practices and values in higher education, while simultaneously establishing an infrastructure that endorses and perpetuates this categorisation. This nuanced understanding challenges simplistic views and opens the door to a more critical analysis of the forces shaping the global landscape of higher education.

The “world-class” narrative has been spread and legitimised through the foundation of various international institutions and the implementation of a worldwide university evaluation system. This system presumes the existence of a global space where universities, despite the stark differences stemming from their specific national histories and cultures, can be compared to each other as a coherent whole, even sidelining the fact that these institutions often are made up of sub-units—faculties and the like—with very distinct academic traditions and practices. Now, let’s discuss the specific research questions that guided my study. Namely, why and how certain universities are classified as world-class institutions and what symbolic relationships stem from this distinction process.

Global Field Formation

The concept of a “world-class university” has emerged as a pivotal term in the lexicon of higher education, especially in the latter part of the twentieth and early twenty-first centuries. Its prominence, as explored in Chapter 4, is deeply intertwined with the evolution of a global sub-field of universities. However, the in-

triguing aspect of this term lies not in its precise definition, but rather in its inherent ambiguity. This ambiguity plays a critical role in the sociological dynamics of the academic fields, a perspective that can be richly explored through the lens of Pierre Bourdieu's field theory.

As discussed in Chapter two, Bourdieu's field theory posits that various social arenas, or fields, operate under specific sets of rules and are influenced by the distribution of different forms of capital. In the context of higher education, the notion of a "world-class university" becomes a powerful asset, primarily due to its vague yet aspirational nature. This ambiguity allows for a wide array of interpretations, enabling diverse institutions to strive for this status under the guise of multiple criteria and measures. The term becomes a symbol of prestige and excellence, a beacon for institutions globally to orient their strategies and operations.

The strength of the term, therefore, lies in its capacity to shape the actions and perceptions within academic fields and the global sub-field of universities it organises. It creates a competitive environment where universities are driven to align themselves with certain standards, often dictated by global ranking systems. These standards, which include reputation, research output, international outlook, and metrics of scientific recognition, among others, become the indicators by which institutions measure their progress towards becoming "world-class".

From a Bourdieusian perspective, this pursuit can be seen as a struggle to accumulate or reproduce symbolic capital within the global sub-field of universities. Symbolic capital, in this context, refers to the prestige, recognition, and status associated with being labelled as world-class. Universities engage in various strategies to accumulate this capital, from enhancing research capabilities to expanding global partnerships. This race for symbolic capital reinforces the hierarchical nature of academic fields, perpetuating a global order of universities where certain institutions, often those with more resources and historical prestige, maintain dominance.

Furthermore, the pursuit of world-class status involves the accumulation and conversion of other forms of capital, as delineated by Bourdieu. Economic capital is invested in infrastructure and resources, cultural capital is enhanced through research and curricular development, and social capital is garnered through international networks and collaborations. These multifaceted investments and transformations underscore the complex interplay of capital within the global sub-field of universities under study.

The conception, spreading and legitimisation of the idea of the world-class university was catalysed by the introduction of new means of worldwide communication like the Internet and more accessible transportation, coupled with the rise of new supranational regulatory frameworks across multiple sectors and the revaluation of cosmopolitanism following the end of the Cold War. These developments weakened the technical and legal barriers previously confining various fields within national borders. With the rising trend of national and regional university rankings, the desire to evaluate universities on a global scale arose, at least in appearance, naturally. In this context, much like how elite educational insti-

tutions bestow an added symbolic value upon the inherited and acquired capital of students, global university rankings offered universities a marker of “excellence” and “quality”, thus playing the role of consecration instances.

The geopolitical order pre-existing the implementation of global university rankings made the selection of American universities as the main benchmark for “world-class” look perfectly rational. That is, because the US sat atop the world hierarchy, its leading universities stood as the obvious choice to exemplify excellence in higher education worldwide. This decision, made first by Liu Nian Cai when designing the prototype for ARWU, would imprint and reproduce strong biases regarding the forms of higher education that are now taken as instantiations of the world-class university.

Institutions such as UNESCO-CEPES, IREG Observatory, and the Center for World-Class Universities at Shanghai Jiao Tong University became pivotal players in these developments. These entities, composed of ranking publishers, university leaders, and policy researchers, laid the groundwork for setting up the infrastructure that would provide the vertical autonomy necessary for the emergence of a global sub-field of higher education institutions. Through their activity and the inception of global university rankings, these institutions managed to articulate and impose a field-specific narrative whereby the idea of the world-class university, synonymous with highly ranked institutions, steadily became a token of symbolic capital.

Altbach’s observation that every nation aspires to create a “world-class university” discussed in the introductory chapter of this dissertation gains a new layer of complexity when examined through the prism of field theory. As a global field of power materialises,²⁰⁶ agents within national power fields invest in the setting up of mechanisms that amplify the symbolic value of their accumulated cultural capital, ensuring its transnational recognition and enabling transnational reconversion strategies.

Concerning the presence and use of the term “world-class university” in scientific literature, although scholars have extensively examined the contents of studies featuring the notion, my analysis unveiled another dimension where this phrase consistently surfaces funding notes and funding agencies. Most of this segment of the literature does not engage in discussions around the meaning of the term. Instead, these are studies funded by “world-class university” initiatives, dealing in content with unrelated topics.

The imbalance observed between the number of texts produced in STEMM against those produced in the SSH under “world-class university” funding initi-

²⁰⁶ Evidenced by the historical shift in the geopolitical landscape post-World War II, marked by the increasing influence of Western economic and political hegemony. This shift is further illustrated by changes in global governance structures, where governance occurs without a centralised government, manifesting as dispersed administrative power across nations and regions. See for example Omer Awass, ‘Outlines of a Global Power-Field (GPF) Theory (Part 1): Mapping the Dynamics of the Modern World-System and Its Penetration in the Middle East c. 1850–1950’, *Journal of World-Systems Research* 27, no. 2 (2021): 543–565.

atives was striking. So much so, that, in combination with the geographical biases mentioned above, it amounts to evidence of the exercise of symbolic violence. Indeed, the overt consideration of American universities as the main point of comparison, the arbitrary selection of varying and even diverging sets of indicators and weights across evaluators, as well as the overwhelming majority of STEM texts funded by world-class university initiatives reveal the imposition of cultural arbitrariness. In other words, ranking higher education institutions across the globe by their academic excellence (or “world-classness”, which has no essential meaning) effectively hides a ranking of these institutions by “discipline”, that is, by conforming to a specific model of the University.

This interpretation of the facts highlights one of the main theoretical contributions of my work. By applying a field theory approach to the study of the world-class university and its connection to global university rankings, one can move beyond the assumptions of neo-institutionalism by realising that the rules and norms crafted for global university evaluations aren't borne out of pure convergence or consensus. In its place, they emerge from power struggles between a wide array of agents, wherein those crafting the rules and standards—both ranking producers as such and as members of the IREG Observatory as well as the universities taken as a point of reference—stand to gain the most from such competition.

The Structure of the Field

The global sub-field of universities structured around the idea of the “world-class university” and the evaluations carried out by global university rankings comprise institutions from all regions of the world, although with variations in quantity and quality. This field also exhibits a high degree of stability over time regarding its components, especially at higher tiers. However, that stability is by no means absolute; interesting changes were found when exploring ranking results over time and across evaluators.

One major shift found through the examination of the results of the main three global university rankings (ARWU, THE, and QS) over the span of 20 years concerns the growth of Chinese representation in higher-ranking positions at the expense of American institutions. Considering the role of the Chinese government in the launch of ARWU,²⁰⁷ this achievement can be read as the result of a successful strategy implementation. First, “world-class” was quantified by translating it into measurable indicators favourable to leading American institutions; then those measurements were used to compare universities across the globe, and then those results were used to orient the behaviour of certain institutions in order to do better in the following evaluation. Those institutions eventually managed to enter the ranking game, climb to positions within the top 100, and finally stay there.

²⁰⁷ See Chapter 4, subheading “A Global Evaluation System for Universities”.

Another interesting finding stemming from the study of the ranking competition was the nuance added to known facts by performing an analysis of ranking results *vis-à-vis* the total number of universities per country as reported in the WHED. By performing a relative count of institutions in this way, the well-known overrepresentation of, for example, the US appeared as much less pronounced. Because this country has the largest number of universities in the world, one can expect it to have a larger representation in rankings. On the other hand, more extreme overrepresentation of other countries like Canada and Australia became apparent when performing this comparison, reinforcing and extending the scope of the well-known Anglo-Saxon bias present in these rankings.

Moving on to the mapping out of the global sub-field of universities, it turns out that the relationship between ranked institutions largely hinges on two intertwined factors: reputation, as determined by surveys, and performance, as gauged by metrics such as research output and per-capita institution performance. But which one holds more weight? Ask the ranking producers, and they'll advocate for performance, asserting that their efforts objectively capture an institution's true degree of academic excellence beyond mere perceptions of prestige. Yet, when we examined the origins of these evaluations, a different picture emerged. Taking American universities as the definitive standard for "world-class" effectively melds reputation and performance: a group of universities were deemed as good performers because of their prestige, and they were confirmed as prestigious because of their good performance. Rather than moving "beyond status"—as suggested by Liu and Sadlak—rankers have created sophisticated ways for quantifying prestige and, by the magic operation of numbers, transubstantiate it into performance metrics. In other words, the pre-existing geopolitical hierarchy with the US at the top of the world order after the Cold War translated into the global sub-field of universities, making the leading institutions of the country the top institutions of the world, and their practices set the standards for assessing academic excellence.

The same national history and culture that positioned those universities in the upper echelons of their national order determined what would amount to good performance and how it would be measured on a global scale. Thus, global university rankings universalised a set of localised practices and values, a case that provides more arguments to the idea that globalisation is, in many cases, a process of "Americanisation". This fact remains obscured by the constant claims made by rankers that their measurements aim to reflect an objective reality whilst ignoring that such objectivity is skewed by *what* is measured and *how* it has been measured. Because both of these constraints are determined outside the spheres of higher education institutions, the illusion of objectivity becomes possible, while in truth the biases carried by the practices and values developed in other fields are refracted in the specific logic of higher education.

A second set of assets relevant to the study of the relationship of universities competing for world-class status relates to the degree of focus that these institutions place on internationalisation against the degree of focus they place on na-

tional industry impact and domestic orientation. On one side, upcoming Asian institutions as well as relatively lower-ranked American universities seem to invest more heavily in their connections to the national industry. On the other, European universities as well as Australian and some Asian institutions based in former British colonies stand out for having a larger number of international students and faculty members, as well as for having a stronger international outlook.

These findings echo established knowledge regarding the flows of internationally mobile students and staff. Asian countries, especially China, are known as “exporters” in these dynamics, whereas European countries and the US tend to play a stronger role as “importers”. Furthermore, it also emerges as an interesting finding that internationalisation appears in second place of relevance when studying the structure of a global sub-field of universities. Because of the narratives accompanying the implementation of these devices, one would expect that “world-class universities” would stand out for their international engagement. However, as discussed above, reputation quantified as performance is still the main force structuring this field. A third set of assets relevant to differentiating world-class institutions concerns the temporal dimension of their prestige, performance, and scientific recognition. Whilst some American, Australian and Asian institutions tend to stand out more for their current efforts, the positions of European, especially Nordic universities seem to strongly relate to their historical standing, as measured by the number of alumni and staff holding Nobel Prizes or Field Medals. This division further highlights the arbitrariness underlying the global university ranking system and how the biases underlying available metrics crafted outside the spheres of higher education are transposed in a global field of universities.

The rise of the “world-class university” as a coveted status in the global academic arena has had profound implications on the geopolitical order of higher education. In Chapter 7, the geopolitical grouping of institutions for analysis in the global sub-field reveals that the structure of this field is more accurately summarised by geopolitical alignments than by mere geographical considerations. The heavy dominance of Anglo-Saxon institutions in this landscape is not coincidental; it underscores a prevailing trend where the Anglo-Saxon model of the university, characterised by certain pedagogical and institutional practices, has been promoted and evaluated favourably by global university rankings. This model, inherently tied to the historical and cultural legacies of these regions, has set a benchmark for academic excellence that other institutions worldwide strive to emulate or compete against. Over time, the collaboration patterns studied in Chapter 8 paint a more complex landscape. The American dominance, though still prominent, shows signs of dispersion as the system becomes geographically more diverse. This trend reflects a move towards increased globalisation in higher education, where more universities are drawn into the ranking game, adapting to its criteria. Consequently, the traditional hegemony of American institutions in the global rankings gradually gives way to a more multifaceted and inclusive academic world.

However, this diversification brings to the forefront a critical issue: the narrowing of the university's mission and function to fit within the confines of numerical rankings. The intricate and varied ideas about what a university should represent and contribute have been overshadowed by a pervasive focus on rankings. This focus on quantitative measures has dominated discourse in higher education throughout the first two decades of the twenty-first century, often at the expense of broader educational values and missions. As universities globally align themselves with the criteria set by these rankings, the diversity in understanding and approaching higher education risks being diminished, creating a homogenised global academic culture that follows the Anglo-Saxon view of the university.

A valid question for my research at this point is *how global* the global sub-field I proposed is; if the performance and prestige of the institutions featured in rankings are constrained by the local and cultural context where they are embedded, can we say that they compete over the same resources? To this, I reply yes and no, depending on the perspective. On a symbolic level, universities engage in a competition for world-class recognition: they look at the same evaluators and indicators, orienting their behaviour accordingly. They generally take ranking positions as reflective of their reality, especially when they are favourable. However, when we take the analysis of that competition to the material dimension, we find that in truth these institutions cannot compete over the same material resources. For example, when universities try to improve their performance in one indicator like “international students”, the talent pool they have access to becomes constrained by their specific geographical location, culture, history, and language. Thus, whilst universities from English-speaking countries can attract people from most regions of the world thanks to the status of *lingua franca* of that language, universities from, for instance, Spanish- or French-speaking countries tend to be limited to their colonial connections. Similarly, when universities compete over producing or hiring award-winning scholars, their efforts are massively limited by the research tradition, funding, and research capacity of the country where they are located. Further still, a similar case can be made about their research output regarding its measurement and connection to the current trends in research evaluation which heavily focus on quantity over quality. Thus, the stability of the structure of the global competition over world-classness owes its efficacy to the biases inherent to the material conditions under which this symbolic competition unfolds.

Moving away from finding a semantic or technical definition for “world-class universities”, allows us to approach the matter from a more critical angle. The implementation of a global field perspective in this case has the virtue of bringing together otherwise fragmented critiques under a theoretical framework capable of connecting them, offering deeper explanations, and even expanding on their remarks.

Världsklassordinationen

Ett fältteoriperspektiv på studiet av globala universitetsrankningar

Begreppet ”universitet i världsklass” antyder att det finns ett överstatligt område där en utvald grupp institutioner kämpar om att förvärva och reproducera de tillgångar som kännetecknar denna prestigefyllda kategori. Med utgångspunkt i Pierre Bourdieus fältteori undersöker denna avhandling den dynamik och de narrativ som formar denna kategorisering. I det inledande kapitlet lägger jag grunden för en undersökning av hur idén om ”universitet i världsklass” växt fram i samband med globala universitetsrankningar, och belyser hur framsteg inom kommunikation och transport, i kombination med ett skifte i ekonomiska perspektiv på universitetet som institution, har påverkat dess uppkomst och utveckling. Kapitlet berör också globaliseringen av den högre utbildningen och beskriver den som ett dynamiskt, samtida fenomen. Kapitlet innehåller en noggrann genomgång av befintlig litteratur om globala universitetsrankningar, vilket lägger grunden för de kommande kapitlen. Utifrån denna genomgång identifierar kapitlet luckor i den befintliga forskningen och formulerar de specifika forskningsfrågor som blir vägledande för undersökningen. Centralt för denna studie är frågorna om varför och hur vissa institutioner kommit att betecknas som ”universitet i världsklass” och hur fältet av dessa universitet är strukturerat och har förändrats.

Kapitel två presenterar studiens teoretiska ramverk och utforskar och jämför olika ståndpunkter inom världssystemperspektivet, världssamhällsperspektivet och fältteorin, vilka är avgörande för att förstå globala fenomen inom högre utbildning. Kapitlet förespråkar att fältteori, särskilt ett globalt fältperspektiv, är det mest passande ramverket för denna studie. Kapitlet innehåller en kritisk genomgång av den samtida forskning som har implementerat detta tillvägagångssätt och diskuterar de specifika anpassningar av teorin som har gjorts i avhandlingen. I kapitlet argumenteras för att globala universitetsrankningar har utvecklats till unika konsekreringsinstanser, som effektivt konsekrerar andra konsekrerare – det vill säga högre utbildningsinstitutioner. Genom dessa rankningar kan universitet som uppfattas som prestigefyllda validera och kvantifiera sitt rykte, medan mindre prestigefyllda institutioner får sin utslutning förstärkt och motiverad. I kapitlet presenteras hypotesen att globala universitetsrankningar styr ett globalt subfält av både blivande och etablerade

universitet i världsklass, och dikterar kriterierna för akademisk excellens. I kapitlet föreslås att denna process utgör en slags symboliskt våld: en godtycklig makt som påtvingar kulturell godtycklighet och rationaliserar och legitimerar en befintlig social ordning under sken av akademiska utvärderingar.

Kapitel tre är en beskrivning av den forskningsdesign som använts i studien och beskriver metoderna för datainsamling, analysteknik och operationalisering av det konceptuella ramverk som vägleder undersökningen. I kapitlet diskuteras också de utmaningar som uppstod under forskningen och hur dessa hanterats. Som nämnts tillämpas i avhandlingen fältteori för att förstå varför och hur vissa universitet erkänns som världsledande medan andra inte gör det. Detta förutsätter en undersökning av instanser som har makten att utdela denna klassificering, legitimeringen av deras auktoritet och den resulterande symboliska ordning som härrör från denna klassificeringsprocess. Tillvägagångssättet börjar med att kartlägga framväxten och strukturen av ett globalt subfält av universitet för att sedan noggrant analysera dess nuvarande struktur. I kapitlet presenteras flera grundläggande utgångspunkter för denna studie. En sådan är att begreppet "universitet i världsklass" har utvecklats ur lokala metoder och processer som har fått global spridning genom specifika aktörers aktivitet. Dessa aktörer, oavsett om de är individer eller institutioner, antas ha de resurser och förutsättningar som krävs för att främja dessa metoder på global nivå. En undersökning av idén om "universitet i världsklass" kräver ett dubbelt fokus på symboliska och materiella egenskaper, eftersom denna beteckning innebär ett globalt erkänt symboliskt kapital. Detta erkännande är i sin tur centralt för maktdynamiken och positioneringskampen inom det globala subfältet av universitet.

Forskningsmetoderna och det empiriska materialet är uppdelade i två delar för att motsvara studiens två huvudteman. Den första uppsättningen fokuserar på att reda ut ursprunget till och legitimeringen av etiketten "universitet i världsklass" och utforska uppkomsten av detta globala subfält. Den andra uppsättningen fokuserar på att förstå de strukturer som härrör från denna klassificering, belysa maktdynamiken och den institutionella positioneringen inom subfältet. Utöver detta diskuteras vissa inneboende begränsningar i avhandlingen. Fokus på regioner, nationer och institutioner i stället för individer begränsar undersökningen till makro- och meso-perspektiv. Denna avgränsning är avgörande för att kartlägga det globala universitetsfältet och förstå dess konkurrensdynamik, men det innebär att den mångsidiga effekten av denna dynamik på individuella akademiska vägar och metoder förblir mindre utforskad. Att förlita sig på rankingdata leder dessutom till begränsningar, som en konsekvens av de rankingansvarigas val när det gäller vad och hur de mäter. Detta förutbestämmer vissa resultat i avhandlingen. För att motverka detta utförs en kritisk granskning av rankingsindikatorerna och en inplacering av dem i ett bredare sociohistoriskt sammanhang. Detta avslöjar inte bara rangordningen av universiteten utan kastar också ljus över de ideologier och värderingar som ligger till grund för dessa rankingar.

Kapitel fyra presenterar en kritisk litteraturoversikt som först tolkar historien om globala universitetsrankingar och relaterade institutioner som ett led i fältets formerande. Därefter undersöks användningen av termen ”universitet i världsklass” i vetenskaplig litteratur. Denna dubbla ansats behandlar forskningsfrågorna om uppkomsten och legitimeringen av globala universitetsrankingar och bidrar till vår förståelse av utvecklingen av ett globalt subfält av universitet som är centrerat kring detta begrepp. Kapitel beskriver uppkomsten av detta globala subfält, förankrat i etableringen av en fältspecifik diskurs, av relaterade globala institutioner och av ett unikt globalt utvärderingssystem. Diskursen kring begreppet ”universitet i världsklass” har varit både en konsekvens och en drivkraft i globaliseringen av den högre utbildningen. Viktiga aktörer som IREG Observatory och Center for World-Class Universities, som ofta arbetar tillsammans med UNESCO, har varit avgörande för att forma denna diskurs. Deras inflytande sträcker sig längre än till att främja konkurrens mellan institutioner; de fastställer kriterierna för att definiera ”världsklass” och integrerar dessa standarder i bredare sociopolitiska och utbildningsmässiga sammanhang. Enheter som IREG:s observationsorgan spelar en avgörande roll för att legitimera och normalisera begreppet ”universitet i världsklass”. Anordnandet av konferenser och antagandet av internationella ramverk som Berlinprinciperna har skapat ett gemensamt språk för att förstå och bedöma universitetsrankingar. Denna institutionalisering har introducerat en ny form av symboliskt kapital inom högre utbildning och omformat globala uppfattningar och värderingar av universitet. Utveckling från en trendig fras till en etablerad global standard involverade såväl statliga organ och internationella organisationer som den akademiska världen. Globala universitetsrankingar, som ett fältspecifikt utvärderingssystem, skapar ett globalt riktmärke för jämförelse och konkurrens som har en djupgående inverkan på institutionernas policyer, strategiska val och identiteter. De påverkar utvecklingen av den högre utbildningen globalt och driver institutionerna att anpassa sig till en allmänt erkänd standard. Tillämpningen av en homogeniserad standard marginaliserar ofta lokala utbildningsvärden och -mål, vilket leder till en än tydligare stratifiering inom den högre utbildningssektorn. Denna strävan efter ett ideal i ”världsklass” tenderar att överskugga universitetens olika uppdrag och sammanhang, vilket leder till symboliskt våld som gynnar den anglosaxiska universitetsmodellen.

En bibliometrisk analys av termens förekomst i vetenskapliga artiklar visar en stark koppling till finansiering, främst inom STEMM-områden, vilket tyder på en inneboende partiskhet. Denna partiskhet indikerar att akademisk excellens, som konceptualiseras av standarden ”universitet i världsklass”, är närmare anpassad till den praxis som råder inom STEMM-disciplinerna. Detta inflytande syns i drivkraften inom traditionellt bokfokuserade discipliner att alltmer övergå till artikelpublicering, i linje med rankingarnas utvärderingskriterier. Kapitel belyser också en ökande trend när det gäller vetenskapliga artiklar som kritiskt utvärderar begreppet ”universitet i världsklass”, i kontrast till nedgången i publikationer som är ett direkt resultat av projekt som finansierats av ”universitet

i världsklass”. Denna observation pekar på ett växande vetenskapligt intresse för att ifrågasätta och omvärdera konsekvenserna av och grunderna för detta globala akademiska riktmärke.

Kapitel fem innehåller en kritisk jämförande analys av institutioners, nationers och regioners positioner i globala universitetsrankningar, där tidigare och nuvarande trender granskas för att förstå hur utfallen av ”tävlingen” om världsklass har utvecklats och hur de ser ut i dagsläget. I detta kapitel används ett teoretiskt ramverk inspirerat av fältteori för att analysera rankingarnas roll inom högre utbildning i vilken de ses som ceremoniella plattformar som inviger universiteten med en ranking som symboliserar deras grad av världsklass. Kapitlet utmanar idén om att globalt rankade universitet konkurrerar om identiska materiella resurser. Det illustrerar att universitet, särskilt anglosaxiska sådana, attraherar olika grupper av internationella studenter jämfört med institutioner i spansk- eller fransktalande regioner. På samma sätt varierar konkurrensen om finansiering avsevärt mellan olika universitet och institutioner, vilket påverkas av geografiska och geopolitiska faktorer. Trots dessa skillnader pågår en symbolisk kapplöpning om världsklasstatus, särskilt bland de högst rankade institutionerna. Analysen visar att dessa rankningar i huvudsak mäter hur nära globala institutioner speglar prestigefyllda anglosaxiska universitet, särskilt amerikanska Ivy League och brittiska Oxbridge. Detta återspeglas i den konsekventa överrepresentationen av institutioner från Australien, Nya Zeeland och utvalda västeuropeiska länder. En anmärkningsvärd trend är ökningen av asiatiska institutioner, särskilt från Kina, som anpassar sig till västerländska akademiska normer. Denna trend är mer uttalad i länder med historiska band till brittisk kolonialism och brittiska mandat, såsom Hongkong, Singapore, Malaysia och Israel. Om man utesluter dessa länder blir den asiatiska representationen i rankingarna mer blygsam, vilket tyder på en västcentrerad syn på globalt akademiskt erkännande. I kapitlet granskas även utvärderingskriterierna för Academic Ranking of World Universities (ARWU), QS World University Ranking (QS), and Times Higher Education World University Ranking (THE) och deras inneboende subjektivitet visas fram. Det finns ingen universell standard för världsklass; istället väljer utvärderarna indikatorer som speglar ett universitets engagemang för forskning eller undervisning och tilldelar dessa mått godtyckliga vikter. Denna process legitimerar en redan existerande hierarki, där USA och Storbritannien konsekvent ligger i topp. ARWU fokuserar främst på forskningsresultat, medan QS och THE inkluderar undervisningskvalitet och internationell rekrytering i sina utvärderingar.

Kapitel sex och sju ägnas åt att kartlägga det globala subfältet av universitet och identifiera viktiga särdrag och hierarkier inom det. Dessa kapitel svarar på frågor om fältets struktur och de olika grupper av institutioner som det omfattar. Med hjälp av Multipel Korrespondensanalys (MCA) och relaterade metoder analyseras 2022 års data från ARWU-, QS- och THE-rankingarna för att utforska strukturella skillnader i flera dimensioner mellan topprankade universitet. En viktig slutsats från analyserna är att internationalisering, som ofta

betonas i diskursen om globala rankingar, framstår som en sekundär egenskap i det globala subfältet. Istället dominerar indikatorer relaterade till anseende – såsom akademiskt anseende och anseende hos arbetsgivare, forskning och undervisningsutvärderingar. Detta utmanar det konventionella fokuset på internationalisering och tyder på att rykte och upplevd kvalitet är mer inflytelserika än internationalisering. En intressant aspekt av internationalisering som framkommit i analysen är kontrasten mellan ett internationellt fokus, baserat på internationell rekrytering, och en mer inhemsk inriktning, med starka nationella industriella band. Engelskspråkiga institutioner, eller de med anglosaxiska kulturella band, har en fördel när det gäller att attrahera internationella studenter och lärare, vilket ofta kompenserar för svagare resultat i anseendemätningar. MCA:n visar också på en dikotomi när det gäller vetenskapligt erkännande. Äldre institutioner, som utmärker sig genom historiska utmärkelser som Nobelpris och Fieldsmedaljen, står i kontrast till yngre institutioner som särskiljer sig genom många citeringar per forskare och lärare. Detta belyser utvecklingen inom vetenskapliga områden, där nyare former av forskningsutvärdering baserade på publikationer och citeringar blivit allt mer framträdande.

En euklidisk klusteranalys bekräftar dessa resultat och visar på tydliga grupper av institutioner med specifika profiler, såsom asiatiska institutioner med fokus på den inhemska marknaden och anglosaxiska institutioner med balanserade resultat. Dessa kluster förstärker de primära skillnaderna som identifierats av MCA:n och ger en fördjupad förståelse för hur institutioner grupperas baserat på rankingresultat. Analysen visar på komplexa hierarkier och maktstrukturer inom den högre utbildningen världen över, och betonar vikten av rykte, historisk prestige och internationalisering. Analys av regionala och geopolitiska undergrupper inom det globala subfältet belyser denna dynamik ytterligare. I Europa bidrar etableringen av ett gemensamt europeiskt område för högre utbildning, som underlättar hög studentrörlighet, till att europeiska lärosäten framträder när det gäller internationaliseringsindikatorer. Asiatiska institutioner, särskilt från Kina, lockar däremot färre internationellt rörliga studenter men har starkare band till nationella regeringar och näringslivet. Genom att isolera anglosaxiska universitet i analysen framhävs Europas och Asiens universitets unika egenskaper. Detta bekräftar rankingarnas känslighet för den anglosaxiska, särskilt den amerikanska, modellen för högre utbildning. Kinas särskilda ansträngningar att efterlikna och konkurrera med nordamerikanska institutioner, vilket framgår av att den första globala universitetsrankningen i Kina med statligt stöd, har varit framgångsrik.

I kapitel åtta studeras samspelet mellan samarbetsmönster mellan universitet och det globala subfältet av universitet, med särskild tonvikt på regionala europeiska akademiska samarbetsnätverk baserade på gemensamma publikationer. I kapitlet används social nätverksanalys för att undersöka de akademiska samarbetsrutinerna vid svenska, engelska och tyska lärosäten, där skillnad görs mellan områdena ”vetenskap, teknik, ingenjörsvetenskap,

matematik och medicin” (STEMM) och ”samhällsvetenskap och humaniora” (SSH). Analyserna avslöjar både konstanter och förändringar i dessa samarbetsrelationer över tid. Ett av kapitlets viktigaste resultat är den bestående styrkan i intraeuropiska samarbeten inom både STEMM och SSH, en trend som håller i sig över åren och understryker de djupa kulturella, historiska och akademiska banden inom Europa. Dessa samarbeten är dock inte statiska, utan uppvisar subtila förändringar som återspeglar föränderliga akademiska prioriteringar och inriktningar inom regionen.

De nordamerikanska institutionernas tidiga framträdande roll som viktiga samarbetspartners har minskat markant fram till 2022, till förmån för en ökning av Asienbaserade partnerskap. Denna förändring, som är särskilt tydlig förutom i Sveriges och Tysklands SSH-samarbeten, ligger i linje med en global omorientering mot den asiatiska akademiska sektorn. Asiens tillväxt, särskilt i globala universitetsrankningar både när det gäller kvantitet och resultat, bekräftar denna trend och markerar en betydande balansförskjutning i den akademiska världen. I kapitlet konstateras också att även om samarbeten i regioner som Afrika, Nord- och Sydamerika och Oceanien har ökat, är deras tillväxt relativt blygsam i jämförelse med Asien. Denna skillnad i tillväxttakt är ett bevis på Asiens snabbt växande inflytande i det globala akademiska landskapet.

På landsnivå framstår USA konsekvent som den primära samarbetspartnern, vilket gäller för alla tre länder och de två vetenskapsområdena, förutom Sveriges SSH-samarbeten 2022 där Storbritannien har företräde. USA:s och Storbritanniens fortsatta dominans i internationella akademiska samarbeten, som påverkas av Web of Sciences inriktning mot engelsktalande länder, bekräftar det bestående inflytandet från den anglosaxiska universitetsmodellen. Det mönster som observerats under åren visar en stabil andel samarbeten inom STEMM men en anmärkningsvärd nedgång inom SSH, vilket tyder på språkmättnad och strategiska förskjutningar mot mer lukrativa forskningsvägar vid amerikanska institutioner. Andra länder, särskilt Kina, visar en anmärkningsvärd tillväxt i STEMM-samarbeten med europeiska länder. Denna kraftiga ökning åtföljs av betydande ökningarna från länder som Indien, Österrike och Australien. Inom SSH har man konstaterat att Kinas tillväxt till och med överträffats av andra länder, vilket tyder på ett mer diversifierat samarbetslandskap. Sammantaget visar kapitlet att det finns ett starkt samband mellan regionala och nationella samarbetspartners framträdande roll och deras universitets globala ranking. Europa och Nordamerika, som länge ansetts vara bastioner för akademisk excellens, fortsätter att leda i globala universitetsrankningar och internationella forskningssamarbeten med svenska, engelska och tyska institutioner. Detta etablerade narrativ håller dock gradvis på att förändras, och Asiens uppgång i globala universitetsrankningar och samarbetsnätverk återspeglar en framväxande trend av ökad akademisk deltagande i regionen.

Det sista kapitlet sammanfattar de viktigaste resultaten av studien och väver samman de insikter som samlats in från de skilda analyserna i tidigare kapitel. Termen ”universitet i världsklass”, laddad med mångtydighet, framträder som en

kraftfull symbol inom det globala subfältet av universitet. Denna mångtydighet underlättar ett brett spektrum av tolkningar, vilket gör att olika institutioner kan tävla om denna prestigefyllda status utifrån olika kriterier. Denna strävan är inte bara en jakt på objektiva mått utan är starkt påverkad av intressenter som skapar och sprider en global berättelse, som definierar idealiska metoder för att mäta kvalitet inom högre utbildning. Centralt i denna berättelse är den roll som globala universitetsrankningar har, som har framstått som avgörande för att forma handlingar och uppfattningar inom akademiska områden. Dessa rankningar skapar ett konkurrensfält och uppmanar universiteten att anpassa sig till standarder som ofta återspeglar amerikanska och västerländska ideal om akademisk excellens. Denna anpassning är inte bara en strävan efter symboliskt kapital – prestige, erkännande och status – utan involverar också strategiska investeringar för att förbättra forskning, infrastruktur och globala partnerskap. De geopolitiska och kulturella influenserna efter kalla kriget, tillsammans med tekniska framsteg som Internet, har underlättat spridningen av amerikanskt centrerade ideal i dessa rankningar och därmed bidragit till att format globala standarder inom högre utbildning efter amerikanska modeller.

Maktdynamiken som ligger till grund för rankingsystemen kan spåras genom aktiviteter av internationella organisationer som UNESCO, Center for World-Class Universities och IREG Observatory. Dessa grupper har inte bara legitimerat berättelsen om kategorin ”universitet i världsklass” utan har också hjälpt till att skapa och påtvinga ett områdesspecifikt narrativ, i vilken att bli stämplad som ett ”universitet i världsklass” symboliserar en form av akademisk konsekration. Trots rankingarnas globala räckvidd är universitetens förmåga att konkurrera avsevärt begränsad av deras geografiska, kulturella och historiska sammanhang, vilket framhäver en skillnad mellan symbolisk och materiell konkurrens. Intressant nog visar avhandlingen på en tendens till förändring i det globala akademiska landskapet över tid. Medan den amerikanska dominansen i rankingarna kvarstår, finns det en observerbar trend mot ökad diversifiering ledd av asiatiska institutioner – mestadels baserade i Kina – vilket speglar ett mer globaliserat system för högre utbildning. Men denna diversifiering väcker samtidigt farhågor om ökade inskränkningen av universitetens uppdrag, pressade att passa inom ramarna för numeriska rankningar, vilket potentiellt leder till en mer homogeniserad akademisk kultur som prioriterar kvantitativa åtgärder framför bredare utbildningsvärden.

Denna studie av ett globalt universitetsfält avslöjar den mångfacetterade och dynamiska karaktären hos det som utgör ”universitet i världsklass”. Det understryker den viktiga roll som globala narrativ, olika intressenters engagemang och geopolitiska influenser spelar i utformningen av dessa klassificeringar, och belyser komplexiteten och maktdynamiken som utspelar sig på den globala akademiska arenan. Avhandlingen erbjuder därmed ett kritiskt perspektiv på högre utbildning genom att koppla samman olika kritiker under ett teoretiskt ramverk, fältansatsen, vilket ger en djupare förståelse för det globala subfältet av universitets intrikata dynamik.

SUMMARY

The World-Class Ordination A Field Theory Approach to the Study of Global University Rankings

The notion of a “world-class university” suggests the existence of a supra-national space where a select group of institutions struggle over the acquisition and reproduction of the assets indicative of this prestigious category. Informed by Pierre Bourdieu’s field theory, this thesis interrogates the dynamics and narratives shaping this categorisation. In the opening chapter, I set the stage for a comprehensive exploration of the “world-class university” idea in connection with global university rankings, highlighting how advancements in communication and transportation, coupled with a shift in economic perspectives on the university as an institution, have influenced their emergence and development. The chapter serves as an introduction to the globalisation of higher education, framing it as a dynamic, contemporary phenomenon. It meticulously reviews existing literature on global university rankings, laying the groundwork for the forthcoming chapters. Through this review, the chapter identifies gaps in existing research and articulates the specific research questions that drive this investigation. Central to this study are the questions of why and how certain universities are designated as world-class institutions.

Chapter 2 delves deep into the theoretical framework of the study, exploring and juxtaposing various standpoints such as the world-systems perspective, world-society approach, and field theory, which have been pivotal in understanding global phenomena in higher education. The chapter advocates for the adoption of field theory, particularly a global field perspective, as the most fitting framework for this study. It critically evaluates recent works that have implemented this approach, discussing the specific adaptations employed in the current research. This chapter proposes that global university rankings have evolved into unique consecration instances, effectively consecrating other consecrators—higher education institutions. Through these rankings, universities perceived as prestigious can validate and quantify their reputations, while less prestigious institutions find their exclusion reinforced and justified. The chapter sets out to raise the hypothesis that global university rankings govern a global sub-field of both aspiring and established world-class universities, dictating the criteria for academic excellence. The chapter concludes by suggesting that this process amounts to symbolic violence: an imposition by an arbitrary power of cultural

arbitrariness, rationalising and legitimising an existing social order under the guise of academic evaluations.

Chapter three serves as a blueprint of the research design employed in this study, laying out the methods of data collection, analysis techniques, and the operationalisation of the conceptual framework guiding the investigation. This chapter discusses as well the challenges encountered during the research and the strategies deployed to address them. As stated before, central to the thesis is the application of field theory to understand why and how certain universities are acknowledged as world-class while others are not. This involves investigating the entities with power to bestow this classification, the legitimisation of their authority, and the resultant symbolic order stemming from this classification process. The approach starts with charting the formation of a global university sub-field and then thoroughly dissecting its current structure. The chapter discloses several foundational assumptions for this study. It posits that the concept of a “world-class university” evolved from local practices and processes that gained global traction through the activity of specific agents. These agents, be they individuals or institutions, possess the requisite resources and dispositions to promote these practices on a global scale. The investigation into the “world-class university” idea necessitates a dual focus on symbolic and material features, acknowledging that this designation signifies globally recognised symbolic capital. This recognition, in turn, is central to the power dynamics and positioning struggles within the global sub-field of universities.

The research methods and empirical materials are bifurcated to correspond with the two main themes of the study. The first set focuses on unravelling the origins and legitimisation of the “world-class university” label, exploring the genesis of a global sub-field of universities. The second set of methods and materials concentrates on understanding the structures that stem from this classification, elucidating the power dynamics and institutional positioning within the sub-field. In addition to this, the study acknowledges and confronts certain inherent limitations that shape its scope. Primarily, the focus on regions, nations, and institutions over individuals, while integral to the field theory approach, restricts the exploration to macro- and meso-perspectives. This lens is pivotal for mapping the global university sub-field and comprehending its competitive dynamics, but it does mean that the nuanced impact of these dynamics on individuals’ practices remains less explored. Additionally, the reliance on ranking data introduces biases, shaped by the choices of rankers in terms of what and how they measure. This pre-determines certain outcomes of the analysis. To counteract this, the study critically examines the ranking indicators, situating them within a broader socio-historical context. This not only reveals the numerical standings of universities but also sheds light on the ideologies and values underpinning these rankings.

Chapter four presents a hybrid analysis—akin to a critical literature review—first interpreting the history of global university rankings and related institutions as a process of field formation, and then examining the usage of the term “world-class university” in scientific literature. This dual approach addresses the research ques-

tions concerning the emergence and legitimisation of global university rankings, significantly contributing to our understanding of the development of a global sub-field of universities centred around this concept. The chapter delineates the formation of this global sub-field, anchored in the creation of a field-specific discourse, the establishment of related global institutions, and the introduction of a unique global evaluation system. The discourse surrounding the “world-class university” label has been both a consequence and a driving force in the globalisation of higher education. Key players like the IREG Observatory and the Center for World-Class Universities, often working alongside UNESCO, have been instrumental in moulding this discourse. Their influence extends beyond fostering competition among institutions; it sets the criteria defining “world-class” excellence, integrating these standards into the broader socio-political and educational milieu. The role of entities such as the IREG Observatory in legitimising and normalising the “world-class university” concept is pivotal. The organisation of conferences and the adoption of international frameworks like the Berlin Principles have provided a common language for understanding and assessing university rankings. This institutionalisation has introduced a new form of symbolic capital in higher education, reshaping global perceptions and valuations of universities. This evolution from a trendy phrase to an established global standard has involved government bodies, international organisations, and academia.

Global university rankings, as a field-specific evaluation system, establish a global benchmark for comparison and competition. The impact of these rankings on institutional policies, strategic choices, and identities is profound, influencing the evolution of higher education globally and driving institutions to align with a widely acknowledged standard. The enforcement of a homogenised standard often marginalises local educational values and goals, leading to stratification within the higher education sector. This pursuit of the “world-class” ideal tends to overshadow the diverse missions and contexts of universities, resulting in symbolic violence that favours the Anglo-Saxon model of the university.

A bibliometric analysis of the term’s presence in scholarly articles reveals a strong link with funding, predominantly in the Science, Technology, Engineering, Mathematics, and Medicine fields (STEMM), indicating a latent bias. This bias suggests that academic excellence, as conceptualised by the “world-class university” standard, is more closely aligned with the practices of STEMM disciplines. This influence is seen in the push for traditionally book-focused disciplines to shift towards rapid article publication, aligning with global university rankings’ evaluation criteria. The chapter also highlights an increasing trend in scientific papers critically assessing the “world-class university” notion, contrasting with the decline in publications directly resulting from “world-class university” funded projects. This observation points to a growing scholarly interest in questioning and reevaluating the implications and foundations of this global academic benchmark.

Chapter five offers a critical comparative analysis of institutions, nations, and regions through the lens of global university rankings, scrutinising past and pre-

sent trends to understand the trajectory and current state of the world-class competition. This chapter applies a field theory-inspired theoretical framework to decipher the role of these rankings in higher education, viewing them as ceremonial platforms that consecrate universities with a rank symbolising their degree of world-classness. The chapter challenges the idea that globally ranked universities compete for identical material resources. It illustrates that universities, especially Anglo-Saxon ones, attract different cohorts of international students compared to institutions in Spanish or French-speaking regions. Similarly, competition for funding varies significantly across universities and departments, influenced by geographical and geopolitical factors. Despite these differences, a symbolic race for world-class status is apparent, especially among top-ranking institutions. The analysis reveals that these rankings essentially measure how closely global institutions mirror prestigious Anglo-Saxon universities, particularly American Ivy League and Britain's Oxbridge. This is reflected in the consistent overrepresentation of institutions from Australia, New Zealand, and selected Western European countries, underscoring the prestige bias towards Western, especially Anglo-Saxon, institutions. A notable trend is the rise of Asian institutions, particularly from China, aligning with Western academic norms. This trend is more pronounced in countries with historical ties to British colonialism and mandates, such as Hong Kong, Singapore, Malaysia, and Israel. Excluding these, Asian representation in rankings becomes more modest, indicating a Western-centric view of global academic recognition.

The chapter also scrutinises the evaluation criteria of the Academic Ranking of World Universities (ARWU), QS World University Ranking (QS), and Times Higher Education World University Ranking (THE), revealing their inherent subjectivity. There's no universal standard for world-classness; instead, evaluators choose indicators that reflect a university's commitment to research or teaching, assigning arbitrary weights to these metrics. This process legitimises a pre-existing hierarchy, with the United States and the United Kingdom consistently at the top. While ARWU focuses primarily on research output, QS and THE incorporate teaching quality and international recruitment into their evaluations.

Chapters six and seven are dedicated to mapping out the global sub-field of universities and identifying key features and hierarchies within it. These chapters respond to questions about the structure of the field and the diverse groups of institutions it encompasses. Using Multiple Correspondence Analysis (MCA) and related methods, the chapters analyse 2022 data from ARWU, QS, and THE rankings to explore the multidimensional structure of differences among world-class universities. A significant finding from the analyses is that internationalisation, often emphasised in global rankings discourse, emerges as a secondary characteristic in the global sub-field. Instead, reputation, as defined by indicators completely or partially based on reputation surveys—such as academic and employer reputation, research, and teaching metrics—predominates. This challenges the conventional focus on internationalisation, suggesting that reputation and perceived quality are more influential. An interesting aspect of internation-

alisation revealed in the analysis is the contrast between an international focus, based on international recruitment, and a more domestic orientation, with strong national industry ties. English-speaking institutions or those with Anglo-Saxon cultural ties enjoy an advantage in attracting international students and faculty, often compensating for weaker performance in reputation metrics. The MCA also exposes a dichotomy in scientific recognition. Older institutions, distinguished by historical accolades like Nobel Prizes and Field Medals, stand in contrast to younger institutions excelling in citations per faculty. This opposition highlights evolving dynamics in scientific fields, where newer forms of research evaluation based on publications and citations are gaining prominence.

Euclidean clustering corroborates these findings, revealing distinct groups of institutions with specific profiles, such as Asian institutions focused domestically and Anglo-Saxon institutions with balanced performance. These clusters reinforce the primary profiles identified by the MCA and offer a clearer understanding of how institutions are grouped based on ranking performance. Theoretical implications of these findings suggest that field theory provides valuable insights into the power dynamics within the global sub-field. This analysis reveals complex hierarchies and power structures in higher education worldwide, emphasising the importance of reputation, historical prestige, and internationalisation. Regional and geopolitical subgroup analysis in the global sub-field further illuminates these dynamics. In Europe, the existence of a European Research Area and a European Higher Education Area facilitating high student mobility contribute to higher internationalisation scores. In contrast, Asian institutions, notably from China, attract fewer internationally mobile students but have stronger national government and industry ties. Isolating Anglo-Saxon universities in the analysis accentuates Europe and Asia's unique characteristics. This exercise confirms the rankings' sensitivity to the Anglo-Saxon, especially the American, model of higher education. The specific efforts by China to emulate and compete with North American institutions, as evidenced by the origin of the first global university ranking in China with government support, have been successful.

Chapter eight takes a focused look at the interplay between collaboration patterns among universities and the global sub-field of universities, with a specific emphasis on regional European academic collaboration networks based on joint publications. The chapter employs social network analysis to examine the academic collaborative practices of Swedish, English, and German higher education institutions, differentiating between STEM and "Social Sciences and Humanities" (SSH) fields. The analysis unveils both constants and transformations in these collaborative relationships over time. One of the chapter's key revelations is the enduring strength of intra-European collaborations in both STEM and SSH, a trend that persists across the years and underscores the deep cultural, historical, and academic ties within Europe. However, these collaborations are not static, exhibiting subtle shifts that reflect evolving academic priorities and alignments within the region.

The early prominence of North American institutions as major collaborators has notably diminished by 2022, giving way to an increasing trend of Asia-based partnerships. This shift, particularly evident outside of Sweden and Germany's SSH collaborations, aligns with a global realignment towards the Asian academic sector. The growth of Asia, notably in global university rankings both in terms of quantity and performance, corroborates this trend, marking a significant shift in the academic world balance. The chapter also observes that while collaborations in regions like Africa, the Americas, and Oceania have expanded, their growth is relatively modest compared to Asia's pronounced development. This differential growth rate is a testament to Asia's rapidly expanding influence in the global academic landscape.

At the country level, the US consistently emerges as a primary collaboration partner, except in Sweden's 2022 SSH collaborations where the UK takes precedence. The sustained dominance of the US and UK in international academic collaborations, influenced by the Web of Science's bias towards English-speaking countries, reaffirms the enduring influence of the Anglo-Saxon university model. The pattern observed over the years shows a stable collaboration share in STEMM but a notable decline in SSH, hinting at language saturation and strategic shifts towards more lucrative research avenues in US institutions. Other countries, particularly China, have shown remarkable growth in STEMM collaborations with European countries. This surge is accompanied by significant increases from countries like India, Austria, and Australia. In SSH, China's growth is matched or even surpassed by other countries, indicating a more diversified collaboration landscape. All in all, the chapter suggests a strong relationship between the prominence of regional and country collaborators and their universities' global rankings. Europe and North America, long considered bastions of academic excellence, continue to lead in global university rankings and international research collaborations with Swedish, English, and German institutions. However, this established narrative is gradually shifting, with Asia's rise in global university rankings and collaborative networks reflecting an evolving trend of increased academic prowess in the region.

The final chapter synthesises the main findings of the study, weaving together the insights gathered from the extensive analysis conducted in previous chapters. The term "world-class university", loaded with ambiguity, emerges as a powerful symbol within the global sub-field of universities. This ambiguity facilitates a wide array of interpretations, allowing diverse institutions to vie for this prestigious status under various criteria. This pursuit is not merely a chase for objective metrics but is heavily influenced by stakeholders who craft and propagate a global narrative, defining ideal practices in higher education.

Central to this narrative is the role of global university rankings, which have emerged as pivotal in shaping the actions and perceptions within academic fields. These rankings create a competitive environment, urging universities to align with standards often reflective of American and Western ideals of academic excellence. This alignment is not just a quest for symbolic capital—prestige, recog-

nition, and status—but also involves strategic investments in enhancing research, infrastructure, and global partnerships. The geopolitical and cultural influences post-Cold War, coupled with technological advancements like the Internet, have facilitated the American-centric view in these rankings, subtly imprinting biases and shaping global standards in higher education.

The power dynamics at the foundation of the ranking systems can be traced through the activities of international organisations such as UNESCO, the Center for World-Class Universities, and the IREG Observatory. These groups have not only legitimised the narrative of the category of world-class universities but have also helped in crafting and imposing a field-specific narrative, where being labelled as a world-class university symbolises a form of academic consecration. Despite the global reach of these rankings, universities' ability to compete is significantly constrained by their geographical, cultural, and historical contexts, highlighting a disparity between symbolic and material competition.

Interestingly, the thesis notes a shift in the global academic landscape. While American dominance in rankings persists, there's an observable trend towards increased diversification led by Asian institutions—mostly based in China—reflecting a more globalised higher education system. However, this diversification raises concerns about the narrowing of universities' missions, pressured to fit within the confines of numerical rankings, potentially leading to a homogenised academic culture that prioritizes quantitative measures over broader educational values.

This exploration into the world of higher education reveals the multifaceted and dynamic nature of what constitutes a world-class university. It underscores the significant role of global narratives, stakeholder interests, and geopolitical influences in shaping these classifications, highlighting the complexities and power dynamics at play in the global academic arena. The thesis offers a critical perspective on higher education, connecting various critiques under a theoretical framework that provides a deeper understanding of these intricate dynamics.

Appendices

Appendix A: Universities selected for the MCA and their labels.

<i>Name</i>	<i>Label</i>	<i>Name</i>	<i>Label</i>	<i>Name</i>	<i>Label</i>
Harvard University	Harvard	University of Zurich	UZ	University of Pittsburgh	Pitt
Stanford University	Stanford	University of Minnesota, Twin Cities	Umin	Moscow State University	MSU
Massachusetts Institute of Technology (MIT)	MIT	Utrecht University	Utrecht	University of Florida	UF
University of Cambridge	CU	University of Southern California	SCU	Boston University	BU
University of California, Berkeley	UCB	University of British Columbia	UBC	London School of Economics and Political Science	LSE
Princeton University	Princeton	Technical University of Munich	TUM	The University of Adelaide	AdelU
California Institute of Technology	Caltech	University of Munich	Umun	University of California, Davis	UCD
University of Oxford	Oxford	University of California, Irvine	UCI	Sun Yat-sen University	SYU
University of Chicago	Uchicago	Vanderbilt University	Uvan	Seoul National University	US
Columbia University	Columbia	Zhejiang University	Uzhe	University of Bern	Ubern
Yale University	Yale	Technion-Israel Institute of Technology	Techion	University of Amsterdam	UvA
Cornell University	Cornell	University of Groningen	UoGr	Emory University	EU
University of California, Los Angeles	UCLA	University of Oslo	Oslo	Huazhong University of Science and Technology	HUST
ETH Zurich	ETHZ	Heidelberg University	UoH	Wageningen University & Research	UWR
University of Pennsylvania	Upenn	University of Basel	UB	The University of Glasgow	UoGl
Paris-Saclay University	UPS	University of Bonn	Ubonn	Pennsylvania State University - University Park	PSU
Johns Hopkins University	JHU	Aarhus University	AU	Nanjing University	NJU
University of California, San Diego	UCSD	University of Sydney	Usyd	Georgia Institute of Technology	GT
University of Washington	Uwash	The University of New South Wales	UNSW	The University of Sheffield	Ush
University College London	UCL	The Hebrew University of Jerusalem	HUJI	The Chinese University of Hong Kong	CUHK
Imperial College London	ICL	Ghent University	UG	Tokyo Institute of Technology	Tokyo Tech
Washington University in St. Louis	UstL	University of Science and Technology of China	USTCH	University of Birmingham	UoB
New York University	NYU	National University of Singapore	NUS	Delft University of Technology	TU Delft
University of Toronto	Utor	The Australian National University	ANU	University of Leeds	UoL
The University of Tokyo	Utok	McGill University	McGill	City University of Hong Kong	CityU
University of North Carolina at Chapel Hill	UNC	Shanghai Jiao Tong University	SHJT	University of Tuebingen	Utub
Northwestern University	NWU	University of Bristol	Ubristol	Lund University	LU
Tsinghua University	Utsin	McMaster University	McMaster	Trinity College Dublin	TCD
University of Michigan-Ann Arbor	Umich	Stockholm University	StockU	University of Southampton	SHU

THE WORLD-CLASS ORDINATION

Duke University	DU	Swiss Federal Institute of Technology Lausanne	EPFL	The University of Auckland	UoA
The University of Edinburgh	UoE	Erasmus University Rotterdam	EUR	KTH Royal Institute of Technology	KTH
University of Wisconsin - Madison	UWM	Fudan University	FU	Tohoku University	Utoh
The University of Melbourne	Umel	Carnegie Mellon University	CMU	The Hong Kong Polytechnic University	HKPolyU
PSL University	PSL	Brown University	BrwonU	Osaka University	OU
The University of Texas at Austin	UTXA	Monash University	MonU	National Taiwan University	Utaiwan
University of Colorado at Boulder	CUB	Rice University	RU	Sungkyunkwan University	Usun
University of California, Santa Barbara	UCSB	Université Paris Cité	UPC	Korea Advanced Institute of Science and Technology	KAIST
The University of Manchester	Uman	Nanyang Technological University	NTU	Korea University	KU
University of Copenhagen	UCPH	Purdue University - West Lafayette	Purdue	Yonsei University	UY
University of Maryland, College Park	UMD	Uppsala University	UU	University of St Andrews	UstA
Kyoto University	KyotoU	The University of Western Australia	UWA	RWTH Aachen University	RWTH
The University of Queensland	UQ	University of Helsinki	HU	Pohang University of Science and Technology	POSTECH
University of Illinois at Urbana-Champaign	UIUC	KU Leuven	KUL	Institut Polytechnique de Paris	IPP
Peking University	PKU	University of Alberta	Ualberta	The Hong Kong University of Science and Technology	HKUST
Sorbonne University	SU	University of Warwick	Uwar	Durham University	Durham
King's College London	KCL	Leiden University	Uleiden	University of Malaya	UM
University of Geneva	UoG	The University of Hong Kong	HKU		

Appendix B: Detailed Statistics for MCA

Table 29. Frequencies for recoded modalities.²⁰⁸

Category	Frequency	
	Alumni with Awards	Staff with Awards
Yes	105	87
No	35	53
		Other Variables
Low Score		28
Medium Score		84
High Score		28

Table 30. Eigenvalues, variance, and importance index extended. Axes 1–8.

Axis	Variance	Importance Index (modified rates)		Cummulated Importance Index
1	15.90	55.89	55.89	55.89
2	11.02	19.09	74.98	74.98
3	10.09	14.25	89.23	89.23
4	8.48	7.55	96.78	96.78
5	6.30	1.84	98.62	98.62
6	5.53	0.75	99.37	99.37
7	5.40	0.62	99.99	99.99
8	4.30	0.01	100	100

Table 31. Variables grouped by theme and modalities retained for the interpretation with their contribution. Axes 1–4.

Axis 1	Ctr	Positive Coordinates	Ctr	Negative Coordinates	Ctr
Research	21.0	High	16.2	Low	3.1
Teaching	19.6	High	15.3	Low	2.5
Academic Reputation	19.2	High	15.0	Low	2.7
Employer Reputation	15.1	High	11.4	Low	2.7
Per Capita Performance	7.8	High	6.1	Low	1.0
Total	82.7		64.0		12.0
Axis 2	Ctr	Positive Coordinates	Ctr	Negative Coordinates	Ctr
International Faculty	20.5	Low	16.3	Mid	2.4
International Students	15.2	Low	10.4	High	4.4
International Outlook	25.4	Low	20.0	High	3.0
Industry Income	10.1	High	7.4	Low	2.2
Total	71.3		54.1		12.0
Axis 3	Ctr	Positive Coordinates	Ctr	Negative Coordinates	Ctr
Award-Winning Alumni	11.8	No	8.9	Yes	3.0
Award-Winning Staff	12.1	No	7.5	Yes	4.6
Citations per Faculty	10.1	High	4.0	Low	6.0
International Faculty	17.5	High	13.9	Mid	3.1
International Students	9.7	High	6.7	Low	2.6
International Outlook	13.3	High	10.2	Mid	3.0
Employer Reputation	9.3	Mid	3.3	Low	5.4
Total	83.8		54.5		27.7
Axis 4	Ctr	Positive Coordinates	Ctr	Negative Coordinates	Ctr
Research	19.0	Low	13.1	Mid	5.7
Academic Reputation	19.0	Low	11.3	Mid	6.5
Per Capita Performance	13.0	Low	8.2	Mid	4.3
Employer Reputation	10.9	Low	7.3	Mid	3.4
International Outlook	11.8	High	7.0	Mid	4.0
International Students	9.1	Low	2.8	Mid	3.7
Total	82.8		49.7		27.6

Table 32. Supplementary variables' coordinates and test value. Axes 1–3.

Variable	Freq	Per cent	Coordinates			Test value		
			Axis 1	Axis 2	Axis 3			
<i>Geographical Region</i>								
Asia	31	22.1	-0.2	1.1	0.5	-1.1	6.9	3.2
Europe	53	37.9	-0.2	-0.5	-0.1	-1.6	-4.9	-1.0
North America	47	33.6	0.3	0.0	-0.5	2.7	0.3	-4.3
Oceania	9	6.4	-0.1	-0.8	1.6	-0.2	-2.5	4.9
	140	100.0						
<i>Geopolitical Region</i>								
Anglo-Saxon	37	26.4	0.0	-0.7	0.7	-0.3	-5.1	5.1
No-Anglo Europe	34	24.3	-0.4	-0.4	-0.2	-2.5	-2.4	-1.6
No-Anglo Asia	22	15.7	0.0	1.7	0.3	-0.1	8.6	1.4
	93	66.4						
<i>Country</i>								
Australia	8	5.7	0.0	-0.7	1.6	0.0	-2.1	4.7
Belgium	2	1.4	-0.7	0.4	0.1	-1.0	0.5	0.2
Canada	5	3.6	0.3	-0.2	-0.4	0.8	-0.5	-1.0
China	9	6.4	0.1	1.7	0.5	0.3	5.2	1.6
Denmark	2	1.4	-0.4	-0.2	-0.9	-0.6	-0.3	-1.3
Finland	1	0.7	-0.6	-0.1	-0.6	-0.6	-0.1	-0.6
France	5	3.6	0.0	-0.5	-0.6	-0.1	-1.0	-1.4
Germany	6	4.3	-0.3	0.0	-0.7	-0.8	0.1	-1.7
Hong Kong	5	3.6	-0.3	-0.1	2.0	-0.7	-0.1	4.5
Ireland	1	0.7	-0.5	-1.6	0.2	-0.5	-1.6	0.2
Israel	2	1.4	-1.2	-0.7	-2.2	-1.7	-0.9	-3.2
Japan	5	3.6	0.2	1.6	-0.3	0.5	3.6	-0.6
Malaysia	1							
Netherlands	7	-1.2	-0.6	-0.2	-1.2	-0.6	-0.2	
New Zealand	1	5.0	-0.6	-0.4	-0.1	-1.6	-1.0	-0.3
Norway	1	0.7	-0.6	-1.3	1.2	-0.6	-1.3	1.2
Russia	1	0.7	-0.9	-0.8	-1.6	-0.9	-0.8	-1.6
Singapore	2	0.7	0.4	0.9	-0.9	0.4	0.9	-0.9
South Korea	6	1.4	0.3	0.0	1.8	0.5	0.0	2.6
Sweden	4	4.3	-0.4	2.0	0.5	-1.1	5.0	1.3
Switzerland	6	2.9	-0.7	-0.9	-0.8	-1.4	-1.7	-1.5
Taiwan	1	4.3	-0.1	-0.6	1.0	-0.2	-1.4	2.6
United Kingdom	17	0.7	-0.6	1.2	0.4	-0.6	1.2	0.4
United States	42	12.1	0.2	-0.9	0.2	1.0	-4.0	0.8
	140	30.0	0.3	0.1	-0.5	2.5	0.5	-4.0
		100.0						
<i>Age</i>								
Oldest	28							
Older	28	20.0	0.0	-0.4	-0.3	-0.2	-2.4	-1.9
Mid	28	20.0	0.1	-0.2	-0.4	0.5	-0.9	-2.3
Younger	29	20.0	0.1	0.1	-0.1	0.3	0.3	-0.5
Youngest	27	20.7	0.1	0.3	0.3	0.7	1.9	1.5
	140	100.0						

Bold figures: The descriptive difference is important (over 0.4) and significant distance from the overall mean point (using the typicality test, or equivalently the test value). (Le Roux & Rouanet 2010:82–84)

²⁰⁸ Frequencies vary slightly for “Academic Reputation”, where Low Score = 28, Medium Score = 85, and High score = 27; “International Students” and “Industry Income”, Low Score = 29, Medium Score = 83, and High score = 28.

Table 33. Detailed description of clusters. Axes 1–3.

Cluster	Size (n)	Size (%)	Overrepresented	% in Cluster	% in Sample	Underrepresented	% in Cluster	% in Sample
1	15	10.0	Academic Reputation: Low	100.0	20.0	Academic Reputation: High	0.0	19.3
			Academic Reputation: Low	93.3	20.0	Research: High	0.0	20.0
			QS Rank: > 100	93.3	29.3	Teaching: High	0.0	20.0
			Research: Low	73.3	20.0	Employer Reputation: High	0.0	20.0
			PCP: Low	53.3	20.0	PCP: High	0.0	20.0
			Country: Israel	13.3	1.4	Age: Younger	0.0	20.7
			Citations per Faculty: Low	46.6	20.0	Research: Mid	26.6	60.0
			Country: Switzerland	20.0	4.2	Employer Reputation: Mid	6.6	60.0
						Academic Reputation: Mid	0.0	60.7
						Age: Mid	4.5	20.0
						Industry Income: High	4.5	20.0
2	22	15.7	Teaching: Low	100.0	20.0	Age: Mid	4.5	20.0
			Region: Europe	77.3	37.9	Industry Income: High	4.5	20.0
			Country: Sweden	18.8	2.6	Citations per Faculty: High	4.5	20.0
			International Faculty: Mid	90.9	60.0	Region: North America	13.6	33.6
			THE Rank: > 100	63.6	31.4	Region: Asia	4.5	22.1
			QS Rank: >90, ≤ 100	27.3	7.1	Country: US	9.1	30.0
			Research: Low	45.5	20.0	Academic Reputation: High	0	19.3
			Country: UK	31.8	12.1	International Outlook: Low	0	20.0
			ARWU Rank: > 80, ≤ 90	22.7	7.4	Research: High	0	20.0
			Industry Income: Low	40.9	20.7	Teaching: High	0	20.0
			ARWU Rank: > 100	54.5	32.9	International Faculty: Low	0	20.0
						Faculty/Student Ratio: High	0	20.0
						Employer Reputation: High	0	20.0
						PCP: High	0	20.0
3	16	11.4	International Faculty: Low	93.8	20.0	Teaching: Mid	0	20.0
			International Outlook: Low	75.0	20.0	Research: High	0.0	20.0
			QS Rank: >70, ≤ 80	37.5	7.1	Teaching: Low	0.0	20.0
			PCP: Mid	100.0	60.0	International Student: High	0.0	20.0
			International Student: Low	56.3	20.7	International Faculty: High	0.0	20.0
			Research: Mid	93.8	60.0	Citations per Faculty: High	0.0	20.0
			Industry Income: High	50.0	20.0	PCP: High	0.0	20.0
			Citations per Faculty: Low	50.0	20.0	PCP: Low	0.0	20.0
			THE Rank: > 100	62.5	31.4	Region: Europe	6.3	37.9
			Country: Japan	18.8	3.6	International Outlook: Mid	25.0	60.0
			Country: South Korea	18.8	4.3	International Faculty: Mid	6.3	60.0
			Region: Asia	43.8	22.1			
4	31	22.1	Teaching: Mid	100.0	60.0	Staff with Awards: No	22.6	37.9
			International Outlook: Mid	96.8	60.0	Age: Youngest	6.5	19.3
			Academic Reputation: Mid	96.8	60.7	Research: Low	6.5	20.0
			PCP: Mid	90.3	60.0	International Faculty: High	6.5	20.0
			International Students: Mid	87.1	59.3	International Faculty: Low	6.5	20.0
			International Faculty: Mid	87.1	60.0	Employer Reputation: Low	6.5	20.0
			Research: Mid	83.9	60.0	Citations per Faculty: High	6.5	20.0
			THE Rank: > 40, ≤ 50	19.4	6.4	PCP: Low	6.5	20.0
			Country: Germany	12.9	4.3	Region: Asia	6.5	22.1
			Employer Reputation: Mid	77.4	60.0	International Outlook: Low	3.2	20.0
			Staff with Awards: Yes	77.4	62.1	International Students: High	3.2	20.0
			Country: Belgium	6.5	1.4	Academic Reputation: Low	3.2	20.0
						PCP: High	3.2	20.0
						Academic Reputation: High	0.0	19.3
						International Outlook: High	0.0	20.0
						Teaching: High	0.0	20.0
						Teaching: Low	0.0	20.0

THE WORLD-CLASS ORDINATION

Cluster	Size (n)	Size (%)	Overrepresented	% in Cluster	% in Sample	Underrepresented	% in Cluster	% in Sample
5	11	7.8	Country: China	72.7	6.4	International Students: Mid	27.3	59.3
			International Outlook: Low	100.0	20.0	Country: US	0.0	30.0
			Region: Asia	100.0	22.1	Region: North America	0.0	33.6
			Alumni with Awards: No	90.9	25.0	Region: Europe	0.0	37.9
			Staff with Awards: No	100.0	37.9	PCP: Mid	9.1	60.0
			PCP: High	72.7	20.0	International Outlook: Mid	0.0	60.0
			International Students: Low	72.7	20.7	Staff with Awards: Yes	0.0	62.1
			Citations per Faculty: High	63.6	20.0	Alumni with Awards: Yes	9.1	75.0
			Country: South Korea	27.3	4.3			
			Age: Youngest	54.5	19.3			
			Industry Income: High	54.5	20.0			
			International Faculty: Low	54.5	20.0			
			THE Rank: > 50, ≤ 60	27.3	7.1			
			QS Rank: > 40, ≤ 50	27.3	7.1			
			International Students: High	81.0	20.0	THE Rank: > 100	9.5	31.4
			Country: Australia	38.1	5.7	International Outlook: Mid	33.3	60.0
			International Outlook: High	66.7	20.0	International Faculty: Mid	33.3	60.0
International Faculty: High	66.7	20.0	International Outlook: Low	0.0	20.0			
Region: Oceania	38.1	6.4	Research: High	0.0	20.0			
Age: Youngest	52.4	19.3	Teaching: High	0.0	20.0			
Research: Mid	90.5	60.0	International Faculty: Low	0.0	20.0			
Teaching: Mid	90.5	60.0	Citations per Faculty: Low	0.0	20.0			
Country: Hong Kong	19.0	3.6	International Students: Low	0.0	20.7			
THE Rank: >30, ≤ 40	23.8	7.1	QS Rank: > 100	4.8	29.3			
QS Rank: >50, ≤ 60	23.8	7.1	Country: US	4.8	30.0			
Employer Reputation: Mid	81.0	60.0	Region: North America	4.8	33.6			
Academic Reputation: mid	81.0	60.7	International Students: Mid	19.0	59.3			
Research: High	95.8	20.0	Age: Youngest	4.2	19.3			
Teaching: High	91.7	20.0	International Outlook: Low	4.2	20.0			
Academic Reputation: High	87.5	19.3	Faculty/Student Ratio: Low	4.2	20.0			
THE Rank: ≤ 10	41.7	7.1	International Students: Low	4.2	20.7			
QS Rank: ≤ 10	41.7	7.1	Alumni with Awards: No	4.2	25.0			
ARWU Rank: ≤ 10	41.7	7.1	Employer Reputation: Mid	33.3	60.0			
Employer Reputation: High	66.7	20.0	PCP: Mid	33.3	60.0			
THE Rank: > 10, ≤ 20	37.5	7.1	Research: Low	0.0	20.0			
PCP: High	58.3	20.0	Teaching: Low	0.0	20.0			
ARWU Rank: > 10, ≤ 20	29.2	6.4	Employer Reputation: Low	0.0	20.0			
Faculty/Student Ratio: High	50.0	20.0	Academic Reputation: Low	0.0	20.0			
Region: North America	66.7	33.6	Staff with Awards: No	8.3	37.9			
Staff with Awards: Yes	91.7	62.1	QS Rank > 100	0.0	29.3			
Country: United States	58.3	30.0	THE Rank: > 100	0.0	31.4			
QS Rank: > 10, ≤ 20	25.0	7.1	ARWU Rank: > 100	0.0	32.9			
Alumni with Awards: Yes	95.8	75.0	Academic Reputation: Mid	12.5	60.7			
QS Rank: > 20, ≤ 30	20.8	7.1	Teaching: Mid	8.3	60.0			
Citations per Faculty: High	37.5	20.0	Research: Mid	4.2	60.0			

Appendix C: Cosine similarity, axes from MCA and CSA

Table 34. Cosine similarity, geographical subspaces.

	<i>Axis 1, CSA North America</i>	<i>Axis 2, CSA North America</i>	<i>Axis 1, CSA Europe</i>	<i>Axis 2, CSA Europe</i>	<i>Axis 1, CSA Asia</i>	<i>Axis 2, CSA Asia</i>
Axis 1 MCA	0.94	-0.14	0.87	-0.34	0.55	-0.59
Axis 2 MCA	-0.37	-0.74	-0.13	-0.46	0.54	-0.14
Axis 3 MCA	0.05	0.46	0.42	0.41	-0.44	-0.66

Table 35. Cosine similarity, geopolitical subspaces.

	<i>Axis 1, CSA Anglo-Saxon</i>	<i>Axis 2, CSA Anglo-Saxon</i>	<i>Axis 1, CSA Europe (no Anglo)</i>	<i>Axis 2, CSA Europe (no Anglo)</i>	<i>Axis 1, CSA Asia (no Anglo)</i>	<i>Axis 2, CSA Asia (no Anglo)</i>
Axis 1 MCA	-0.78	0.56	0.17	0.23	0.98	0.07
Axis 2 MCA	-0.24	-0.16	-0.16	0.45	0.05	-0.08
Axis 3 MCA	-0.57	-0.57	0.63	0.60	-0.35	-0.39

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