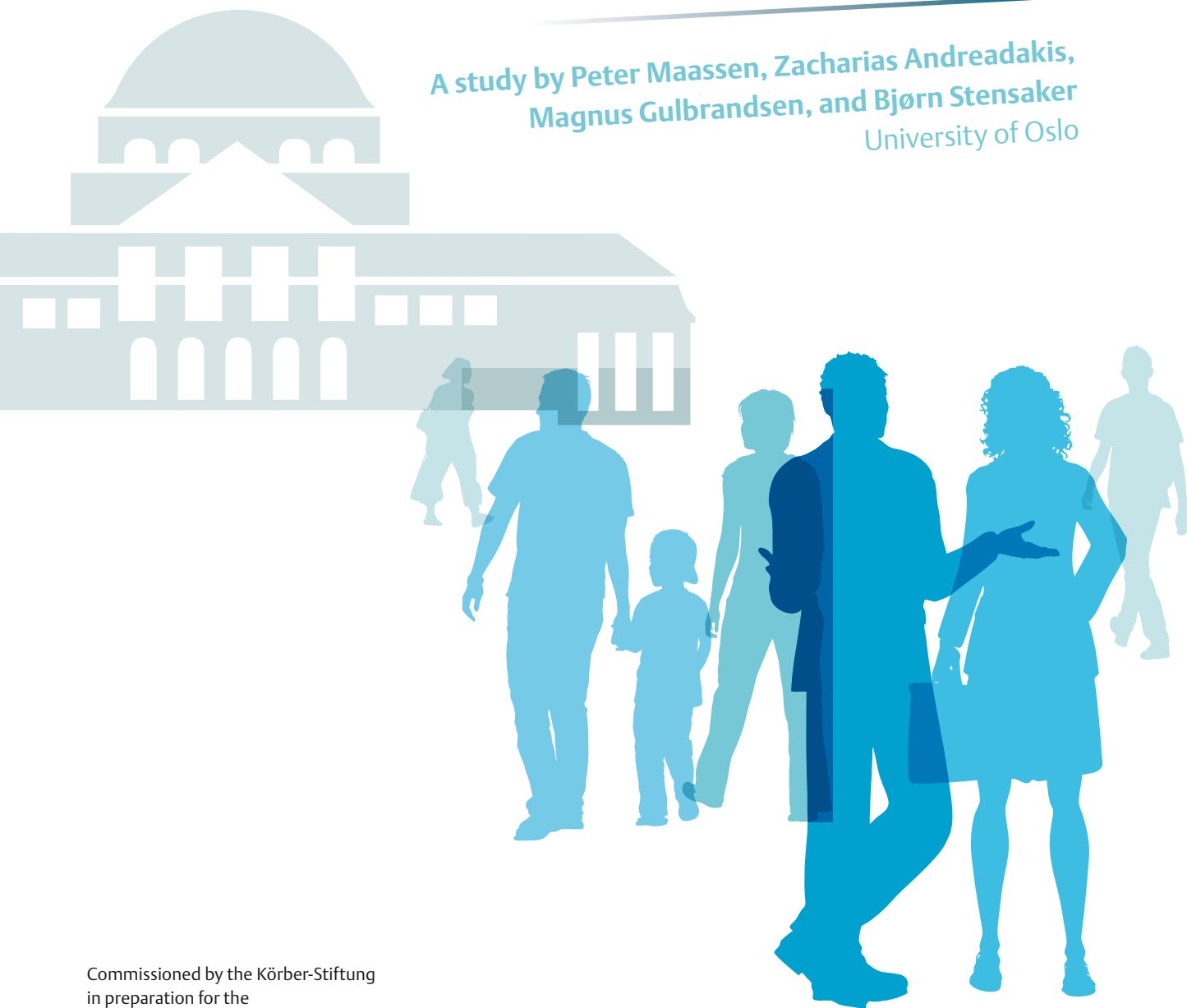


The Place of Universities in Society

A study by Peter Maassen, Zacharias Andreadakis,
Magnus Gulbrandsen, and Bjørn Stensaker
University of Oslo



Commissioned by the Körber-Stiftung
in preparation for the



The Global University Leaders Council Hamburg (GUC Hamburg) is an initiative of the German Rectors' Conference, the Körber Foundation and Universität Hamburg. It is the aim of the Council to initiate a dialogue among university leaders about the current key challenges that national higher education systems around the globe are confronted with. The process of globalization has led to a situation in which higher education systems worldwide are facing a number of similar challenges. These range from threats to university autonomy and academic freedom to conflicting theories of the university and education, and from questions of access to higher education to the financing of university teaching and research.

The co-organizers understand the GUC Hamburg as a forum for discussions on the core mission of the university in a globalized higher education landscape.

The study »The Place of Universities in Society« was commissioned by the Körber Foundation in preparation for the 2019 Global University Leaders Council Hamburg.

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Magnus Gulbrandsen, and Bjørn Stensaker**

University of Oslo

INITIATORS

The study „The Place of Universities in Society“ was commissioned by the Körber Foundation in preparation for the 2019 Global University Leaders Council. The GUC Hamburg is an initiative of the German Rectors' Conference, the Körber Foundation and Universität Hamburg.

German Rectors' Conference

The German Rectors' Conference (HRK) is the association of universities in Germany. The HRK is an independent organisation, representing all types of higher education institutions. Around 94 percent of all students in Germany are enrolled at its member universities. Hence, the HRK is the political and public voice of the universities and the forum for the universities' joint opinion-forming process. The HRK helps to set the political agenda and lead public discussion on all issues relating to the universities. In this context, the HRK represents the universities' positions in Germany and Europe as well as on the international stage. Furthermore, the HRK supports its member institutions and provides them with a platform for exchange among each other.

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Körber-Stiftung

Social development needs dialogue and understanding. Through its operational projects, in its networks and in conjunction with cooperation partners, the Körber Foundation takes on current social challenges in areas of activities comprising Innovation, International Dialogue and Vibrant Civil Society. At present its work focuses on three topics: Technology needs Society, The Value of Europe and New Life in Exile. Inaugurated in 1959 by the entrepreneur Kurt A. Körber, the foundation is now actively involved in its own national and international projects and events. In particular, the foundation feels a special bond to the city of Hamburg. Furthermore, the foundation holds a site in the capital of Germany, Berlin.

www.koerber-stiftung.de

Universität Hamburg

As one of Germany's largest higher education institutions and member of the "German U15"-network of leading research universities, Universität Hamburg is the Flagship University in the Hamburg Metropolitan Region. Founded in 1919, Universität Hamburg is celebrating its 100th anniversary in 2019. The University boasts numerous interdisciplinary research projects, covering the full spectrum of disciplines in the humanities, law, economics, business administration, the social sciences as well as the natural and life sciences. We combine excellent research with academic breadth in teaching and currently offer 170 undergraduate and graduate degree programs, including teacher training and medicine. Additionally, we foster an extensive partner network of leading regional, national, and international higher education and research institutions. As part of the Excellence Strategy of the Federal and State Governments, Universität Hamburg has been granted Clusters of Excellence in four core research areas, all of which will receive substantial funding beginning in 2019: Advanced Imaging of Matter (photon and nanosciences), Climate, Climatic Change, and Society (climate, earth and environment), Understanding Written Artefacts (manuscript research), and Quantum Universe (particle, astro- and mathematical physics).

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PREFACE

The expectations of society towards universities and their perception of their own role are in constant flux. For this reason, universities develop and define their key role in research and innovation, teaching and continuing education in constant dialogue with all groups in society. The spectrum of tasks included in the two core functions of research and teaching has expanded at a growing rate in recent years. Therefore, universities now provide educational programmes for the majority of a given age cohort, pursuing the individual support of talents at the same time. They carry out basic research as well as research focusing on applications. They are faced with international competition and are also drivers of regional development. In this web of demands and expectations, it is important to continuously develop the role of universities in society.

The reciprocal relationship between universities and society is marked by ongoing exchange and mutual influence. On the one hand, universities provide important impetus for society and are a key partner of industry, the public sector, civil society and culture. On the other hand, they also respond to societal developments, pick up on impetus and issues arising from society and are an integral component of economic and social life in their city or region.

In preparation for the 2019 Global University Leaders Council Hamburg, which is being run by the German Rectors' Conference, the Körber Foundation and Universität Hamburg, the Körber Foundation asked Peter Maassen from the University of Oslo to compare and analyse the conceptual position of universities in society as well as real-life practices in the interaction between universities and society in various regions around the world. This study sheds light on the situation in Canada (Ontario), Chile, Germany, Japan, South Africa, and the United Kingdom (England), highlighting both differences and similarities.

The results of the study will provide the participants of the Global University Leaders Council Hamburg with a basis for strategic discussion in June 2019. Around fifty university leaders from all over the world will gather to formulate guidelines for the future development of the interaction between universities and society. Current societal and economic trends such as advancing globalisation and digitalisation require new courses of action. In our view it is essential for universities to actively shape the ongoing processes and to clearly communicate the prerequisites for a successful interaction between universities and society to internal and external stakeholders.

We would like to thank Peter Maassen, Zacharias Andreadakis, Magnus Gulbrandsen, and Bjørn Stensaker for their excellent work. We are convinced that this study will have an effect that will go far beyond the specific reason for its publication, the 2019 Global University Leaders Council Hamburg. "The Place of Universities in Society" should be considered an independent and contemporary contribution to the current debate surrounding the reciprocal relationship between universities and society.

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EXECUTIVE SUMMARY

Growing focus on the universities' third mission: the changing place of universities in society worldwide

PETER MAASSEN, ZACHARIAS ANDREADAKIS, MAGNUS GULBRANDSEN AND BJØRN STENSAKER

Throughout their long history universities have regularly been confronted with intensive discussions about their place in society. In some periods these discussions resulted in incremental adaptations and reforms within fairly stable organizational and normative frames, while in other periods more fundamental changes and reforms were introduced affecting the universities' mission, governance, funding, organization, functioning, and the ideas underlying their institutional foundation. It can be argued that universities are currently facing again fundamental discussions about what they are expected to accomplish for society, how they are to be made more accountable to society, and what kind of relationship they should have with core organizations and actors in society. In the current discussions a variety of arguments can be identified about the need for universities to contribute more directly and effectively to economic growth, social inclusion, and cultural diversity. Important trends inspiring the discussions include political changes, growing worries about grand challenges, social crises, and the emergence of the knowledge-based economy.

The new demands from society imply that universities are expected to become more strategic, proactive and explicit in the development, operationalization, implementation and presentation of their relationships with society, in other words, their 'third mission'. This third mission has emerged over the last decades as an equally important part of the universities' social contract or pact with society as the primary

two missions of education and research. The third mission has replaced the traditional, rather vague notion of university services to society. It requires that universities themselves take the responsibility for linking their primary activities through mutually beneficial partnerships to social and cultural needs in society, to demands from politics and the economy. In order to be successful, this responsibility must be incorporated in the universities' strategic frameworks, which accordingly have to be developed and implemented around all three missions.

While there is general acceptance and acknowledgement of this principle starting-point, there is no agreed upon common understanding of the exact nature of the third mission in the academic literature, nor among the main external stakeholders of the university, including national governments. In many countries state authorities have over the last decades withdrawn from their traditional position of being the sole or main provider of services in areas such as health care and education, thereby creating a gap in the provision of these services. They are looking, amongst others, at universities for filling at least part of the gap, without always clarifying which contributions are expected. In addition, there are essential differences among countries in the extent to which the state authorities have withdrawn from the provision of services, and in the nature and size of the gap. Further, universities themselves use many interpretations of the third mission in their strategies, while there is considerable variation among universities

in the concepts and terms they use when referring to their third mission practices. This is evident in the national and university case studies included in this study.

But while criticism on the apparent lack of serious progress in the development and implementation of the universities' third mission is in some respects understandable, it is reasonable to argue that a careful examination of the universities' third mission and more general the universities' place in society also allows for another interpretation. The variations among countries and individual institutions can also be regarded as a strength and an indication of the important impact of national contexts, as well as of the remarkable adaptiveness and robustness of universities. At the same time, universities could become more strategic and professional in managing, organizing and institutionalizing their third mission, as well as in communicating their reciprocal relationship with various actors and groups with society.

A number of issues are at stake here. First, there is an urgent need for operationalizing and clarifying the political and legal interpretation of the universities' third mission in order to prevent a further growth of the gap between the demands from society towards its universities and the capacity of the universities to satisfy the demands. Such a clarification is required to make society's expectations more realistic, and should also elucidate which gaps in service provision universities are expected to fill. This would also expose the growing varieties among societies when it comes to the expected role of the universities in providing specific services. The question: "What kind of university do we want for what kind of society?" will not be answered the same in each country. Second, universities themselves could become less general, implicit and abstract, and more explicit and focused in the operationalization and presentation of their third mission, and in the way they communicate their third mission activities and achievements. They are increasingly promoting their commitment to knowledge transfer and community engagement, and their knowledge-based expertise in tackling grand challenges. However, in the current dynamics of the democratization

of knowledge, universities can be expected to go beyond a taken for granted cognitive authority position in order to be able to convince society of the value and relevance of their contributions to a better world.

NATIONAL CONTEXTS

National contexts still provide the main political, financial and legal framework conditions for universities' strategies and activities. The study shows how variations in national governance approaches and policies affect the way in which universities relate to society. From the six countries in this study, two have a governance approach strongly founded on one dominant vision. The United Kingdom (England) emphasizes the universities' contributions to the country's economy in its governance approach, while Japan governs universities from the perspective of a national political agenda. Of the other four countries Germany uses a governance approach that integrates various visions, including strengthening the foundations under the open democratic German society, contributing to the economy and civil society, and solving major societal challenges. South Africa and Chile are among the countries in the world with the highest socio-economic inequality among their population, and accordingly universities are expected to contribute to making the societies more inclusive, in addition to other roles they are expected to play. Canada (Ontario) has a university governance model that can be positioned somewhere between the UK/English and the German approach, with a focus on the economic role of universities, while also stimulating their contributions to their local & regional communities.

These differences also come to the fore in major university policies governments introduced over the last 10-15 years. Japan, for example, is stimulating university-industry-government partnerships especially at the local and regional levels, the UK/England is concentrating government funding in study programs in STEM (Science, Technology, Engineering, and Mathematics) areas in universities on the basis of the expected contribution of these areas to economic development, and in Ontario government policies are

aimed at careful stimulating system diversity through strategic agreements. The government in Chile wants to combine social with economic university policies, somewhat comparable to South Africa where the government tries to combine a transformation and economic development policy agenda. German federal higher education policies address a range of issues, including university excellence, maintaining higher education capacity to provide access to all qualified students, improving the quality of higher education, and stimulating innovation in the private sector as well as civil society.

Social engagement is less visible as a governmental policy issue. In Chilean and South African policies there is attention for the universities' role in reducing inequality in society, while in Ontario university programs and support activities for vulnerable students, including indigenous students, are on the policy agenda. But in general national programs and funding opportunities for the universities 'engagement' activities are lacking. As a consequence, the interpretation and operationalization of their 'engagement' with society is to a large extent left to the universities themselves.

UNIVERSITY MISSIONS

Mission statements play an important role in the presentation of universities' understanding of their place in society. The most diversifying and communicative university missions can be found in Ontario, South Africa, and the UK/England. Japanese universities incorporate in their mission statements their history and traditions, as well as specific features of their institutional profile. In Germany explicit university mission statements are a relatively new phenomenon and not all universities present their mission in an easily identifiable way. All Chilean universities express in their mission the importance of their relationship with society.

Nearly all universities have development plans, charters, strategic plans/frameworks, or action plans in which their missions are further elaborated and operationalized. These documents provide insights into the activities the universities (plan to) undertake for

realizing their missions.

Many universities refer to their preferred position in society in their mission statements, but not always, and not always as clear as one might expect. While mission statements are presented on university websites and are visible to the outside world also through other communication channels, the plans, charters, and strategic documents are in general developed and used more as internal documents. This has an impact on the extent to which the contributions of universities to society are visible and known among the wider public.

EDUCATIONAL AND RESEARCH INNOVATIONS

Both pedagogical and academic educational innovations have been introduced in the universities in the study, which include changes in teaching methods, course organization and study programs that aim at attracting non-traditional students. However, most universities emphasize pedagogical innovations, and in this they focus a lot on the use of digital technologies in teaching and learning, and on the introduction of various types of on-line learning, including MOOCs. In addition, new learning outcomes, such as inter-cultural competences have become more common. Also measures for supporting groups of vulnerable students with high levels of dropout have been developed by a number of universities institutions.

Many universities have introduced new types of study programs for attracting non-traditional students or enhancing their students' employability. Also new programs, specialization tracks, and majors and minors, addressing 'grand challenge topics', such as climate change and alternative energy, have been introduced. However, there are only a few examples of new, truly multidisciplinary education initiatives that innovatively go beyond traditional study programs in their pedagogical approach and coverage of disciplinary knowledge.

True innovations are less common in the area of research. This has, amongst other things, to do with the continuous large autonomy of academics

(individually and group-wise) in their research activities. In addition, the rather strict disciplinary organizational foundation (also in the administration) of the university forms a barrier towards new, truly multi-disciplinary research activities. But there is definitely more focus on grand challenges in research activities, and in some cases, for example, at South African universities, new research hubs or niches are identified and supported.

KNOWLEDGE TRANSFER AND SOCIAL ENGAGEMENT

Universities' knowledge (and technology) transfer strategies and activities are focused mainly on industry. Socially oriented knowledge transfer activities are in general captured under the heading of 'engagement'. Knowledge transfer is in five of the six countries in the study rather strongly institutionalized in all universities, as illustrated by the offices centrally in the universities mandated to manage knowledge and technology transfer to society, or in some cases, the establishment of university owned private non-profit knowledge transfer companies. In Chile knowledge transfer is only institutionalized as a central function in the country's research-intensive universities, which has to do with the relatively low level of public investments in R&D.

As the Chilean case illustrates, the diversity among universities is of relevance for the nature of the institutional knowledge transfer activities. Research-intensive universities emphasize, for example, the support to their academic staff in the development of partnerships with industry, especially large international companies, while other universities in the six countries focus more strongly on connecting industry, especially small and medium size enterprises (SMEs), to their academic staff and students. The knowledge transfer activities of universities of technology and universities of applied sciences in the study are in general first and foremost focused on the needs of the local industry, while the transfer activities of the comprehensive research-intensive universities are also globally oriented.

Knowledge transfer is mainly taking place in the following forms: a) collaborative research with private companies; b) licensing, that is, the right to use specific research outputs produced by the university; c) consultancy, that is, 'domain-specific advice and training' to clients in the private sector; and d) knowledge transfer through setting up new businesses (or the commercialization of research outcomes). In addition, there are relevant examples of knowledge transfer practices that involved students (e.g. through internships) and academic staff (e.g. through publications and events).

Universities' engagement activities are mainly identified with social or community development, and community services. A common characteristic among most of the universities in the study is the focus on student engagement, in the form of stimulating students to engage in a variety of social activities, such as environmental protection, education improvement, and health care provision to vulnerable groups. In Chilean universities engagement activities also take place through applied centers, especially in the areas of health care and education, aimed at transferring application oriented science to relevant communities and groups.

The engagement activities of universities are not as strongly institutionalized as their knowledge transfer, and are in general organized in a more scattered and fragmented way, as well as more decentral than knowledge transfer to industry. In many universities engagement programs and opportunities are provided by faculties and departments, and most engagement activities are relatively small and vulnerable. In general, the universities in the study have a rather strong commitment to engagement, a wide range of engagement activities and opportunities (especially for students), a rather impressive impact on the local/regional community, but a relatively weak level of organization and institutionalization, and no directly recognizable university engagement strategy with clearly articulated goals. As mentioned above, also in government policies there is a clearer focus on knowledge transfer to industry and its assumed economic impacts, than on engagement and its assumed social and cultural impacts. As a consequence, there is also more

public funding for supporting knowledge transfer, for example, in connection to innovation, than for university engagement.

THE CHALLENGES OF KNOWLEDGE TRANSFER AND ENGAGEMENT

Overall the universities in this study face the challenge that the management and organization of their knowledge transfer activities is in need of further professionalization. In addition, universities' community or social engagement activities are relatively weakly embedded in the universities' formal management, governance and organization structures. The latter creates certain challenges, but can also be regarded as allowing for flexibility and bottom-up initiatives. Finally, universities need to seriously improve the ways in which they communicate their 'third mission' and preferred place in society.

In most countries, there are rather unclear political and legal framework conditions when it comes to the preferred relationship of universities to society. In addition, also the level of public funding is insufficient for developing the universities' third mission to a level comparable to the primary missions of education and research. Consequently, universities have in general a limited capacity for further developing and professionalizing their third mission strategies and activities. Only in exceptional cases, such as the University of Waterloo, Ontario, has the university been able to come a long way in integrating regular teaching and research activities with experiential education, successful incubation programs and impact-oriented research.

Universities face important challenges when it comes to handling the legal, academic and economic complexities of negotiating about and agreeing upon equal partnerships with industry, for example, in the area of allocating intellectual property rights, exploiting results, and determining liabilities. While this is an area where many universities have started to develop an appropriate capacity, there is still room for further professionalization.

Another challenge is that many engagement activities

initiated by university staff and students are not part of a larger strategic activity of their institution. These 'bottom-up' activities are usually weakly institutionalized and often dependent on the commitment of one or a few individuals.

Further, the continuous 'Ivory Tower image' especially traditional research-intensive universities still have can act as a barrier for strengthening relationships with society. In Chile it is, for example, argued that due to historical reasons, the societal indifference with respect to public and private roles of universities limits the ability to strengthen the collaboration between the state authorities and the public universities to jointly tackle national problems, propose knowledge-based solutions, and implement effective development strategies.

In a number of countries university professors are still rather powerful and autonomous. While many professors are interested in educational and research innovations, as well as in knowledge transfer and engagement, it is in the end up to the individual professor to determine whether or not, and if so, how he/she wants to contribute to strengthening the university's relationship with society. This implies in practice that the room to maneuver for the leadership of many universities in strengthening their institution's relationship with society is relatively small.

In addition to national contexts, also global university templates play a role in the development of the relationship between university and society. This applies especially to the most research intensive universities in our sample. The developments in how they relate to their societies are strongly influenced by their strategic aim to also contribute to global challenges and problems. As a consequence, in their focus on global connectedness and the importance of excellence in their academic activities they resemble more each other than the other universities in their own countries. This might make the efforts of national governments to develop uniform national framework conditions for universities' third missions more difficult.

Finally, there is continuous criticism on universities

that their ‘third mission’ strategies and activities are insufficient until now. While the study shows that especially the engagement activities of universities deserve more attention, as indicated above, part of the problem is also a lack of effectively communicating their achievements so far. In general one can argue that universities are more active in transferring knowledge to and engaging with society than they get credit for. This implies that there is a gap between the activities universities undertake to strengthen their relationship with society, and the visibility, understanding and recognition of these activities among the wider audience.

THE WAY FORWARD

The emergence of the knowledge-based economy, combined with the withdrawal of governments from providing certain public services, the massification of higher education, and other major trends, have resulted in a growing interest around the world in the universities’ relationships with society. In response, universities have made many efforts to renew their primary

processes, develop their knowledge transfer strategies and strengthen their engagement with society. The nature and range of activities realized is rather impressive, and to a large extent contradicts the widely heard criticism that universities do not take their relationship with society serious enough.

Universities are in an important transition period. While the notion of the Ivory tower can be argued to belong to another era in the university’s history, it is still affecting the public image of the university and its place in society. The way forward is to rebalance the university’s three missions and build on the achievements realized until now. This requires a more proactive university leadership, more managerial and academic capacity for the universities’ third mission strategies and activities, more effective university personnel policies and more diverse academic staff career possibilities, and more truly innovative new study programs and educational tracks. A development in this direction also requires the commitment and support of national, regional and local authorities, as well as other external stakeholders of the university.

CHAPTER 1: INTRODUCTION

New demands to universities and their impact on the place of universities in society

PETER MAASSEN

Universities play a critical role in their societies in the handling of knowledge, and the development of expertise for a multitude of purposes. The tasks and activities traditionally attached to this role are multifaceted and have the last decades become more and more affected by trends, demands, and expectations originating outside the university. An important element in this is the global emergence of the knowledge-based economy, which has made the university more visible as a key knowledge institution. At the same time, the political importance of the notion of a knowledge-based economy also challenges the traditional internal control of the university over its primary processes of education and research. It is argued that a successful knowledge economy requires a more externally, that is, a more use- and user-oriented university, which takes the needs of society more effectively into account in the management of its primary processes, and engages more consciously with various societal partners. These developments obviously have an impact on the relationship between universities and society and in this report we will discuss and analyze the findings of a study on how the current place of universities in society can be interpreted. This study was focusing especially on the universities' perspective, that is, strategies, innovations and activities developed by the universities themselves aimed at enhancing their relationships with society. In addition, the study examined the main barriers and challenges the universities experience in realizing their efforts to contribute more effectively and directly to society.

The dual responsibilities for producing new knowledge and introducing new generations of students to

institutionalized and emerging knowledge areas are understood to ideally nurture each other. However, growing tensions among various excellence schemes and the pressures on universities to be more relevant for society may lead to a reallocation or even disintegration of primary activities among academic staff. New university reform agendas have been introduced to address these and other worries. One of the arguments emphasized in the implementation of these reform agendas is that more effective governance structures and management practices are required at all relevant institutional levels in order to prevent negative effects of the growing demands on the universities' overall productivity and their contributions to society.

A closer look at the new demands from society reveals that universities are not only required to produce new knowledge, but are also expected to take the responsibility themselves for transferring (relevant) knowledge to society and engaging with society. In this, transferring knowledge through education to students ("knowledge transfer on two feet") is still essential, but not regarded as sufficient for satisfying all knowledge related needs in society. Further, the traditional notion of services to society as an internally embedded third task of universities and their academic staff is gradually replaced by the more externally anchored and more formal 'third mission' of universities¹. As a consequence we can see new components emerging in universities' mission and academic work, such as entrepreneurialism and innovation contribution, community development activities, impact and impact measurement, and expressions of academic capitalism as well as academic activism.

While universities have always found themselves in an area of tension between tradition and innovation, between past and future, between the Republic of Science and serving society, between conserving what is and preparing for what comes, it can be argued that the current situation is rather unique in its emphasis on the potential value of the outcomes of the universities' primary processes for society. These outcomes are expected to contribute to improving individual life chances and well-being, enhancing national or regional economic and technological competitiveness, strengthening social cohesion, and finding solutions to the grand challenges that our societies face. This is clearly expressed in governmental policy documents as well as in the media. Recently this value is also more explicitly acknowledged within universities, leading to many internal innovations in educational activities and research agendas aimed at making them more directly relevant for society, and to adaptations and innovations in the ways universities transfer knowledge to and are engaged with society. Nonetheless, from many sides there is critique on the universities for their lack of real progress in strengthening their relationship with society, and for the low level of institutionalization of their engagement activities^{II}. At the same time, we know relatively little from a comparative perspective about the nature of the universities' adaptations and innovations in their relationships with society, and the extent to which these are mainly rhetoric and symbolic, or represent more fundamental changes in universities strategies and activities.

Taking the above considerations and these concerns as a starting-point, the underlying study has examined how the (changing) place of universities in society is reflected in a number of key issues:

1. The universities' institutional mission, including the way in which universities address in their missions issues such as the rationality of science itself, and the nature of their aimed at relationship with society at large.
2. The universities' educational innovations, including the use of online, digital learning technologies for reaching non-traditional students, as well as the ways in which universities

adapt their curricula in ways that are regarded as desirable by the employers of university graduates.

3. The transfer of research-based knowledge from the university to society, including the operationalization of the innovation/valorization contributions of the university, and the development of partnerships with private sector companies and public sector organizations.
4. The ways in which universities engage with society, including activities aimed at community development.

Next we will present the countries and universities that were examined in more detail in the underlying study and a rationale for their selection. In addition, a number of perspectives of relevance for understanding the developments in the relationship between universities and societies will be discussed.

NATIONAL CONTEXTS

An important contextual dimension of university transformation is formed by the ideas underlying national governance arrangements with respect to higher education in general and universities in particular. There are many classifications available in the academic literature, and the classification used in this study consists of four visions of university organization and governance (see table 1.1). These four visions are first the university as a rule-governed community of scholars; second the university as an instrument for realizing national political agendas; third the university as a representative democracy; and fourth the university as a service enterprise embedded in competitive markets. The basic starting-point for this categorization is that countries emphasize different (combinations of these) visions in their national higher education policies and strategies, leading to important variations among countries when it comes to the expected contribution of universities to society at large

The first vision, the university as a rule-governed community of scholars (also referred to as 'the

Table 1.1: Four visions of university organization and governance

Autonomy:		University operations and dynamics are governed by <i>internal</i> factors	University operations and dynamics are governed by <i>environmental</i> factors
Conflict:	<i>The University is a rule-governed community of scholars</i>	<i>The University is an instrument for national political agendas</i>	
	<u>Constitutive logic:</u> Identity based on free inquiry, truth finding, rationality and expertise. <u>Criteria of assessment:</u> Scientific quality. <u>Reasons for autonomy:</u> Constitutive principle of the University as an institution: authority to the best qualified. <u>Change:</u> Driven by the internal dynamics of science. Slow reinterpretation of institutional identity. Rapid and radical change only with performance crises.	<u>Constitutive logic:</u> Administrative: Implementing predetermined political objectives. <u>Criteria of assessment:</u> Effective and efficient achievement of national purposes. <u>Reasons for autonomy:</u> Delegated and based on relative efficiency. <u>Change:</u> Political decisions, priorities, designs as a function of elections, coalition formation and breakdowns and changing political leadership.	
Actors have <i>shared</i> norms and objectives			
	<i>The University is a representative democracy</i>	<i>The University is a service enterprise embedded in competitive markets</i>	
	<u>Constitutive logic:</u> Interest representation, elections, bargaining and majority decisions. <u>Criteria of assessment:</u> Who gets what: Accommodating internal interests. <u>Reasons for autonomy:</u> Mixed (work-place democracy, functional competence, <i>realpolitik</i>). <u>Change:</u> Depends on bargaining and conflict resolution and changes in power, interests, and alliances.	<u>Constitutive logic:</u> Community service. Part of a system of market exchange and price systems. <u>Criteria of assessment:</u> Meeting community demands. Economy, efficiency, flexibility, survival. <u>Reasons for autonomy:</u> Responsiveness to “stakeholders” and external exigencies, survival. <u>Change:</u> Competitive selection or rational learning. Entrepreneurship and adaptation to changing circumstances and sovereign customers.	
Actors have <i>conflicting</i> norms and objectives			

Source: Olsen (2007, p. 30)

Republic of Science') is strongly identified with the Humboldtian university model. It argues that the university's institutional identity and self-understanding is founded on a shared commitment to scholarship and learning, basic research and search for the truth, irrespective of immediate utility and applicability, political convenience or economic benefit. The university is supposed to contribute to society as a whole and not benefit only specific individuals or groups, and education is to be open and accessible to all formally qualified. Even though this vision has lost most of its traditional prominence at the national policy levels, it has definitely not disappeared and is still incorporated in national university policies and strategies, especially when it comes to basic research and excellence programs. Within universities this vision is still 'alive' among the senior academic staff, and how universities address this vision in their institutional mission and KT is an issue that has been examined in this study. The three other visions portray the university as an instrument for different groups: first, an instrument for shifting national political agendas and governments, second an instrument for a variety of internal individuals and groups constituting a representative democracy, and third, an instrument for external stakeholders and customers treating the university as a service enterprise embedded in competitive markets. These three 'instrumental' visions are clearly recognizable in national policies and strategies. An empirical question addressed in this study is the extent to which national differences in the visions (or ideologies) underlying national university policies and strategies lead to relevant differences in university missions, study program innovations, new research agendas, knowledge transfer practices, and university engagement.

NATIONAL FRAMEWORK CONDITIONS FOR UNIVERSITIES

How are universities affected by political developments in their national contexts? As expressed in the quote from the European Commission presented later in this chapter, there is a persistent image that universities try to hide themselves in the 'Republic of Science' using the argument of the rationality of

science. This applies first and foremost to research-intensive universities that are consequently required to change, and combine their contributions to the frontiers of science with more proactive KT and social engagement strategies and activities. But also other types of universities and colleges are affected in the sense that the academic quality of their primary activities per se has become less important for the assessment of their place in society than the way in which they meet external demands. What does it mean in practice that the vision of a university as a self-regulating community of scholars has lost most of its traditional prominence? How are national and institutional strategies, initiatives and activities aimed at strengthening the university's contributions to society affected by the dominant ideas underlying the national governance approach with respect to higher education as expressed in the other three visions presented in table 1.1?

First, in those countries that most directly and consequently followed a market-oriented and competition vision in their university governance model, that is, especially the Anglo-Saxon countries, universities have been affected by austerity measures. In the USA this development has been rather extreme with public flagship universities in just a few decades moving from 60-80% of their annual budgets covered by a state block grant to the state grant covering in general less than 15% of their annual expenditures. Also in other Anglo-Saxon countries governments believe in the positive impact of competition, more direct relationships between the university and its users or clients, private, diversified funding (incl. high levels of tuition fees), and needs-driven research agendas. In these countries the role of the state and the size and formal mandates of the public domain have been adapted and in many ways reduced over the last decades, and the political economy can be characterized as a liberal market economy. One assumed consequence for the relationship between university and society is that the state provides incentives and pressures for universities to develop partnerships with socio-economic actors, without initiating, steering or regulating these partnerships itself. In practice this would imply that university-society partnerships are governed through market-mechanisms without government involvement and that universities would

compete with each other for the most attractive partnerships. The attractiveness of specific partnerships is determined, for example, by the prestige attached to it or the income it is expected to derive in the end, either directly or indirectly. The latter can, for example, refer to partnerships that are expected to increase the attractiveness of the involved university for specific types of students or staff.

Second, in those countries in which the university is first and foremost regarded as one of the key institutions for implementing and realizing national development agendas the university's governance structures and practices are in general quite strictly controlled by the state authorities, either through a very powerful Ministry, such as in Japan, or through a direct inclusion of state representatives in the university's leadership structure, such as in China. In both cases excellence is regarded as a key concept for enhancing the university's role in stimulating the country's global competitiveness. Therefore, relatively large amounts of earmarked public funding are invested in institutional and disciplinary excellence schemes, with the aim to strengthen the quality and relevance of the universities' research and education activities and connect them more directly to the national development agendas. Many schemes are introduced to stimulate the universities' academic quality and relevance, but on a trial and error basis. This implies that there is a rather low level of stability in the universities' environment and they have to adapt themselves regularly to new productivity enhancing measures and perspectives introduced by the state authorities. In these countries the role of the state, and the size and formal mandates of the public domain have been relatively stable over the last decades, and the political economy can be characterized as a state-led economy or state-led market economy. For university-society relationships this implies that the state determines the main objectives of these relationships, and that they are much more stimulated if not steered in a top down fashion than being the outcomes of competition and market-interactions.

Third, in those countries where the state authorities adhere to a more balanced mixture of ideas underlying their university governance model over emphasizing one dominant vision, for example, in

Northwestern Europe, government funding levels remain relatively high, tuition fees are low or disallowed, and university governance models try to maintain a balance between democratic and executive principles and components. While we also see in these countries a growing reliance on the working of the market place and competition, and a focus on the contribution of universities to innovation in the private sector, at the same time also the promotion of open societies, democracy and multi-culturalism are important elements of the university governance approach. In these countries the role of the state and the size and formal mandates of the public domain have been adapted, but not necessarily reduced over the last decades, and the political economy can be characterized as a coordinated market economy. For university-society relationships this implies that the state tries to strategically coordinate these relationships, and universities would seek to cooperate with other organizations, including, other universities, in the development and maintenance of these relationships.

Of relevance here is that in the first group of countries the handling of societal problems and challenges is to a large extent seen as the responsibility of social institutions and public sector organizations, such as universities, private sector partners, and other non-state actors. As a consequence, the expectations towards universities for proactively and effectively transferring knowledge and engaging with society can be argued to be more comprehensive and more direct than in countries where state authorities themselves are, at least to a large extent, responsible for making sure that societal problems and challenges are addressed and solved.

COUNTRY AND UNIVERSITY SELECTION

In the underlying study six countries have been selected as the main cases to be studied, that is, Germany and the United Kingdom (with a focus on England), Japan, Canada (with a focus on Ontario), Chile, and South Africa. In this, Germany and South Africa are assumed to fit the category of countries characterized by a balanced combination of

underlying university visions; Chile, UK and Canada are assumed to belong to the category of countries that emphasize the vision of the university as service enterprise; and Japan is assumed to fit the category of countries that build their national policies first and foremost on a vision emphasizing the university's role as a national political instrument.

In addition, the following arguments have been used in the selection of the six case countries. Germany and the UK are two key countries in the European science and higher education area, when it comes to size, impact and quality, output and productivity, and international attractiveness of the national universities. In the turbulent situation Europe is in at the moment, amongst other things, as a result of the financial crisis of the late 2000s and Brexit, the traditional understanding of the position of the university in society is changing in a number of ways. The two case countries were selected for getting a better insight into the nature of the realized changes until now in two different types of national university governance contexts. Japan is selected since it is the first Asian country that has developed world class universities, and has as a consequence, at least until recently, been the dominant university system in Asia. A major government reform in 2004 enhanced the autonomy of the public universities, but recent studies suggest that this enhancement has mainly been introduced 'on paper', while the universities' operations have in practice been continuously controlled in detail by the responsible Ministry. Chile has the highest GDP per capita in Latin America, a national context that has stimulated the combined development of public and private universities, and it has two universities (one public and one private) among the best research-intensive universities in the world. The project has examined how selected Chilean universities (public and private) have developed their position in society, and have operated in a national context that is relatively strongly competition and market oriented. In Africa the university system in South Africa has the highest participation rate of the continent, the highest research output (in the sense of research publications, patents and PhD graduates), and has 5 of the 6 African universities ranked among the 500 best in the world (according to the so-called Shanghai ranking). Also

of importance in this is that the developments in the South African university sector are a central frame of reference for university sectors in the rest of Sub-Saharan Africa, while South Africa also has the university system with the most extensive and reliable data basis, as well as available academic studies and institutional analyses on the continent. Other university systems in Africa, for example, in Ethiopia, Ghana, Kenya, and Nigeria, are experiencing a period of impressive growth and development, but there is in general still a lack of reliable statistics and indicators, as well as valid academic studies with respect to these systems. Finally, the developments in US higher education are studied intensively, and are an important frame of reference for the rest of the world. But instead of selecting one US state the study has included a Canadian province, that is, Ontario. This allowed for the analysis of relevant strategies and activities of Canadian/Ontario top-universities, as well as more regionally oriented universities in a national-provincial context that is market-driven, but presumably in a less extreme form than can be observed in the USA or the United Kingdom. For each of the six countries an overview has been produced of the main current university policies, measures and programs, and these overviews are presented at the beginning of each of the subsequent country chapters.

In each of the six countries five or six universities have been selected for more detailed analyses of their relationships with society. For this purpose the institutional websites, relevant documents, available studies and data, with the aim to map and interpret the visions of these institutions have been examined, as well as the planned and realized changes with respect to their relationship with and position in society. A survey has been undertaken of university leaders at a number of these universities, that is, the member(s) of the central university leadership body responsible for the relationship with society. Finally, for each of the six countries a national expert has been consulted in all relevant stages of the study, including literature and data analysis, fact checking, and final review of each of the national case reports. In each of the countries two globally connected research-intensive

universities have been selected, as well as two additional universities, and one specialized university of applied sciences. The selected universities are assumed to represent the full range of universities in the country in question.

Specific concepts, approaches and perspectives are of relevance for getting a better understanding of how the national context is affecting the relationship between universities and society. In the remainder of the chapter some of these will be discussed briefly.

KNOWLEDGE-BASED ECONOMY

Numerous scholars have documented the transition currently taking place especially in medium- and high-income countries from an economy based on natural resources and physical inputs to one based on knowledge and intellectual assets. The global emergence of this knowledge-based economy plays an important role in the changing position of universities in society, in the sense that universities have become socio-economically more visible and more important, but at the same time politically less special. What does that mean?

As a consequence of the massification of higher education, the growing volume and strategic relevance of university research, and the increasing focus on innovation in private sector production processes and public sector service provision, universities have moved in many countries around the world to the center of national policy arenas. Consequently, higher education policy has become more directly linked to other policy areas, such as science, technology, innovation, business, and labor, and together these form a 'knowledge policy area' that has gained a high status in the political programs and sectoral organization of national governments. One implication of this increasing status is that in addition to the traditional actors involved in the vertical higher education policy pillar, especially Ministry of (Higher) Education and university representatives, new actors have become interested and involved in higher policy processes. These new actors include other Ministries, such as Economic Affairs, Labor, Science and Technology, employers' organizations and unions, and various interest groups. From

the perspective of these new policy actors higher education should be treated by state authorities in the same way as other public sector organizations, such as hospitals, social welfare bodies and public transport agencies. This marked in practice the end of the relatively protected position universities were having in society, where they could determine to a large extent their own affairs. This development started in the 1960s in the USA, while in other countries it is a more recent phenomenon. Overall it has had important consequences for the place of universities in society, in the sense that universities are expected to contribute more directly to socio-economic developments, as can be illustrated by the following quote from a 2003 policy paper by the European Commission entitled 'The role of the universities in the Europe of knowledge':

"After remaining a comparatively isolated universe for a very long period, both in relation to society and to the rest of the world, with funding guaranteed and a status protected by respect for their autonomy, European universities have gone through the second half of the 20th century without really calling into question the role or nature of what they should be contributing to society. The changes they are undergoing today and which have intensified over the past ten years prompt the fundamental question: Can the European universities, as they are and are organized now, hope in the future to retain their place in society and in the world?"

From this perspective, universities themselves have to operationalize how they want to 'retain their place in society'. This implies that internally they have to decide how to adapt and innovate their primary processes (education and research activities), while externally they have to determine where and how they want to contribute more effectively to socio-economic progress, community development, job creation and innovation. In his work on entrepreneurial universities Burton Clark referred already in the 1990s to the demand – capacity imbalance universities are facing, in the sense that the demands from society towards the university have increased so much that no university has the

capacity to satisfy all expectations and demands. Choices universities have to make in determining which demands to satisfy range between direct contributions to the innovativeness and competitiveness of the private sector, contributions to civil society, and contributions to a better understanding of and solutions for society's grand challenges. In addition, for research-intensive universities the contributions they want to make to the frontier of science will impact the capacity they have for other possible contributions to society, including the nature of their knowledge transfer activities.

KNOWLEDGE TRANSFER

Knowledge transfer (KT) from university to society has, amongst other things, been interpreted from the perspective of the commercial value of knowledge and technology. From this perspective universities' contributions to society's development were measured through commercial value indicators, such as dollars or euros earned through licensing, or the number of spin-offs from university research. This focus on university-industry relationships still has a central position in the academic scholarship on knowledge transfer. Consequently, the mechanisms for KT between university and the private sector referred to in the academic literature include the recruitment of university graduates, exchanges of staff, contract research, industry funded facilities, etc.

But commercialization, while important, is not the only indicator for measuring the nature and outcomes of KT from universities to society. Here we can refer to the interpretation of KT presented by the University of Cambridge^{III} indicating that universities have a broader role to play than solely producing knowledge and technologies that can be patented. There are many potential outcomes and benefits of university research and innovation that cannot be reduced to licensing revenue, implying that KT is not limited to the science and technology disciplines and goes beyond university-industry collaborations. According to this interpretation six types of KT can be identified. First, KT is taking place through the universities' students and graduates,

whether through internships or by entering the workforce. Second, knowledge is transferred by academic staff through publications, events and networking. Third, collaborative research with private companies or public organizations is a means for transferring new knowledge produced by the university. Fourth, consultancy, in the sense of 'domain-specific advice and training' to clients in the public and private sector is an important way for transferring knowledge from university to society. Fifth, licensing, that is, the right to use specific research outputs produced by the university, is an effective KT form. Finally, knowledge transfer through setting up new businesses can for some universities be a relevant form of KT. Three factors are argued to contribute to the success of KT, first, the investments (in capacity, funding and time) that need to be made; second, the contacts with external actors that need to be built and maintained, and third the institutional level support (internally and externally) needed for developing appropriate and effective KT circumstances. These types and factors will be used in the examination of the KT strategies and practices of selected universities as presented in the six country chapters in this report.

When examining and interpreting the universities' KT activities in practice we have to remember the specific characteristics of universities which, imply that they are not like businesses. In addition, it is important to emphasize that universities are not expected to develop identical KT strategies in their efforts to strengthen their contributions to society. This means that ideally each university would find its own 'KT niche' that reflects an appropriate balance between the university's size, history, location and strengths, its aspirations and capacities, and society's needs for relevant knowledge and technologies. Accordingly some universities would be expected to focus their KT activities first and foremost on local/regional communities, while others would try to find a balance between global, national and local knowledge transfers; some would focus on building partnerships with companies, while others would also include KT to the public sector in their strategy; and some would see KT as a source for funding their research, while others would be more focused on contributing to the economic development of their region.

In developing their KT activities, the ‘room to manoeuvre’ or institutional autonomy individual universities have is of importance. For understanding how universities interpret and use their autonomy we have to acknowledge that universities are complex organizations, which provide highly specialized services to society. As a specialized institution, with a unique, long history, the university is part of a specific, partly self-regulating scientific pillar or sphere that has institutionalized its understanding of autonomy in a unique way. This represents specific values and norms, logics, and appropriate ways of behavior. As a consequence of the specific characteristics of the university as an institution and the nature of its primary processes, it cannot be expected that changes in the academic core, organization, governance and funding of education and research within universities can be easily dictated by external reforms. The scope for external design is limited and only to be expected to play a major unfettered role under special circumstances with performance crises or external emergencies. The impact of external factors, both in the form of governmental reforms and expectations from larger sets of environmental actors, is also determined by processes within the university and is shaped by the internal structures, institutionally defined expectations, ideas and practices. Relevant issues in this are, for example, the role of ‘prestige’ in the relationship between universities and society, as well as changes in the social contract or pact between university and society.

A PRESTIGE ECONOMY PERSPECTIVE ON UNIVERSITY – SOCIETY RELATIONSHIPS

Universities’ operations can be affected by a prestige economy created by the phenomenon that in the competition among universities for external funding some resources (those derived from high status research funding sources) are preferred to others (those derived from low-status research funding sources and instruction). Governments are contributing to the impact of the prestige economy, for example, by maintaining existing and creating new high status research funding programs, by introducing excellence programs, and by requiring one or more of their national research universities

to be able to compete with the most prestigious universities in the world. With respect to the latter the emergence and impact of global university rankings, among which the so-called Shanghai Ranking was in 2003 the first to be introduced, has been an important factor. The research universities on their side are getting more and more involved in an intensifying global competition for top academic staff and highly talented students.

In the USA, and to some extent in other Anglo-Saxon countries, the impact of the prestige economy is argued to have created a status-based segmentation within universities. High status, derived from a competitive logic and dependent on the success in the external competition for high prestige research funding, means for a university department reduction in educational tasks and activities (especially at the undergraduate level), more internal resources, more tenured positions, and more control over their own resources. Low status, derived from a dominant administrative logic and the result of a lack of success in the external competition for high prestige research funding, implies for a department an increase in educational tasks and activities (especially at the undergraduate level), a low level of internal resources, few tenured positions, and less control over resources. This is a consequence of the authority of the institutional administration in educational matters and its abilities to govern the university’s education activities through the allocation of resources and the control over the academic positions of a department. This means in practice that in high status departments the academics themselves are to a large extent in control over the external high prestige research funding for which they competed successfully, while in low status departments the academics are required to spend a relatively large part of their professional time on educational activities with little or no control over the tuition fees and other sources of educational income resulting from their academic teaching efforts. In other higher education systems, e.g. in Northwestern Europe, still a large part of the annual expenditures of universities is publicly funded by the government through a basic grant, with tuition fees forming at most a small

segment of the university income. Basic grants have been relatively stable and cover in most cases more than 50% and in some cases still more than 65% of the annual budgets of the universities. But also in universities in these countries, even though the basic grants are still relatively stable, some external research funding reflects high prestige and most educational income a relatively low prestige.

PACT WITH SOCIETY

The discussions about the universities' relationships with society are a part of change processes in the larger configuration of socio-economic and political institutions in which universities are embedded. These processes link change in the university to change in the post-1945 global political order and the role of government, in national and global economies, in the understanding of the importance of economic innovation, in public-private relations, and in the use of information and communication technologies. This raises an important question about the university's long-term social contract or pact^{IV} with society. It is argued by many both inside and outside the academic world that the time of the self-governing Republic of Science has passed, and as a consequence there is a reshaping of institutional purposes going on, and some would argue even a reform of universities' institutional identity. Relevant consequences of addressing this 'pact' issue in practice include in many countries fundamental changes in the autonomy of the university and in the academic freedom of individual faculty members, in the university's academic organization and the unity of research and teaching, in who controls specific bodies of knowledge and who defines criteria of excellence and social needs, in the structure

of departments, degree programs and courses, in the relations between those who do research and teach and academic and administrative leaders, and in governments' commitment to funding universities. But universities are obviously not just passive pawns on a board fully controlled by others. They are proactively attempting to transform their educational approaches and research agendas, their operational and management practices, and their institutional strategies and action plans in response to changing needs in society, including changing labor market demands, intensifying innovation needs in public and private organizations and companies, expectations of students, and political priorities. How universities handle the choices they face in this is not only affected by their basic institutional characteristics, but also by their national contexts, as discussed above.

In the subsequent country chapters first a governmental policy overview is presented, followed by an analysis of each selected university's mission statements. Next an overview is given of the main innovations in the universities' education and research activities, followed by relevant examples of each university's knowledge transfer activities. In addition, selected social (or community) engagement strategies and activities of each university are discussed, followed by a presentation of some of the main challenges and barriers the universities experience in their efforts to strengthen their relationship with society. Finally, in each of the six country chapters a comparative reflection of the selected universities' strategies and achievements is presented when it comes to their relationship to society. The final chapter of the report consists of the study's main conclusions and recommendations.

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ENDNOTES

- I Also referred to as community or academic engagement.
- II See, for example, the project ‘Towards a European Framework for Community Engagement in Higher Education’ (TEFCE), co-funded by the European Commission through the Erasmus+ program (Benneworth et al. 2018).
- III See: www.cam.ac.uk/research/news/what-is-knowledge-transfer.
- IV A “pact” can be described as a fairly long-term cultural commitment to and from the university, as an institution with its own foundational rules of appropriate practices, causal and normative beliefs, and resources, yet validated by the political and social system in which the university is embedded.

CHAPTER 2

Canada/Ontario

ZACHARIAS ANDREADAKIS AND PETER MAASSEN

NATIONAL CONTEXT

In Canada, being one of the few OECD countries without a national Ministry of Education, higher education is in essence a provincial policy responsibility. This has consequences for the way in which typical national policy issues are addressed. For example, only in 2014 the Canadian federal government introduced its first-ever strategy for the internationalization of higher education, under the title “*Harnessing Our Knowledge Advantage to Drive Innovation and Prosperity*”. Given this provincial policy embeddedness we focus in this chapter on one Canadian province, that is, Ontario, which has Canada’s largest provincial higher education system.

Higher education¹ in Ontario is governed and regulated by the Ministry of Training, Colleges and Universities (MTCU)² and provided by 20 public universities, a number of small private universities, 24 colleges of applied arts and technology, and more than 400 private career colleges. Currently, around 800,000 students are enrolled in higher education, with over 65% (almost 520,000 students) of the student population enrolled in the 20 universities. According to the OECD’s 2014 Education at a Glance report, Canada has the highest percentage, among member countries, of adults aged 25-64 who have obtained a higher education qualification: 53% against the OECD’s average of 32%. This also applies to Ontario’s population of around 14.2 million inhabitants (2017), with approximately half of the population possessing a higher education certificate, diploma, or degree.

The MTCU promotes the following vision for Ontario’s higher education system:

“Ontario’s colleges and universities will drive creativity, innovation, knowledge, and community engagement through teaching and research. They will put students first by providing the best possible learning experience for all qualified learners in an affordable and financially sustainable way, ensuring high quality, and globally competitive outcomes for students and Ontario’s creative economy.”

The policy priorities identified by MTCU are: the contribution of higher education to social and economic development; the provision of high quality educational experiences for all students; the creation of a financial sustainable and accountable higher education system; the further increase of access to higher education for all qualified students; the support for world-class research and innovation in the Ontario higher education system; and the provision of relevant learning pathways for students in the higher education system. The current Ontario government came into power June 2018, and is made up by members of the center-right Progressive Conservative Party. This government has promised large public funding savings, and the expectation is that the higher education budget might suffer serious cuts.

With respect to the higher education sector’s current funding situation, MTCU has indicated that by 2016-17, “funding to postsecondary sector had increased Can\$23 billion, or by 85%, over 2002-03 levels.” In its 2014-2016 Biennial Report, the Council of

Ontario Universities (2016:10) reports a total of fund balances for the universities amounting to around Can\$50 billion. This represents a strong improvement of the financial basis of universities compared to the situation immediately after the financial crisis of 2008.

An important government advisory agency is the Higher Education Quality Council of Ontario (HEQCO), which was established in 2005 and is funded by MTCU. HEQCO is mandated to provide research-based recommendations to the Ontario government aimed at enhancing the accessibility, quality and accountability of Ontario's colleges and universities. Accordingly, HEQCO's research agenda is focused on three priorities, that is, a) to improve access to higher education for non-traditional and underrepresented students; b) to ensure that students graduate with the knowledge and skills they need to succeed in the workplace and in life by promoting the assessment of skills and competencies; and c) to enhance academic quality and choice by assessing the sustainability of postsecondary institutions and the sector, and by promoting differentiation among higher-education institutions and outcomes-based funding.

As indicated by HEQCO's third research priority, a key policy issue is the differentiation of the Ontario higher education system. For that purpose the MTCU has introduced Strategic Mandate Agreements (SMAs). These SMAs are intended to be the mechanism through which the universities and colleges articulate their unique mission and profile, that is, their mandates, strengths and aspirations. They outline how each higher education's mission and activities align with the overall government's higher education vision presented above.

The first SMA cycle covered the period 2014-2017; currently all Ontario colleges and universities have an SMA for the period 2017-2020. These SMAs will form one element in our examination of the place of Ontario universities in society. For this purpose we have selected five universities, that is, McMaster University, The University of Ontario Institute of Technology, University of Guelph, the University of Toronto, and the University of Waterloo (for

key data of the selected universities, see table 2.1).

MISSION STATEMENTS

Within the overall framework conditions set by the Ontario government's vision, the missions of the five selected universities as presented in their SMAs provide a first insight into the institutional profile each of them is aspiring. Overall the mission statements are very stable, with four universities presenting the same mission statement in their 2014-17 and 2017-2020 SMAs. Only the University of Guelph has renewed its mission: referring to its history and new Strategic Framework its new mission statement emphasizes more strongly its profile as a top comprehensive university, that is both learner-centered and research intensive. In this it has moved somewhat away from a strong student learning orientation to a university that is engaged with society through its teaching and research activities. When it comes to the missions of the other universities, the University of Toronto (U of T) expresses in its mission a profile as an internationally significant research-intensive university with excellent academic and professional study programs. In the mission statement no direct reference is made to U of T's place in society. McMaster University's mission statement contains more elements than U of T's mission, and encompasses the handling of knowledge, its broad commitments in the key academic activities, the importance of soft skills, lifelong learning, as well as the importance of serving various needs of its community and society. In its mission statement the University of Waterloo (UW) emphasizes a single goal, that is, to be recognized as one of the top innovation universities in the world. UW presents a profile that is distinct from other universities in its orientation on entrepreneurialism, transformation, and its intentions to change lives and advance industries, locally, nationally as well as globally. Finally, the University of Ontario Institute of Technology (UOIT) presents a comprehensive five point mission statement, which expresses its position in the university landscape in education ('technology enriched'), research, lifelong learning, industry and community collaborations, and intended learning outcomes for its students, including social engagement.

Table 2.1: Basic features of the five Ontario universities in the study

Key data Selected Universities	Year of Foundation	Student numbers (Fall 2017 – 18)	Campus location(s)	Number of Staff members	Operating budget (2017 – 18)
University of Toronto (U of T)	1827	90 077	Main campus: Downtown Toronto Plus two regional campuses	21 556 (Fall 2016)	Can\$ 2.5 billion
McMaster University	1887	31 843	Main campus: Hamilton Plus four regional campuses	>10 000	Can\$ 1.1 billion
University of Guelph	1964	29 507	Main campus in Guelph, with satellite campuses in Toronto and Ridgetown	3 714 (incl. 789 full-time faculty)	Can\$ 826 million
University of Waterloo (UW)	1957	40 000	Main campus in Waterloo, with three satellite campuses throughout Southern Ontario	3 726 (incl. 1,260 faculty)	Can\$ 789 million
University of Ontario Institute of Technology (UOIT)	2002	<10 000	Two campuses in Oshawa	>1 550	Can\$ 183 million

All in all the mission statements of the five selected universities presented in the SMAs reflect the underlying government differentiation policy, with U of T presenting itself as a global research-intensive university, and McMaster University positioning itself as the dynamic second research-intensive university of the province. Further, the University of Guelph mentions in its statement that it has renewed its mission, thereby indicating that it is evolving into a university that is learner-centered, research intensive, and committed to be relevant for society, and UW is clearly emphasizing its unique innovation and entrepreneurial profile. Finally, OUIT presents itself as a well-connected university with clear and unique profile elements in five areas.

These mission statements are further elaborated in the current SMAs as well as in institutional strategic plans in the form of presentations of each university's future aspirations, where all five universities introduce various elements of their place in society including their contributions to the prosperity and wellbeing of their immediate environment, the province and the country, as well as in some cases, the global community. This can be illustrated by the guiding strategy of McMaster University, *Forward with Integrity*, and its elaborated global as well as local community engagement activities. The latter includes essential contributions to the city of Hamilton's poverty reduction and urban renewal programs, amongst other things, by providing healthcare to citizens in Hamilton who previously were without access to a family doctor. In addition, McMaster University plays an important role in the efforts to make Hamilton a healthier and environmentally more sustainable city to live in^{III}.

INITIATIVES AND PRACTICES FOR STRENGTHENING THE UNIVERSITIES' RELATIONSHIPS WITH SOCIETY

Innovations in primary processes

A central component in the educational and research innovations that Ontario universities have introduced for strengthening the relationship with society is their strong commitment to serving their communities

in an effective and fitting way. The latter refers to the academic profile areas that are emphasized by the universities in their community engagement activities. Strikingly the five selected universities emphasize the importance of mutually beneficial engagement with not-for-profit community partners. Overall, this focus on serving their communities is clearly a more visible and institutionalized part of the Ontario universities' innovations in their relationship with their society than in the universities included from the other five countries covered in the study, with the exception of South Africa.

This can, for example, be illustrated by the rapid institutionalization of digital learning offerings at the five universities. McMaster University lists 30 online courses and blended courses, e-Modules, and more recently MOOCs (Massive Open Online Courses) with the aim to stimulate the access of non-traditional students. Similarly, UW with a total of 499 online courses and 39 online programs – powered through Waterloo's Centre for Extended Learning and through eCampusOntario – seeks to widen the learning spectrum of and the intended audience for its teaching and learning activities. Conversely, the UOIT offers more than 1,400 courses per year, with more than 8% in hybrid format and 12% totally online, also here with the aim to enhance the flexibility and efficiency of student learning. Also U of T has invested strongly in the revision of its educational activities. First, with the 'Expansion of Curriculum Mapping' initiative, it seeks to stimulate the innovation of curricula, by offering updated templates, online mapping menus, and other supports to enable faculty to better define the knowledge they are transmitting to students, while allowing students in turn to better assess and articulate their own learning. Further, under the rubric of Open UToronto, it seeks to initiate the sharing of reusable and accessible digital resources such as e-textbooks, designing personalized learning opportunities and interactive resources available across degree programs. In that context, students and faculty are strongly encouraged to engage in hybrid, flipped, and online classrooms, while U of T commits to growing its MOOC offerings to twenty, with new courses, for example, in urbanization, GIS mapping, and sustainable engineering.

These online (ICT) and blended teaching practices are not the sole manifestation of modification in the universities' educational activities. There is strong emphasis on aligning these emerging new teaching and learning practices with student satisfaction, employability, and market relevance. McMaster University states, for instance, that according to the 2015 National Survey of Student Engagement (NSSE), 86% of the students rated their entire McMaster educational experience as good or excellent in its relevance. Similarly, in 2012-13, UOIT heralds that its graduate employment rate, two years after graduation, was 95% with 90% employed in a job related to their field of study, which is "attributed to UOIT's responsiveness to the diverse needs of employers". The University of Guelph also states that Guelph students' employment rate is over 89% within six months of graduation, and 94% within two years of graduation. UW has developed the world's largest co-operative education program, with 3 000 students participating in 2017/18 in co-op work terms in more than 60 countries. Overall Waterloo students have access to over 7 000 employers located across the globe, more than any other university in North America, and co-op education options are available in most of Waterloo's 100+ study programs. Finally, the U of T has sought to customize the applied character of learning experiences in relevant study programs by establishing in 2017 "The University's Task Force on Experiential Learning", which pursues to tailor the learning experience with labor market relevance. This initiative is connected to a second institution-wide priority entitled "Leveraging our Location(s)", which intends to boost student placements with local partners in the community and support the city of Toronto, "enabling us to enrich undergraduate education while simultaneously contributing to the University's reinvigorated city-building mission."

In many respects, multi-disciplinary approaches play a role in the educational innovations and research activities of the universities. Among a variety of institutional initiatives and projects, four examples can be referred to for illustrating the width and nature of these. First, the University of Guelph, in its "High Impact Practices" project includes a "First-Year Seminar Program", specifically designed to initiate first-year undergraduate students to project-based

interdisciplinary courses that promote research in action and application, and the development of analytic, communication and time-management skills. Second, the U of T offers "Collaborative Specializations" options to graduate students across the university existing of multidisciplinary experiences for students to connect around a particular area of focus outside their home graduate unit. Students in a collaborative specialization must meet all the requirements of their home department in terms of course work, practicum, and/or thesis, in addition to taking the specialized courses of the collaborative program. Collaborative specialization areas include Addiction Studies, Global Health, Community Development, Women's Health, and Indigenous Health. Accepted students can select a thesis topic, a thesis advisor, or a practicum placement from a pool of over 10 disciplines and 180 multidisciplinary professionals. Third, McMaster University has introduced a large number of KT projects including Community-Campus CoLaboratory, a social innovation lab looking at issues of food insecurity, accessible mobility and digital literacy, and the McMaster Research Shop, which enables student research associates to support community partners by undertaking plain language research reviews. Fourth, at UW around 30% of research is funded by industry, mainly through partnerships with federal government agencies that incentivize academic – industry collaborations. In many of these research partnerships the university's interdisciplinary institutes and research centers play an important role. For example, the Waterloo Artificial Intelligence Institute's research projects spans disciplines to include intelligent systems that can detect cancer and heart disease, understand language and emotion, and navigate roadways and factory floors. Waterloo's newest institute, the Cybersecurity and Privacy Institute, opened September 2018 to bring together 88 Waterloo professors, spanning six faculties, whose research is related to cryptography, security and privacy enhancing technologies.

Knowledge transfer and Community engagement

All five universities aim at affecting their local communities (private and public partners) via a direct transfer of research-based knowledge. This strategic intention is embedded in a national context where

university research is regarded as highly important, partly because of the comparatively small industry-based R&D component. According to OECD data Canada has relatively low levels of industry-based research. Among the factors responsible for this situation is that many major companies in Canada are US branch-plants, with the R&D activities taking place at the home office in the USA. Since the share of Canadian research performed in the university sector is relatively high, university-based research plays a larger role in research and innovation strategies at the provincial and federal levels than in most other countries.

A good example of universities' KT practices can be found at the University of Guelph, which, in partnership with the Ontario Ministry of Agriculture and Food and the Ontario Ministry of Rural Affairs (OMAF-MRA), has developed initiatives to engage with rural communities developing a safe and an environmentally sustainable "agri-food" sector in Ontario. A recent economic study suggests that OMAF-MRA's Can\$55M investment in this partnership has yielded over Can\$1.15 billion in return to the provincial economy. UW has set up an entrepreneurship program called Velocity, which is regarded as the most productive start-up incubator in Canada. Velocity provides opportunities for alumni to build start-ups and launch new products, and has worked with more than 300 startups who have raised more than \$750 million in funding to develop emerging technologies and innovative enterprises. Waterloo also looks to explore the possibilities of transferring research-based knowledge to society at a grass-roots level, for example, with the installation of GreenHouse, "a live-in social innovation incubator". Greenhouse is an initiative to solve pressing social, environmental or health problems at their root. It is designed to provide students from all Waterloo faculties with mentorship and coaching in their effort to develop innovative solutions. The majority of the participants are female. GreenHouse entrepreneurs who wish to develop their solutions into self-sustaining ventures often continue on in the Velocity ecosystem. On a comparable vein, McMaster University has developed a start-up venue, entitled *The Forge*, which offers free desk space and guidance to early stage technology-based companies. The Forge has had

among its ranks so far 97 companies, which exported products to over 30 countries. The U of T has an analogous commitment to research-based transfers to its stakeholder audience. The largest provincial KT and social innovation project it is involved in is the MaRS Discovery District^{IV}, which was established in 2000 as a non-profit corporation adjacent to the U of T. MaRS works with medical sciences, ICT, engineering and social sciences. As of 2014, startup companies emerging from MaRS had created more than 4000 jobs, and in the period of 2011 to 2014 had raised over Can\$750 million in capital investments. Another example is the announcement in 2016 of the creation of ONRamp, a 15,000-square-foot facility to house new collaborative and research-inspired workspaces for students, entrepreneurs, and startup companies, as well the RBC Innovation Hub. ONRamp will enable these new companies to network with each other, display their work to potential investors and grow their businesses. In addition, a Can\$3 million fund will be used to create fellowships, award prizes and start a speaker series intended to enhance the university's entrepreneurship ecosystem and foster further research-based spin-offs.

The universities are also actively engaged in promoting access, diversity, and social justice in their communities. Initiatives in this sector are numerous. From McMaster University, the Faculty of Social Sciences' *Scholar in Community* program, is a good example of community engagement and solidarity, and creates networks for practically helping members in the community who struggle with poverty and marginalization. Another example is WU's direct collaboration with the UN on the matter of equity and access, particularly for female students. Waterloo is currently the only Canadian organization involved in the UN HeforShe initiated IMPACT 10x10x10 framework, which involves 10 heads of state, 10 CEOs, and 10 university presidents to advance gender equity. Specific commitments include: boosting female student participation in STEM (*Science, Technology, Engineering and Mathematics*) experiences and academic careers; building the pipeline of future female leaders in traditionally male-dominated disciplines; enhancing female faculty representation to improve the campus environment today and drive towards parity in the

future; and attracting and advancing female leaders into senior academic and administrative university positions. Also the U of T has taken many such initiatives. For example, the Black Student Application Program (BSAP) aims to increase and support black medical student representation at the U of T, by breaking down some of the traditional barriers in this area. In addition, early 2017, the President announced a new U of T Committee on the Environment, Climate Change, and Sustainability that will identify ways to advance the University's contribution to meeting the challenge of climate change and sustainability. The Committee's primary purpose is to enlighten and rally the Toronto community behind this issue.

Organizational structures for supporting knowledge transfer and community engagement

All five Ontario universities have established one or more offices to support knowledge and technology transfer to society. In addition, some of the universities have introduced specific units for supporting the university's community engagement activities. However, the first types of offices are more institutionalized and have a larger capacity than the community engagement units. In table 2.2 an overview is presented of some of these offices and units.

CHALLENGES

The high percentage of persons who have obtained a higher education qualification in Canada is a very positive contextual factor also at the provincial level when it comes to the place of universities in society. This is reflected in a recent survey by Universities Canada^v, which shows that the overwhelming majority of Canadians believe that university research is valuable to society and is helpful to the country's economic perspectives. The survey findings also include that almost all Canadians support investing in international university research collaboration to tackle global challenges and attracting the world's best researchers to Canadian universities for exposing their students to world leading research. At the same time there is a tendency in Canadian federal and provincial university politics to increasingly

emphasize the contributions of the university to economic growth and private sector innovation, in line with the 'service industry' vision of Olsen. This tendency is less dominant than in the United Kingdom (especially England) and the USA, and it is also not as consistently going in one direction as in these two countries. Different governments put different emphasizes in their focus on the role of the university in society, with the current federal government more broadly than the previous one pursuing policies at least some of which recognize that the value of universities to society goes beyond their ability to generate economic benefits in the immediate to short term. Nonetheless, the political focus on economic competitiveness and innovation has its impacts on the universities' possibilities to follow in practice a broad social engagement/KT strategy, encompassing not only economic but also social, political and cultural aims. As argued by McMaster University, a major challenge facing higher education institutions in Ontario is that their relevance to society has not been negated so much as it has been impoverished over time. Consequently, universities' ability to be agents of genuine social progress and transformation is argued to be diminished in proportion to the growing hegemony of a market mentality in Canadian society. It is also argued to affect students' preferences, in the sense that most university students are in the first place interested in the job opportunities their education provides, instead of being open for a multipurpose educational experience, which would include community engagement activities. Overall, as expressed by McMaster University, despite praise for the utility of the liberal arts from Canadian business leaders, a much more mundane utilitarianism still grips recruiters, animates politicians, and convinces parents to steer their children away from the social sciences and humanities—the very subjects through which universities might strengthen their relationship with society.

The UOIT faces the challenge of the relatively low retention rate of its first-year students and seeks primarily to build confidence and facilitate access for students who are in poor academic standing and tend to withdraw from academic programs. This kind of problem is reasonably salient in technical institutions and reveals a distance between globalized intentions and practical

Table 2.2: Overview of relevant offices and units per Ontario university

Universities	1. Knowledge/Technology Transfer Offices 2. Social/Community Engagement Units (all mentioned websites were accessed January 2019)
University of Toronto	1. Innovations and Partnerships Office (IPO) (http://www.research.utoronto.ca/about/organizational-structure/) 2. Centre for Student Engagement (https://www.utm.utoronto.ca/utm-engage/volunteering)
McMasters University	1. McMaster Industry Liaison Office (MILO) (https://milo.mcmaster.ca/) 2. Office of Community Engagement (https://macconnector.mcmaster.ca/macconnect/about/about-us-home)
University of Guelph	1. Research Innovation Office (https://www.uoguelph.ca/research/innovation/) 2. Department of Community Relations (https://www.uoguelph.ca/community/departement/)
University of Waterloo	1. Waterloo Commercialization Office (WatCo) https://uwaterloo.ca/research/waterloo-commercialization-office-watco 2. Community Relations team https://uwaterloo.ca/community-relations/
University of Ontario Institute of Technology	1. Office of Technology Transfer and Commercialization (OTTC) 2. No specific unit(s), but many decentralized engagement initiatives and activities, especially student oriented

realities. The University of Waterloo emphasizes the lack of adequate balances between research, teaching and learning as a major challenge. In a recent document entitled “*Disrupting the 21st Century University: Imagining the University of Waterloo @2025*”, it describes disciplinary silos, as well as the division of academic duties of teaching and research as the main barriers in its pursuit of global impact. For the University of Waterloo, one possible answer to these challenges rests with a focus on shaping local and international talent.

The University of Guelph addresses challenges of broader scope, namely, towards branding its strategic position in the competition, and its relationship with society. In a recently published strategic framework “*Our Path Forward*”, Guelph seeks to define its aimed at new profile as “*a je ne sais quoi, the x factor*”, which unites harmoniously scholarly excellence and an elevated sense of community building. The challenges of Guelph in uniting these two forces are visible in the Strategic Renewal Input documents, available on public domain. There, several engaged community members took the opportunity to provide online and real-time feedback (via e-mails or Twitter) on the process of articulating the role and challenges of Guelph, all pointing to the fact that the issue of combining community building and academic excellence is fraught with inexplicable ambiguity on how it can be delivered in practice.

The U of T is especially concerned about the impact of disciplinary boundaries and the challenges of interdisciplinary sustainability in the face of globally arising issues. As its 2018-2023 *Excellence, Innovation, Leadership* strategic research plan indicates, for U of T the necessary impact to society lies in combining outstanding disciplinary research with interdisciplinary initiatives and units, in the pursuit of flexible thinking against new challenges and sustainable results.

CONCLUSION

Canada has the highest education level of all OECD countries, measured in the share of the adult population that has a higher education qualification. This is also visible in the very high levels of public support

for higher education and university research. One could assume that this implies that the Canadian universities have a central place in society, and the situation in Ontario confirms this assumption. The province possesses a large, well-functioning, essentially public university system that consists of a range of institutional types, from the globally oriented comprehensive research-intensive university to the regionally oriented, specialized, university of applied sciences. A relatively new provincial differentiation policy, as materialized through Strategic Mandate Agreements (SMAs) between each university and the responsible Ministry, is aiming at the further development and institutionalization of a diverse set of institutional profiles, also in the area of university-society relationships.

What do the aspirations and efforts of the Ontario universities tell us about their current place in society? While all five universities address in many ways the nature and importance of their relationships with society, each of them emphasizes different aspects in their educational and research innovations, and their KT and community engagement activities. For example, the U of T is intending to provide its students more structurally and effectively with multi-disciplinary learning experiences, while the UOIT is innovating its pedagogical approaches with the aim to reduce the drop out especially among its non-traditional students. Along comparable lines the U of T and McMaster University indicate that they want to contribute to the solving of challenges at the global, as well as national, regional and local level, while at the Universities of Guelph and Waterloo the global orientation is emphasized less than their national contributions, with UOIT focusing especially on its regional/local contributions.

All five universities emphasize the importance of engagement with society through their students and graduates. It is an area where many initiatives and projects are undertaken, even though each university presents different rationales and intended outcomes for them. When it comes to knowledge (or technology) transfer to society all universities support and stimulate the connections between their research staff and especially industry through one or more central offices. At first sight the five universities

have comparable KT strategies and practices, with U of T focusing on successful partnerships between industry and the U of T research community as well as on managing U of T's portfolio of intellectual property, turning ideas and innovations into products, services, companies and jobs. McMaster University is emphasizing collaborative research and licensing opportunities, while UOIT wants to connect its researchers with potential users with the aim to realize actual impacts of UOIT innovation. The

University of Guelph and the University of Waterloo both have a long and successful track record in the commercialization of their researchers' innovations. All in all the five universities have comparable structures and strategies in their broad range of KT activities, and the differences can be found especially in the size, profile and nature of these activities, as well as the extent to which each university emphasizes an interest in the commercialization of innovations.

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ENDNOTES

- i In Ontario it is more common to talk about postsecondary education than higher education. This is because it is more inclusive in reference to the college/community college sector across the country as a whole. In this chapter, however, we will use the term higher education.
- ii The Ontario Ministry responsible for higher education is named since 1999 Ministry of Training, Colleges and Universities. Between 2016 and 2018, it was briefly renamed the Ministry of Advanced Education and Skills Development.
- iii See, e.g., the Cootes to Escarpment EcoPark System project, in which McMaster University's is the only involved higher education institution (<http://www.cootestoescarpmentpark.ca/about-us>).
- iv For more information, see: <https://www.marsdd.com>
- v See: www.univcan.ca/media-room/media-releases/new-polling-data-shows-canadians-value-research-canadas-future

CHAPTER 3

Chile

ZACHARIAS ANDREADAKIS AND PETER MAASSEN

NATIONAL CONTEXT

Chile has enjoyed a long period of economic growth, which makes it the most affluent country in Latin America by most economic measurements, even if that wealth is spread unevenly throughout society. This growing national prosperity was one of the key factors for the rapidly increasing enrollments at the higher education level. However, this enrollment growth has almost exclusively been within the private sector and led primarily by market forces, with 72% of students today enrolled at a private higher education institution, implying that Chile has one of the most privatized higher education systems in the world.

Chilean higher education consists of three categories of institutions: that is, 61 universities (18 public and 43 private universities), 43 higher professional institutions, and 47 technical training centers. In 2015, the total number of students enrolled in the system reached 1,232,791, representing a gross (total) participation rate of around 55%. Since the late 1990s enrolment in higher education has grown exponentially. The university sector is largest and enrolls around 59% of all students. It consists of 27 traditional universities (all 18 public and 9 private) that are a member of CRUCH (Council of Rectors of Chilean Universities), and 31 mainly small, private universities that are not eligible for state funding. Only universities have the right to award the degrees of *Licenciado* (undergraduate) and the graduate degrees of *Magister*, and *Doctor*. *Títulos Profesionales* in certain restricted fields of study may also only

by offered by universities. The first higher professional institutes were established in 1981. They are all private, most are small and specialized, and many institutes have campuses across different cities and regions. However, four institutions (Inacap, DUOC, AIEP and Santo Tomás) enroll the majority of the students. Degree offerings are limited to programs leading to *Títulos Profesionales* (professional titles), which are not restricted to universities. The technical training centers (*Centros de Formación Técnica*) are small institutions that do not receive direct funding from the government. They offer two- to three-year *Técnico Superior* (Higher Technician) programs, mainly in business administration and technology fields.

Higher education is governed by Chile's Ministry of Education, which provides the legal and statutory framework of the sector. There are six advisory organizations, which advise and inform the Ministry on all relevant policy issues, such as quality assurance, licensing protocols, scientific and technological progress indicators, and financial support.

Compared to other countries the Chilean higher education system is characterized by two principles. The first principle is a high level of privatization. Traditionally, Chilean higher education was free of charge for students and public. However, ever since the higher education reforms of 1981, and especially since the late 1990s and early 2000s, Chile has adopted a rather strict neoliberal ideology in higher education governance. Public regulation was redesigned to become progressively minimal, and the

governmental policy initiatives were characterized by the use of tools, such as market incentives, competition, and performance-based agreements, and were aimed at stimulating economic growth. The vestiges of this political ideology are still evident in the sector, amongst other things, in the form of the high level of privatization (both in the form of private institutions and the percentage of the student enrolment they absorb), and Chilean higher education having some of the highest student tuition fees and student debt levels in the world.

The second principle that characterizes the Chilean higher education system is its political volatility. The sector has neither a structure nor culture of consensus to ensure a common direction of academic development and change, and, thus, the institutional, local/regional, national, and international strategies and academic priorities are highly divergent among institutions. A clear manifestation of this is evidenced in the area of funding. For one, the public levels of investment in higher education are very low, that is, amongst the lowest in the OECD, and are consistently outpaced by the growth in enrollment. In addition, Chile has a low level of public investment in R&D, at around 0.39% of its GDP in 2015, the lowest figure of any OECD country. As a consequence, the Chilean university sector is overall among the least research intensive within the OECD. Research and its innovation potential are not a priority in the national setting. Overall, the funding of higher education has until recently mainly been depended on student tuition and fees, amounting to over 80% of the total income of higher education. This has changed with the introduction during the Bachelet government of tuition free higher education. Currently tuition is free for all students belonging to the poorer 60% of the population. This applies to students' first degree, during the full nominal duration of the program they follow. The public resources, mainly allocated to research-oriented universities, are allocated upon the use of critical indicators, such as student retention, academic qualification of academics, and scientific publications output. While this is in line with common international higher education funding practices, the long-term planning structure and sustainability prospects of the system, such as student recruitment or teaching innovation are neither salient nor rewarded. The

sector, according to the scholarly consensus, operates on a short-term perspective, which is subject to transient trends, while defying meaningful and consistent quality assurance protocols. Within this picture of fragmented and short-term priorities, two recent policy developments deserve our attention.

The first one has been the introduction of a fast-track, high profile public policy entitled “*gratuidad*” in 2016, a measure designed, in response to significant student protests in 2011, to allow for free tuition for lower income students, in an effort to counter low graduation rates and growing inequality in the labor market. This policy, molded under the slogan of ‘tuition-free quality public education’, has been reported to create significant unintended consequences, especially with reference to the ‘crowding out’ of lower income students, who end up either enrolling less in higher education due to augmented competition for free seats or leave institutions drained for resources to catch up with augmented enrolments.

The second policy development of relevance is the recent creation of a new Ministry of Science, with the intention of turning Chile from a primary goods export economy into a knowledge-based economy. In 2015, many Chilean scientists vehemently protested the lack of scientific prospects for early career scholars and the low level of investment in research and development. The establishment of the Ministry of Science is to be coupled with a promotion of the funding for science and marks an attempt to elevate the global reputation of Chile in the research sector. It remains to be seen whether this development will have the intended outcome.

In sum, the governance of Chile's higher education moves between private neoliberal logics and the unpredictably dynamics of political volatility. To further discuss recent developments in this unique higher education system, we will examine in more detail the way in which five Chilean universities, that is, the Pontifical Catholic University of Chile, The University of Chile, The University of the Andes, Chile, the Federico Santa Maria Technical University, and the University of Valparaiso, have developed their relationships with society. (for basic characteristics of the selected universities, see table 3.1).

MISSION STATEMENTS

The mission statements of the five selected universities provide a first starting-point for analyzing their aimed relationship with society. The University of Chile (UCHile) – as the country's main public research university – aims to generate, develop, and communicate knowledge in all disciplines and to conduct research with a transdisciplinary focus in strong collaboration with other regional public institutions. It indicates in its mission that it wants to tackle global problems from a local perspective, addressing the needs of the country and its people. The Pontificia Universidad Católica de Chile (UC) aspires to achieve excellence in knowledge creation and transfer, and the education of people, taking inspiration from the Catholic vision and always at the service of the Church and society. Both are research-intensive universities, and are the only Chilean universities included in the so-called Shanghai ranking of the 500 best universities in the world. Further, the University of the Andes (UAndes), in strong alignment with Christian values, wants to establish an open and inclusive dialogue with society and its needs. The Federico Santa María Technical University (UFSM) has a mission stating that it wants to foster “a university community of excellence” while placing a special emphasis the integration of those who lack sufficient material means. Finally, the University of Valparaíso (UV), as a public university, aspires to achieve excellence in the formation of persons through its education, to be innovative in the production of knowledge, and pluralist in its management. In this way it wants to contribute to the sustainable development of its region as well as the whole country.

The further elaborations of the mission statements and strategic plans of the universities show clearly the intentions Chilean universities have developed with respect to their relationship with society. UChile indicates, for example, that outreach is one of the main elements of its mission. In this regard, the university is committed to knowledge transfer to different spheres of public life, such as the sphere of the state, government and public institutions; civil society, including the general citizenship; and the industrial and productive sector. UC also mentions

community engagement as one of the key elements of its mission, with as one of the objectives to contribute to the social, economic, political, cultural, and technological development of the country through knowledge transfer. All universities display a commitment to the public good, to contributing to innovation, and seek to promulgate sustainable development. The two research-intensive universities emphasize in this knowledge transfer embedded in excellent education and research, while the other three focus more on their contributions through education, and the role of their graduates in community development.

SUCCESSFUL INITIATIVES AND PRACTICES FOR STRENGTHENING THE UNIVERSITIES' RELATIONSHIP WITH SOCIETY

Innovations in primary processes

The five Chilean universities are strongly focused on the innovation of their pedagogical approaches and have introduced a number of initiatives to increase the access of and support vulnerable student groups.

UChile has introduced over the last decade several new educational policies. These include the policy of sustainability, the policy of the prevention of sexual harassment at the university, and the policy of student equity and inclusion. The last-mentioned policy promotes and supports the integration of students with vulnerable socio-economic backgrounds and students from provincial and rural establishments into the University. Further, as a result of the university's conviction to raise awareness of gender issues on campus, the Gender Equality Office was established in 2018, succeeding the Gender Opportunity Office from 2013. A course of action in the area of research aims at the application of publically accessible research for solving the current challenges of society. In this regard, UChile currently leads and participates in 20 Centers of Excellence, representing over 50% of the national level. In these centers high-impact research is conducted on topics that are a priority to the country, such as renewable energies, green mining, social conflicts, natural

Table 3.1: Basic features of the five Chilean universities in the study

Key data Selected Universities	Year of Foundation	Student numbers (Fall 2017 – 18)	Campus location(s)	Number of Staff members	University income (2016)*
Pontifical Catholic University of Chile (UC)	1888	29 655	4 main campuses in Santiago, and 1 campus in the South of Chile	3 566	Chilean pesos \$ 543 970 million
The University of Chile (UCHile)	1842	41 547	5 main campuses located in Santiago	3 825 faculty members	Chilean pesos \$ 625 784 million
Federico Santa María Technical University (UFSM)	1926	18 431	Main campus: Valparaíso Satellite campuses: two in Santiago, one campus on Guyaquil, Ecuador	1 178 (490 Faculty Members)	Chilean pesos \$ 132 562 million
University of the Andes, Chile (UAndes)	1989	7 617	1 campus in Santiago	1 853 (240 full time professors)	N/A
University of Valparaíso (UV)	1981	16 624	Major campus in Valparaíso; 2 satellite campuses in Quinta Region and in Santiago.	1 200	Chilean pesos \$ 82 361 million

*Source: http://www.consejodirectores.cl/public/pdf/anuario/2016/CRUCH-Anuario_Estadistico_2016.pdf

disasters, e-health, and education. Research efforts at UChile are also concentrated on health and welfare initiatives for the community, with a central role played by the University's Clinical Hospital, the largest academic hospital in the country, responsible for training over 50% of the medical specialists. Another example in the area of applied health care is the establishment of the Institute of Nutrition and Food Technology (INTA) that originally was focused on malnutrition and nowadays is contributing to Chile's efforts in tackling various nutrition problems, including obesity.

The Pontifical Catholic University of Chile (UC) has many programs designed to strengthen the abilities of prospective students and enlarge the pool of academic talent. For example, Penta UC is an extra-curricular enrichment program aimed at talented children from 6th grade to high school, mainly from vulnerable schools. Two other UC educational initiatives are the Center for the Development of Inclusion Technologies, which is set up to develop innovative learning technologies for people with disabilities, and the Service Learning Program, which promotes the active learning of students through the application of their knowledge and skills in practice. This consists of services provided to UC community partners with real needs. In addition, the continuing education programs offered by UC have undergone important modifications in recent years, which have led to a growing institutionalization. The aim is to further strengthen quality assurance mechanisms in the area, promote online (continuing) education through UC Online.

The University of Valparaíso (UV) with UChile the only public university among the five Chilean universities in the study, is very strongly committed to contribute to the development of the Valparaíso region through its educational activities. UV wants to produce graduates with various skills and competences, including critical thinking. UV's practical approach is manifested in its investment in innovative educational practices and a student-centered learning approach. An illustrative example, the UV Profile Integration Workshops are an initiative in which the enrolled students, guided by academic advisors, interact with selected communities and

their problems, and develop projects based on the community expectations and preferences. In this educational endeavor, students are rewarded upon interaction with various actors in the environment, in order to develop diagnoses and propose solutions to the problems detected, which seek to tailor their own educational profile and explore a bottom-up change of the curriculum.

The Technical University of Federico Santa María (UFSM) has a more constricted outlook on community impact, which includes direct student engagement. UFSM's students are encouraged to participate directly in the formation and transfer of knowledge via participation in programs such as ING2030, aimed to enhance the entrepreneurial activities of the students and incorporate them in the industry-market-research triangle, and the FSM 1312 training program, which aims at providing students with direct practical experience in the technical fields of their specialization.

Knowledge transfer and Community engagement

The transfer of knowledge to their communities is an important priority for the five universities. However, knowledge transfer (KT) is conducted in unique and specific ways in each institution, not lending themselves to a single overarching pattern.

UC has taken many knowledge transfer initiatives pertaining both to the socio-economic and to the technological development of society. Among a long list of successful initiatives, two stand out for their originality towards engaging their community. First, the Abdul Latif Jameel Poverty Action Lab (J-PAL), established in 2003 as a research center at the Massachusetts Institute of Technology (MIT) and with UC as its main South American partner, seeks to contribute to reducing poverty and improving the quality of life in Latin America and the Caribbean, by creating and disseminating evidence on which public policies and social programs actually work. Second, the Millennium Institute in Immunology and Immunotherapy is one of UC's prime centers of excellence, and undertakes research aimed at fully understanding the functioning of the immune system to develop new therapies to fight

human diseases such as cancer and autoimmune conditions. Other research initiatives include the Áncora UC Family Health Centers network, which is aimed at improving health care provision for vulnerable persons and groups, and the Study Center of Policies and Practices in Education, which is an interdisciplinary initiative aimed at improving the evidence basis for educational policies and practices.

UChile's key knowledge transfer initiative is the Laguna Carén Academic Project, an applied research platform, designed to be UChile's future Innovation Campus, where different knowledge areas, natural and social sciences and technology and art are planned to meet in order to address in a transdisciplinary manner challenges and demands that Chile and the world are confronted with. The first phase of construction will cover 250 hectare of park and infrastructure and is planned to be completed by 2021. Further, UChile has recently developed a strong innovation policy, which includes new internal regulations, resulting in 16 spin-off, 55 licenses, and 77 applications for invention patents.

UChile strongly emphasizes its outreach activities, and for developing new activities aimed at enhancing the university's social engagement the university created in 2014 the position of Vice Presidency of Outreach and Communication. UChile has its own radio station, its own university publishing company, it hosts a series of over 50 academic journals in almost all academic fields and it is developing MOOCs through the UAbierta initiative, which has about 40.000 students who enrolled last semester. In addition, the voluntary service and engagement activities of its students are an important part of UChile's outreach strategy. In the history of Chile, student organizations, such as UChile's Students Federation (FECh), have initiated and shaped important social movements and have pushed forward the national agenda of many of the institutional initiatives listed above.

The University of Andes (UAndes) is a private, not-for-profit university, founded on a mandate of (applied) research, innovation and development. It displays a different practice of knowledge transfer to its community, seen mainly through the development

of innovative applied research platforms and a merchandisable technology portfolio. To operationalize this knowledge transfer, UAndes has created 12 laboratories that support the applied research platforms in the fields of Health and Engineering. These laboratories focus on developing an interdisciplinary technology portfolio, with products and spin-off assets ready for sale in fields such as cell therapy, dental therapy, stem cells, heart treatment and technology platforms for assessing math and reading skills in children. To showcase success in this line of work and UAndes' strategic emphasis on scientific spin-offs, the Institutional Improvement Plan for Innovation (PMI) is a platform for installing and accelerating science-based innovation capabilities, and aims to position UAndes as a benchmark with international projection in innovation in the field of cell therapy and tissue engineering, supported by the Ministry of Education. Areas of cell therapy, tissue engineering, bio-engineering, immunology, and biomaterials for 3D bio printing received and continue to attract generous funding, intending to transition quickly also into the transformation of the campus' human capital and, eventually, to the organization of UAndes' entrepreneurial activities.

UV has established a circumspect outlook on its knowledge transfer practices. Specifically, the UV Institutional Development Plan of 2015-2019, presents a number of knowledge transfer objectives. To achieve these objectives, UV has established both Research Centers and Research & Development Centers, with the fundamental objective of stimulating application oriented research in all appropriate areas of knowledge. To support and channel its community engagement practices, the university has developed networks and close contacts with public and private stakeholders. From the public sector, distinctive examples are the participation in 11 state Commissions, the signing of 107 clinical field agreements in the health area, and the initiation of the Hospital Technological Center project. Simultaneously, from the private sector initiative, the Innovation and Applied Strategic Design and Research Design Management centers, the Center for Organic Agriculture, and the Functional Food Center and the Chilean Pharmacopoeia all participate towards fostering closer partnerships with their social stakeholders.

UFSM has a long portfolio of technology transfer listings, comprising products such as controlled combustion systems to bacterial types and filters for the extraction of chemical compounds. The university is in the position to organize, and streamline the process by developing a Platform for the Management of the Transfer of Innovation, Research, and Technology, in order to facilitate the process of patenting, scouting competition, and securing intellectual property and relevant dissemination. UFSM's focus on community impact via technology production and active student participation is informed and fostered by a broad network of active university alumni, who are intensively involved in the KT, the financial support of the university, and in the transition of the graduates to the labor market. These efforts promote and reaffirm the role of this university especially in its local communities.

Finally, the Clover 2030 Engineering Strategy is a joint initiative of UC and UFSM, aimed at developing the engineering schools of both universities to world-class level. An underlying aim is also to strengthen the innovation capacities of both universities and in such a way enhance the contribution to the country's most critical needs. The four pillars of the initiative are first, to transform engineering education; second, to conduct applied research for transforming lives; third, to develop an entrepreneurial ecosystem for driving innovation; and fourth, to move the two schools and universities to become globally connected organizations.

Organizational structures for supporting knowledge transfer and social engagement

Amongst other things as a result of the low public investments in R&D the selected universities' knowledge transfer activities are less structured and institutionalized than in the other countries in the study. At the same time, community relations and extension are regarded as central components of four of the five universities' profile. However, these are more socially and culturally than economically oriented. This implies that, contrary to the situation in the other five countries, in the organizational structures of Chilean universities community engagement is more centrally structured, while knowledge and technology

transfer are more decentralized, located especially within engineering and natural sciences faculties. The Federico Santa María Technical University is the exceptional case. It does have some knowledge transfer support structures in place, but none in the area of community engagement. In table 3.2 an overview is presented of some of these offices and units.

CHALLENGES

The Chilean universities face a number of challenges and barriers in their efforts to realize their aspirations for strengthening their relationships with society. The universities themselves make a distinction between internal and external challenges. Among the general challenges in Chile that are of relevance to all universities are first the relative indifference of the state and society at large in the possible contributions of the universities to socio-economic development. Second, Chile is characterized by a relatively low public and private expenditure level on R&D ($\approx 0.4\%$ of GDP) and weak connections between the main stakeholders. It has been argued that a stronger alliance between universities, the State, the private sector and public sector organizations is needed, to generate the necessary consensus for enhancing the R&D system in the country. Third, Chile faces major challenges in the unequal distribution of wealth, power, resources and knowledge. As a consequence, large groups among the population still lack access to quality education, quality health care, cultural goods and decent labor. The universities still have a way to go in the adaption to the increasing diversity of their students, be it in pedagogical approaches, innovative teaching styles, use of technology in learning processes, etc.

The Chilean universities in the study also face more specific challenges as can be illustrated by referring to the organizational culture of UChile, being a traditional research university, which is dominated by the prestige of conducting basic and applied research and offering high quality study programs. Consequently, the involvement of the private sector in the university's innovation and KT processes is still weak, leaving much space for improvement in the university-industry collaboration. The Laguna Carén Academic Project illustrates the university's

Table 3.2: Overview of relevant offices and units per Chilean university

Universities	1. Knowledge/Technology Transfer Offices 2. Social/Community Engagement Units/Sections (all mentioned websites were accessed January 2019)
Pontifical Catholic University of Chile	1. Office of Transfer and Development (DTD) (http://edulab.uc.cl/en/office-of-transfer-and-development) 2. Community services (https://www.uc.cl/en/public-service)
University of Chile	1. Office of Transfer and Licensing (OTL) (http://www.vid-cii.cl/innovacion/otl-uch-2-0) (In Spanish) 2. Vice-presidency of Outreach and Communication (http://www.uchile.cl/VEXCOM) (In Spanish)
Federico Santa María Technical University	1. International institute for business innovation (http://www.3ie.cl/) 2. No specific unit(s), but some decentralized engagement initiatives and activities, especially student oriented
University of the Andes, Chile	1. Innovation directorate (http://innovacion.uandes.cl/investigador) 2. Extension website (http://www.uandes.cl/extension)
University of Valparaíso	1. Dirección de Innovación y Transferencia Tecnológica (https://otl.uv.cl/) 2. No specific unit(s), but some decentralized extension initiatives and activities, especially student oriented

intention to strengthen the KT and collaboration with industry. As a public university, UChile faces a number of internal challenges in its efforts to improve its administrative and managing processes in order to overcome the current constraints of the state administration. Due to the high degree of privatization and lack of public regulation of private universities, state universities find themselves in a number of ways in a disadvantaged position. Among the external challenges that Chilean research universities face, is the lack of awareness that the general public has regarding the depth of the overall activities of research universities. Consequently, the connection between UChile's scientific activities and their impact on society should be further emphasized and better communicated to external stakeholders and the wider audience, which also applies to UC. Further, for UC the internal challenges impacting the effectiveness of community engagement rest with the relative lack of integration, institutional coherence, and consolidation of its engagement activities. While UC has developed a large volume and diversity of community engagement activities relatively little is known of their effects. Therefore, the university wants to develop a methodology for evaluating the combined effects of community engagement activities, both in the society and in the university itself, in order to avoid duplication of its efforts and in order to optimize the use of its resources.

Conversely, the University of Andes emphasizes the growing state regulation as its main challenge, which affects the university's autonomy negatively and the way it plans its financing operations. UAndes remains tacit about full consequence of this line of challenges, or about the steps that could be taken to thwart these challenges.

For the University of Valparaíso, an important internal challenge is related to gender and discrimination. In line with the MeToo movement, and its deep cultural roots in the local social setting, the university promotes a sense of awareness, by providing a detailed infographic platform for processing discrimination complaints, while the university undertakes a series of public outreach and information events regarding the issue. Gender rights are an important priority for the social engagement policies of UV.

For the Technical University of Federico Santa María the challenges are addressed on a broader scope, namely, on the international demands for quality, relevance, accountability, and transparency with social inclusiveness in a world of growing international competition. According to this viewpoint, the proximity of Chile's OECD per capita income to the average of developed countries creates challenges of elevated expectations for the establishment of world class institutions, while, in practice, the low public financing of higher education and the overall fragmentation of the sector's priorities create barriers for such efforts.

CONCLUSION

While Chile is one of the most unequal countries on the globe, it is at the same time also the country with the highest representation in Latin America of the lower 20% of the population enrolled in higher education. This illustrates that in Chile engagement of universities with society is an important tool for addressing inequality and contributing to reducing it and its impacts. All included Chilean universities provide examples of engagement intentions and outcomes addressing specific Chilean needs, including in the area of inequality, be it local, regional or national. At the same time, all agree that more needs to be done, while also important framework conditions need to be improved. The latter concerns, for example, the relationship between the state and the universities, which currently lacks a common agenda and understanding. In addition, a number of factors, including the public funding mechanisms for the universities do not stimulate effective KT from universities to society. Also the lack of public acknowledgement of and support for the importance of KT from universities to industry requires action from the universities and other stakeholders.

What do the aspirations and efforts of the Chilean universities tell us about their current place in society? The main type of knowledge transfer (KT) of Chilean universities consists of KT through application and transfer oriented programs and outreach centers, especially in the areas of education and health care, but also in natural sciences (e.g. seismology), law,

public policy and culture. In addition, Chilean universities put a lot of emphasis on the importance of engaging with society through education provided to students. Concerning the first, especially the two more research-intensive universities (UChile and UC) have a large number of research centers that are transferring knowledge to society. Many of these are relatively new and form an effective ‘knowledge bridge’ between university and society. With respect to the second, all universities have developed strategies for recruiting low-income students, and in this various transformation goals are visible. UChile and UC aim at diversifying their student body by recruiting students from low-income families, from the perspective that higher education is a right for all qualified students, independent of a student’s background or origin. An important aim is to enrich the general academic experience of all students by transforming the classroom into a learning environment that includes multiple perspectives. In this, they want to contribute to social mobility. Also UV is focused on student transformation and subsequently societal transformation, through education, but rather from a set of social and cultural goals. For the other two

universities engagement through education is more directly linked to the skills and competences students need to contribute to innovation and the application of new technologies in society.

The other forms of KT introduced in chapter 1 are less common in Chilean universities. KT through students and academic staff, as well as in the form of collaborative research with industry or the public sector are taking place less frequently than in other OECD member states, the latter as a consequence of the very low level of private company investments in R&D in Chile. Also KT in the form of consultancy, licensing and setting up new businesses are not in the core area of the KT strategies and activities of Chilean universities. This KT pattern is also visible in interpreting the factors that contribute to the success of the two key forms of KT in Chile. The universities invest most capacity and funding in education and center/program forms of KT, in areas where they have effective contacts with external actors. The support for KT is largest at the university side, with external support in need of strengthening among most potential KT partners.

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CHAPTER 4

Germany

ZACHARIAS ANDREADAKIS AND PETER MAASSEN

NATIONAL CONTEXT

Three principles underpin the governance of German higher education system. First, based on the 1949 Basic Law of the Federal Republic of Germany, the public governance responsibility for higher education is decentralized, and rests with the 16 federal states (in German: *Länder*). In this, all federal states comply with the basic principles of the ‘Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* of the Federal Republic of Germany’ (KMK), which construes the general principles of German higher education and offers common national framework conditions, for example, regarding the conditions and quality of study, and the mobility and credit transfer conditions of students within Germany. In practice the sector is operating under three different governance arrangements, that is, the arrangements of a) each federal state *per se*, b) the federal states working with each other, and c) the federal states working with the federal government. This tripartite division of the governance responsibilities for the sector requires an adequate coordination structure all the more when also the European level governance competences in the area of research and education are added to the picture.

Second, the system is predominantly public. Even though there currently are over 100 private higher education institutions in Germany, they form only a small, rather fragmented segment of the system. This has to do with the historical principle that German higher education is to be anchored in a host of basic ideas, such as the unity of teaching and research,

the close community of academic scholars, and the prevalence of academic freedom. From this starting point, higher education is habitually considered to be both a public good and a public responsibility. In line with this principle, which was reinforced after 1945 with the pledge for a socially responsible economy, the German higher education system was designed, and remains for the most part, publicly funded. Currently, the federal states are responsible for around 75% of the system’s funding, while around 15% stems from the Federal government, in the form of research funding, special programs, such as the Excellence Initiative / Excellence Strategy and the Higher Education Pact, and through investments in research facilities. The final 10% comes from private sources, including revenues from commissioned research, private funding of research, and income from tuition fees¹. The sector currently operates on a total expenditure of €52.1 billion, with the investment rate in the sector being $\approx 1\%$ of the annual GDP and the total R&D expenditure amounting to €15.4 billion. However, due to higher education’s rapid massification (with 2.8 million students currently enrolled), it is generally agreed that the German higher education sector is undergoing financial strain. Unlike the situation e.g. in the USA and England, the pressure on the public budget cannot be compensated with increasing tuition fee income. In 2014, all federal states abolished tuition fees for students at public German universities. Even though in 2017 one federal state (Baden-Württemberg) reintroduced tuition fees for non-EU international students, and other states might follow, the level is moderate (€1500 per semester), and strictly regulated by

state governments.

Third, the sector is in essence binary and horizontally arranged. The two main types of institutions are the traditional research universities (around 115), which cover the whole range of academic disciplines, focus on basic research and have the right to award doctoral degrees, and the *Fachhochschulen*, or universities of applied sciences (around 220), which focus on engineering and other technical disciplines, business administration, social work, and design areas. Most students (around 65%) are enrolled in the research universities. There are in total almost 400 recognized higher education institutions currently in operation, and in addition to the first two sectors, there is a small third institutional category (with around 2% of the students), the Colleges of Art and Colleges of Music (57).

To stimulate productive and relevant contributions of German higher education institutions to the knowledge-based economy paradigm, two recent policy initiatives of the German Federal Government are of relevance. The first, internationally most visible one, is entitled the “Excellence Strategy”, which is beginning in 2018, and takes the previous “Excellence Initiative”, launched in 2005, one step further. The latter was undertaken in order to improve the quality of German universities and research institutions, with the aim to make Germany a more attractive research location, and enhance its international competitiveness. The new Excellence Strategy is subdivided into two funding lines: Excellence Clusters and Universities of Excellence, with the former seeking to allocate project-related funding in internationally competitive fields of research to individual universities or university alliances. Universities having been awarded with excellence clusters may apply for an additional university allowance. In total, from 1 January 2019 on, around €385 million will be available annually for the funding of Clusters of Excellence, with the aim to fund up to 50 clusters per year.

The Universities of Excellence line is more holistic and long term, seeking to strengthen universities and their international position in research on the basis of successful excellence clusters. Funding

presupposes at least two clusters per individual university or three clusters in the case of university alliances. Funding of approximately €148 million per year will be made available to fund between eight and eleven universities of excellence.

The second is the so-called Higher Education Pact (*Hochschulpakt 2020*). Starting-point is the high number of new students¹¹ and the political aim to maintain the necessary capacity for enrolling all qualified students in German higher education institutions. Currently the *Hochschulpakt* is in its third phase, in which the federal government and the state governments jointly fund more than 760,000 extra study places (in comparison to 2005). In the total period the *Hochschulpakt* is covering (2007-2023), the federal government will invest €20.2 billion and the federal states €18.3 billion.

Two other policy initiatives we want to mention here are the quality pact for education (*Qualitätspakt Lehre*) aimed at improving the quality of higher education, and the Pact for Research and Innovation (*Pakt für Forschung und Innovation*), aimed at strengthening the large non-university research institutes and the German Research Council.

Within this specific federal setting, each university displays different degrees of investment and originality in achieving its objectives and realizing its socio-economic mandate. In the remainder of the chapter we will focus more closely on five institutions: Heidelberg University, the Ludwig Maximilian University of Munich, RWTH Aachen University, the University of Duisburg-Essen, and the TH Köln - University of Applied Sciences (for some basic features of the five universities, see table 4.1).

MISSION STATEMENTS

Compared to the situation in other countries, German universities have traditionally been very homogeneous. In relation to the relative lack of inter-institutional diversity, German universities did not have explicit mission statements expressing each individual institution’s aimed at profile and identity. Only

since the early 1990s there is an interest in developing greater (mainly vertical) differentiation in German higher education, amongst other things, to ensure that at least some German research-intensive universities can remain or become globally competitive top institutions. Consequently, German universities have started to develop their version of institutional mission statements referred to in German as *Leitbild*. These mission statements are in general longer and more detailed than university mission statements in other countries, and can consist of several pages of text. In addition, some universities have a short motto (in German *Wahlspruch*, *Leitmotto* or *Leitidee*), which expresses a certain aspiration or feature of the university. This motto can be old, such as in the case of Heidelberg University with its motto “*Semper apertus*” (“Always open”), or new, as in the case of the TH Köln’s motto “Shape Social Innovation”. Where appropriate, we will in discussing the missions of the five selected universities refer to their longer mission statements (*Leitbild* or *Leitlinien*).

Heidelberg University’s mission statement (*Leitbild*) consists of a set of principles, which are firmly rooted in its academic history. It presents itself as a comprehensive, basic-research oriented university that wants the results of its research to be relevant for and used throughout society. This is also addressed in its motto (“*semper apertus*”/always open), which represents Heidelberg University’s aspiration to generate and harness knowledge and skills for the benefit of today’s and future generations. In this Heidelberg University is emphasizing the importance of transferring knowledge from all its disciplines to society. Heidelberg’s mission statement expresses further the importance of its partnerships with various groups and organizations, including its alumni, non-university research institutes, and private sector firms. Finally, Heidelberg emphasizes its international orientation and global competitiveness, without explicitly indicating how it wants to contribute to solving global challenges.

The Ludwig Maximilian University (LMU) Munich does not have an extensive mission statement as Heidelberg University. It presents as its mission (*Leitidee*) the ambition to develop cross-disciplinary problem-oriented solutions for increasingly complex

future challenges around people, society, culture, environment and technology. It emphasizes that it is one of Europe’s leading universities, with a long history, and committed to the highest international standards of excellence in research and teaching. LMU Munich communicates its commitment to the community through its diversity initiatives, which include not only social inclusiveness from different socio-economic strata, but, also gender mainstreaming, which is an award-winning effort (E-Quality Award) for the university. RWTH Aachen University’s ambition is “to be the best German University of Technology and one of the top five in Europe as measured by academic output, by the quality of its graduates, and by external funding.” While it does not have an explicit overarching institutional mission, various profile and mission statements are presented that apply to parts of its activities. This includes faculty mission statements, as well as a university mission statement in the area of education, which presents the university’s ambitions in the use of digital technologies in education. An important profile element is the so-called “Aachen way”, which refers to a far-reaching co-decision making process in which all university groups participate in a balanced way. RWTH Aachen University further wants to impact the whole urban region of Aachen and the entire tri-border area of Germany, Belgium and the Netherlands, and contribute to the local culture of innovation and social progress. The *Technische Hochschule Köln* / University of Applied Sciences, as rebranded in 2015, sees itself as University of Technology, Arts, Sciences. Its motto is ‘Shape Social Innovation’. In keeping with its motto, TH Köln is convinced that new products, technologies, and services can only be effective, sustainable and meaningful if they are conceptualized and designed according to the principle of ‘Social Innovation’. TH Köln interprets ‘Social Innovation’ as a multifaceted phenomenon which encompasses that social demands need to be linked with the variety of disciplines at the institution. Its mission statement (*Leitbild*) is extensively presented in its university development plan (UDP). In its UDP 2020 the main elements covered in the mission statement are: societal mandate; entrepreneurial culture; quality and excellence in education and student learning; development of potentials in research; scientific further education and lifelong learning; internationalization;

Table 4.1: Basic features of the five German universities in the study

Key data Selected Universities	Year of Foundation	Student numbers (Fall 2017 – 18)	Campus location(s)	Number of Staff members	Operating budget (2017 – 18)
Heidelberg University	1386	29 689	2 Campuses: Old Town Campus and Neuenheimer Feld	13 712 (533 Professorships)	€ 738,5 million (2018)
Ludwig Maximilian University of Munich (LMU Munich)	1472	50 981	Main campus in downtown Munich. Other locations include the HighTechCampus at Großhadern / Martinsried.	6 242 (762 Professorships)	€ 1 785 million
RWTH Aachen University	1870	45 256	1 Main Campus: North-Western Aachen (Midtown and Melaten District)	4 111 (547 Professorships)	€ 948 million
University of Duisburg-Essen (UDE)	1654 (reestablished 2003)	42 835	1 Main Campus: Metropolis Ruhr	5 706 (499 Professorships)	€ 471 million
TH Köln University of Applied Sciences	1971 (First College, the Royal Provincial Trade School, founded 1833)	26 000	Three Campuses: Cologne, Gummersbach and Leverkusen	1 830 (430 Professorships)	€ 176,4 million (Latest available data online 2014)

and cooperation. The University of Duisburg-Essen (UDE) is emphasizing in its mission statement (*Leitlinien*) that it is committed to meeting its social responsibilities. This is elaborated in the presentation of its key profile elements, which include the unity of education and research; interdisciplinarity; lifelong learning; gender equality; the further development of teacher training in the research and education sectors; and contributing to developing the Ruhr region as a science region.

In sum, the production of knowledge with social and economic relevance for students and, ultimately, for the community, constitutes the common referent for all five German universities. At the same time, the presentation of the German universities' mission and institutional profile is, compared to the universities in the other five countries covered in this report, rather elaborate and not very focused. This also makes it more challenging for society to understand what the German universities see as their place in society.

INITIATIVES AND PRACTICES FOR STRENGTHENING THE UNIVERSITIES' RELATIONSHIPS WITH SOCIETY

Innovations in primary processes

The selected universities have made significant investments in the transformation of their teaching methods, their student learning activities, and the learning outcomes of students.

TH Köln has developed over the last decade a series of new and unconventional teaching and learning activities, which are, amongst other things, aimed at stimulating sustainable learning processes. An example is the interdisciplinary project week in which each semester 700 students from all faculties work in heterogeneous groups and gain insights of relevance for their future professional career through research- and problem-based learning approaches. Another example is the Open educational room project, in which students and teachers from TH Köln invited visitors in an urban shopping center to experience teaching, research and development live. In this way visitors had the opportunity to familiarize

themselves with technologies such as VR-glasses, 3D printer, interactive displays and robots. A final example concerns student projects undertaken in the Cologne Institute of Conservation Sciences (CICS) aimed at developing concepts for the conservation of cultural historical assets. In this TH Köln and CICS work closely together with partners from culture and civil society, such as museums.

UDE has developed an extensive strategy for e-learning and the use of digital technologies in teaching and learning, which is understandable from the perspective that the university has a relatively high number of first-generation students and students with immigrant backgrounds. Cooperative forms of teaching/learning (for example, wiki-projects or online-simulation games), support for self-regulated learning (for example, formative, adaptive online-assessments or interactive screen-experiments), and using student-centred learning approaches (for example, inverted-classroom-models, which use presence-phases qualitatively differently), are all innovations that have been introduced. The aim of these is to enable students to have more intensive exchanges among one another and to stimulate student engagement. At the same time these innovations are expected to assure regular feedbacks in times of overload, provide individualized formative assessment and feedback protocols through learning analytics (data logs on platforms, time per task, etc.), and ultimately, raise the teaching and learning quality of students by integrating and orienting their learning opportunities to align with past and future teaching experiences.

RWTH Aachen is also committed to developing new teaching and learning practices, in particular via online and blended learning practices. Examples include MOOCs, many flipped classroom opportunities, and web-based "serious games", such as trans-Action (a business and economics game which forces the learner to move through the entirety of the supply chain and internalize the scope of various problems in practice). In addition, e-learning and e-examination platforms (for example, Dynexite) and learning apps (for example, RWTH-App, where you can pose questions to the lectures directly during the lecture), all synthesize a highly circumspect and innovative

teaching and learning agenda for engaging students and social partners.

The two other institutions are research-intensive universities, both ranked among the 60 best in the world in the so-called Shanghai ranking. Like other research-intensive universities in this study they highlight in a number of ways their excellence in research and education. They are less focused on educational innovation in their educational strategies than on the importance of the links between research and course content. Within this broad set of institutional framework conditions LMU Munich has, for example, invested in MOOCs with subjects of assumed popular appeal, such as Nutrition and Lifestyle in Pregnancy, and Circadian Clocks and Life Rhythm. What is more, LMU Munich devotes resources towards teaching students with disabilities and chronic illnesses, not only with personalized teaching tools but also with a wide variety of instruction resources and personal advising. Heidelberg University is intensifying the use of novel e-learning tools, such as Moodle, E-Assessment, or Open Educational Resources (OER), in order to prepare students for online teaching and learning scenarios and blended learning practices, where they can interact with peers and instructors and get structured feedback on their performance. In addition, it has introduced new interdisciplinary study programs, such as a Master of Arts program in Transcultural studies.

When it comes to their research activities, overall the five German universities are becoming more directly and explicitly focused on so-called grand societal challenges. Heidelberg University is, for example, highlighting its research on all aspects of ageing, while LMU Munich has refined over the last 15 years its research profile in a sustainable fashion through the *LMUinnovativ* process in 2004, and based on that the so-called 50-40-10 strategy in 2008/09. This strategy implies that about 50 percent of the vacant professorships prior to 2016 should be filled by candidates with the same thematic orientation and 40 percent should be redesignated to cover new research areas, while the remaining 10 percent should be used for follow-up funding of the Excellence Initiative. In line with the strategies at Heidelberg University and LMU Munich, also at RWTH Aachen University

research is focused on problems arising from global challenges. The aim of the university's strategy is to provide solutions for today's complex and multi-faceted problems by developing an integrated interdisciplinary approach to research. For that purpose eight key research areas have been identified, including Energy, Chemical & Process Engineering (with a focus on the provision of sustainable energy and materials), and Medical Science & Technology (with a focus on the investigation and development of new technologies and processes for medical applications). TH Köln has innovated its more applied oriented research activities, amongst other things, by focusing on barriers that immigrants face towards their smooth integration to the labor market and the community, and establishing methods and solutions for sustainable material cycles and resource management. In this the institution has a strong regional focus. TH Köln aims at creating an experimental setting in which science and civil society collaborate on new solutions, social innovation and practical applications, while experiencing them through pedagogical and under-researched media.

Knowledge transfer and Community engagement

Besides the development of innovative teaching and learning activities and changes in research agendas, all five universities are actively promoting knowledge (or technology) transfer to society, which includes for all universities the institutional support for KT events. At the same time, knowledge transfer is not in all universities institutionalized in a separate office or unit in the central administration (see table 4.2). In addition, the notion of social or community engagement is hardly visible and far from being institutionalized at German universities, even though one could argue that the universities include forms of social engagement in their knowledge transfer activities and structures.

A first example of knowledge transfer to society comes from TH Köln in the area of potable water. The OpenWater OpenSource (OWOS) project investigates solutions to the challenges from the areas of climate protection, resource efficiency and raw materials mentioned in the 'Progress NRW'12 research strategy, while engaging not only researchers, but

also stakeholders from both business and civil society, for example, consumers and high school students. A network of water management companies and public associations is connected to the project to ensure that research results are validated in practice and socially relevant issues are addressed. Another example concerns the project “:metabolon”, which explores how waste materials can be processed and recycled. It is developed jointly by the ‘*Bergischer Abfallwirtschaftsverband*’, a regional special purpose association that ensures sustainable waste disposal in the region, and TH Köln. As part of the project a landfill has become a transdisciplinary center for sustainable resource efficiency, conversion of materials and site-related environmental technologies and techniques. TH Köln has announced a new transfer strategy (*Transferstrategie 2025*) with the aim to establish another transfer culture. The motto in this process is: “To make knowledge socially effective” (*Wissen gesellschaftlich wirksam zu Machen*). Also UDE is committed to operate in close proximity with its regional stakeholders. Through its main research areas, that is, the nanosciences, the biomedical sciences, urban systems, and the broad area of “transformation of contemporary societies”, UDE is highlighting the support it receives by the third-party local industry and market, such as the Mercator Foundation, based in Essen. UDE sees itself as an international university with a strong regional orientation, which includes regular exchanges with city leaders and institutions, including the *Regionalverband Ruhr* and the *Initiativkreis Ruhr*. Aim of these partnerships is to make the Ruhr region a more attractive science and student study location.

RWTH Aachen has a Division of Technology Transfer, which belongs to the Department of Research and Career within the university’s central administration. In order to advance the various transfer processes in a targeted manner, the Division of Technology Transfer collaborates in many transfer activities with RWTH Innovation GmbH, a private limited company set up in 2017. This implies, for example, that the Division’s IP Management group supports invention and patenting processes, and provides services to potential start-ups in close cooperation with RWTH Innovation GmbH. The RWTH Aachen Entrepreneurship Start-up Center lists over 40 institutional and international partners of

international caliber, such as Deutsche Telekom and Viessman, who provide ample employment opportunities and early career guidance for its graduates. Moreover, RWTH Aachen’s list of spin-offs and its IT start-up labs provide an extensive illustration of its regional and international impact in the area. LMU Munich provides a range of customized services for the transfer of knowledge and technology through its transfer office (*Referat für Transfer*). These include corporate partnerships, that is, supporting LMU academic staff in initiating cooperation projects with partners in industry and commerce; IP Management through advising scientists, students and doctoral students who wish to obtain patent protection for their inventions; the LMU Spin-off Service, which supports students, post-graduates, academic staff members and professors at LMU Munich who aim to set up a “spin-off” company based on the results of research carried out at LMU; and Societal innovations, which supports the university’s faculties in the analysis of the need for innovations in society and the development of contacts to societal interest groups. This service is especially aimed at social sciences and humanities. Knowledge and technology transfer takes place in many different forms at Heidelberg University, for example, the “Industry-on-Campus” concept is aimed at supporting longer-term cooperation between Heidelberg University and industry with respect to strategically oriented basic research. Even though it does not have one central office for technology transfer, there are decentral units, such as the technology transfer Heidelberg GmbH, which has been established as the commercial arm of the University Hospital and Medical Faculty of the University of Heidelberg for the promotion of research findings and innovative technologies. Other examples are the Catalysis Research Laboratory (CaRLa) in which postdoctoral candidates from Heidelberg University and BASF are collaborating at the Catalysis Research Laboratory (CaRLa) in the field of homogeneous catalysis; and the Heidelberg Collaboratory for Image Processing (HCI), which was set up in 2008 by the university and partners from industry. As the largest image processing center in Germany it comprises three university professorships for imaging processing as well as postdoctoral positions financed through the Excellence Initiative and the participating companies. A prominent knowledge

transfer feature at Heidelberg University is the number of startups, as well as spin-offs.

As indicated, the five universities transfer knowledge not only for economic, but also for social purposes. Of the many initiatives to this effect, the refugee crisis has recently led to a lot of engagement activities at the five universities. For TH Köln, language training of refugees has, for example, been an important activity. Related courses of action towards the refugee crisis and the community awareness around the issue are also undertaken by RWTH Aachen, which provides a wide continuum of academic assistance, such as language acquisition preparation, bridge courses, and student scholarships on a need-basis. Heidelberg University has also contributed to supporting refugees, with financial, medical and academic support initiatives, which also engage the community for their integration. Further, with initiatives such as “Education through Responsibility”, as well “Fleeing for Broader Horizons” UDE and LMU Munich seek to engage local and regional communities with values of active citizenship and acknowledgement of heated issues of migration and social integration.

Organizational structures for supporting knowledge transfer and social engagement

All five German universities have developed strategies and specific approaches for supporting knowledge and technology transfer to industry. However, not all five universities have established a central office for technology or knowledge transfer. In addition, none of the universities has set up specific central units for supporting the university’s community engagement activities. In table 4.2 an overview is presented of some of the knowledge transfer offices and units.

CHALLENGES

German universities have the last 10-15 years in many respects strengthened their relationship with society, in other words their ‘third mission’, especially through their KT activities. Nonetheless, they still lag behind universities in other countries, especially in the Anglo-Saxon world, when it comes to the

professionalization of KT management and organization, the development and institutionalization of community engagement activities, and the effectiveness of their communication about their aimed at place in society. At the same time, the division between private sector oriented KT, and the KT (and community engagement) activities oriented towards civil society is not as sharp in German universities as elsewhere. This can be argued to be in line with the ‘open society’ vision of Olsen (see chapter 1). In all five universities transfer activities aimed at civil society are included in the universities’ KT strategies and intentions, even though the main focus in the actual KT activities is still on transfer to the private sector. The latter makes it understandable why the German federal government announced in 2018 the establishment a civil innovation oriented funding program for leap innovations.

In addition to the general challenge when it comes to the need to further professionalize the management and organization of their KT activities, pay more structured attention to community engagement, and improve how they communicate their ‘third mission’ and preferred place in society, there are also a number of more specific challenges German universities face in their relationship with society. First, there are clear legal challenges. Within the existing legal framework in Germany there is in general a lack of flexibility and room to maneuver, implying that contractual stakeholders are bound by the meticulous regulation of financial contributions, allocation of intellectual property, exploitation of results, rights for publication, and liabilities. Consequently, negotiations around these issues can be protracted, costly, and inflexible, consequently adding to the administrative burden and the adversity of external stakeholders to engage in such a process. Second, there are certain economic challenges. In the German society there is the general idea that universities are publicly funded and therefore their KT services should be offered for free. However, the growth of ‘third mission’ activities is not accompanied by a growth in the public funding of universities, which implies that a lot of these activities are in practice dependent on the ‘voluntary and free’ contributions of the universities’ academic staff and in many occasions also students. Another economic challenge concerns especially the KT to

Table 4.2: Overview of relevant offices and units per German university

Universities	Knowledge/Technology Transfer Offices (all mentioned websites were accessed January 2019)
Heidelberg University	Website: Industry cooperation and Technology Transfer (https://www.uni-heidelberg.de/research/transfer/industry/)
Ludwig Maximilian University of Munich	Das Referat für Transfer (www.uni-muenchen.de/forschung/service/unternehmen/forschungstransfer)
RWTH Aachen University	Die Abteilung für Technologietransfer (http://www.rwth-aachen.de/cms/root/Die-RWTH/Einrichtungen/Verwaltung/Dezernate/Forschung-und-Karriere/~rdg/Abteilung-4-1-Technologietransfer/)
University of Duisburg-Essen (UDE)	SSC Ressort Forschungstransfer (https://www.uni-due.de/ssc/fotrans/index.php)
TH Köln - University of Applied Sciences	Website: Wissenstransfer (https://www.th-koeln.de/forschung/wissenstransfer_33537.php)

public organizations, which are in general not able to pay for university services. A final issue concerns the expectation that universities continue successful third mission activities that were developed as externally funded projects. Either universities face external criticism when they discontinue a successful a ‘third mission’ project, or they might face internal challenges when they use their basic grant for ‘cross-subsidizing’ a ‘third mission’ activity.

A third challenge is formed by the relatively high dropout rate in German higher education, especially among non-traditional students. All universities want to raise the rate of successful completion of studies of their students, and for that purpose they are introducing innovative teaching and learning concepts and new qualification requirements for teachers. But also realizing academic innovations of study programs and enhancing students’ employability have become important challenges that have not received the same attention as the pedagogical innovations in all universities.

A fourth challenge concerns the relatively large individual autonomy of German professors. As a consequence, while many German professors are actively involved in KT and other third mission activities, a large number is not, and prefers to focus on primary activities (research and teaching) only, without the university leadership being able to directly influence the professional choices of their academic staff. Related to this challenge is the issue of the status differentiation between teaching and research, which promotes, especially in the research intensive universities research performance at the cost of teaching involvement and does not reward the successful training of the future generation of scholars. One of the involved universities acknowledges the shortcomings of rankings as a reductive means of measuring academic performance, yet states that “it cannot ignore their normative effect.”

CONCLUSION

Germany has an economy with a private sector that is globally competitive in many areas. There is a long tradition of university-industry collaboration,

which has in many respects contributed to this global industrial competitiveness. What can be observed the last 10-15 years is a professionalization and further development of the relationships between universities and the private sector. The notion of the knowledge economy, the strong political and economic focus on innovation also in Germany and the EU, and the influence of ‘innovation regions’ such as Silicon Valley, have also had an impact on the preferred university – private sector relationship. In addition, and in line with Olsen’s ‘open society’ vision, how the university relates to civil society is apparently a more important issue in Germany than in countries which adhere a market dominated vision, or a political agenda vision. Strikingly while the civil society orientation is included in the German universities’ KT strategies, in practice KT to civil society and the notion of community engagement are developed only relatively weak as a strategic university activity. This has to do with a number of the above presented challenges, including economic ones, and the autonomy of Germany professors. In addition, one could argue, again in line with Olsen’s ‘open society’ vision, Germany is a society where the ‘gap in social services’ to be filled by public sector organizations, such as universities, is smaller than in many other societies, especially those dominated by a market orientation governance vision. The German authorities still have an important role to play in the provision of all kinds of social services, which also shows in the relative high level of public funding of universities. As a consequence, certain university community engagement activities that attract a lot of attention are in areas that are more characterized by their national, political importance, such as the refugee crisis, than being part of local or regional community development needs, agendas, and practices.

What do the ‘third mission’ aspirations and efforts of the German universities tell us about their current place in society? First, educational innovations are quite important at German universities, but consist first and foremost of pedagogical changes, and the use of digital technologies, and less so of the academic adaptation of the curricula in relation to changes in society. With respect to the latter German universities are especially focused on stimulating interdisciplinary academic program development.

Second, compared to, for example, Ontario, there is a lack of clear university profiles with respect to the university – society relationships. This is related to the lack of any form of stratification or formal inter-institutional diversity in the German higher education system, even though informally there are important differences among the universities especially when it comes to the nature and size of their research activities. As a consequence, there is considerable overlap in KT strategies and intentions among the universities. At the same time, the KT orientation of German universities is broader and less exclusively private sector organized than in other countries. What can be mentioned here is the somewhat special position of TH Köln as the country's largest *Fachhochschule*, which has adapted its institutional identity (in between traditional *Fachhochschulen* and research-intensive universities). TH Köln strongly focuses on social innovation, and is in the process of developing a new transfer strategy.

Third, it is difficult to understand how the universities themselves interpret their place in society. KT is in general organized as part of the universities' research activities, and information on the way KT is organized at the universities is not as clear and insightful as one might expect. In addition, as indicated, German universities have hardly developed their community (or social) engagement strategies in a formal and visible way. There are many examples of effective engagement partnerships of the German universities with local and regional private and

public organizations, but the link of these to the universities' 'third mission' strategies and action plans is unclear.

Of the types of KT introduced in the first chapter KT through students does not receive a lot of attention from the German universities. Instead there is more focus on the transfer of knowledge by academic staff through events and networking. This type of KT is in general actively supported by the universities. Also collaborative research or partnerships with private companies is an important form of KT for German universities. Partnerships with public organizations are stimulated and supported, but there are in general fewer examples of public than of private KT partnerships and collaborations at the five universities. KT through consultancy, in the form of advice and training' to clients in the public and private sector, is undertaken by German universities, but not as a key form of transferring knowledge from university to society. Further, licensing in the form of the right to use specific research outputs produced by the university is a KT form that is not very actively pursued by German universities. Instead four of the five universities have an IP management function in their central administration, aimed at supporting inventions and patenting processes of the academic staff, as well as supporting university start-up projects. The latter is a rather successful form of KT at German universities, given the relatively large number of new businesses and start-ups at three of the five universities.

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ENDNOTES

- I For a more detailed discussion of the public funding of German higher education, see: <https://www.hrk.de/activities/higher-education-finance/>
- II The participation rate in German higher education has increased from 37% in 2005 to currently (2018) around 50%.

CHAPTER 5

Japan

ZACHARIAS ANDREADAKIS AND PETER MAASSEN

NATIONAL CONTEXTS

A central characteristic of Japanese universities is that they form an East-West hybrid, in the sense that they are founded on both Eastern and Western academic influences. The Meiji Restoration in 1868 marked the beginning of the impact from Continental European university models which lasted until 1940, while after 1945 the US university model was more influential. More recently Japanese universities have been affected by the rapid academic development of various East Asian countries, including China. This also affects the relationship of Japanese universities with society, in the sense that specific Asian values are as important in this relationship as are the Western focus on innovation and knowledge transfer for economic purposes.

The Japanese higher education sector consists of four main categories of institutions: four-year universities (*daigaku*), two-year junior colleges (*tanki daigaku*), two-year colleges of technology (*koutou senmon gakko*), and vocational/professional training colleges (*senmon gakko*). The total number of institutions is around 1,225 and almost 800 of these are universities, subdivided into national, local, and private universities. The total number of students in higher education is currently (2018) around 3.2 million.

Japanese higher education is characterized by four distinctive features: a) high participation rates; b) a high level of privatization; c) rather strict stratification; and d) strong national government interference. First, regarding the participation rates, 75%-80% of

the Japanese population (currently around 125 million people) are documented to have or are expected to acquire postsecondary credentials at some point in their lives, which represents one of the highest levels in the world. Second, the sector has a very high proportion of private higher education institutions by OECD standards, with almost 80% of all universities being private. Further, Japanese households contribute 2.4 times more than the OECD average to the funding of higher education. Third, the higher education sector is conspicuously hierarchical and structured in a stratified way, with traditional national universities and a number of prestigious private universities forming the top of the hierarchy, followed by second-tier universities. Newly established private universities occupy the bottom of the university hierarchy, while junior colleges are ranked below four-year institutions. The bottom of the hierarchy is formed by the vocational colleges. Finally, despite a major reform in 2004 aimed at enhancing the universities' autonomy, the sector has remained under close governmental control, implying that Japan retains a highly centralized system of university governance.

In the face of a staggering national debt, slow economic growth, and decrease in the size of its population¹, recent university policy initiatives in Japan are aimed at a revision of the sector. First, the Top Global University project, initiated in 2009 under the heading "Top 30", is designed to encourage the internationalization and a managerial reform of universities, in order to attain international research and innovation prestige for the selected universities per se and global leadership status for their students.

This initiative includes the establishment of thirteen “Type A-Top Type” universities and 24 “Type B-Global Traction Type” universities. Further, the Japanese government initiated excellence initiatives known as the twenty-first century Centre of Excellence and Global Centre of Excellence schemes to support globally competitive research units. In addition, Japan’s Ministry of Education (MEXT) introduced in 2017 the Designated National University (DNU) program aimed at supporting Japan’s national universities in the enhancement of their research capacity, and in strengthening the relationship with the economy and society. Selected universities in the program are responsible for actively sharing the outcomes of their efforts, including estimated impacts on socio-economic development with the aim to stimulate reforms also in universities that do not have a DNU status.

Second, a bill passed in May 2017 in Japan’s Diet which will allow for the establishment of new types of vocational education institutions, the “Professional University” and the “Professional College”. This development is designed to facilitate re-entry to higher education at a later career stage and to further intensify the already close connection between industry and the university. Further, recruitment of international top students is identified as a challenge in Japan. To that effect, the Ministry of Education (MEXT) also initiated the “300,000 international students plan”, with a limited number of universities recognized as centers of internationalization in order to make Japan much more internationally oriented in the recruitment of students.

Third, in December 2008, the Central Council for Education submitted a report titled “Towards the enhancement of undergraduate education,” with the aim to create internationally competitive undergraduate education, with which Japanese universities would be expected to improve the quality of the content of their study programs in order to better meet society’s expectations. According to this approach all universities would be required to clarify and strengthen their educational policies in three areas. First, when it comes to awarding academic degrees universities were proposed to clarify the expected learning outcomes of undergraduate study programs

in three categories: Knowledge/Understanding, General-purpose skills, and Comprehensive learning and its application. Second, in the area of curriculum management universities are required to work out educational content systematically and to improve the instruction, as well as to secure students’ learning activity and appropriately evaluate their performance. Third, with respect to student selection and admission universities have to clarify the criteria for selecting students and to make the admission process more transparent. As a follow up to this recommendation the Japanese Ministry of Education seeks to gradually change the learning outcomes of students. In response to concerns about potential curriculum overload and sterile learning, the approach introduced incorporates a greater focus on the promotion of proactive, interactive and deep learning. An important element in this is the goal of preparing students to be effective in community service activities and the approaches taken by their institutions to increase students’ capabilities in that area. The results of these new learning outcomes and their effect towards social progress still remain to be seen.

Finally, the Ministry of Education, Culture, Science and Technology (MEXT) introduced in 2013 the so-called University Center of Community (COC) project, which is aimed at promoting the reform of university curricula in close collaboration with local communities. In 2013, 52 COC proposals were selected for funding by MEXT, with 25 proposals selected in 2014. All selected projects received funding for five years.

In the remainder of the chapter we will focus more closely on five universities, that is, the two highest ranked research-intensive national universities (The University of Tokyo and Kyoto University), one research-intensive private university (Keio University), one regular national university (Gifu University), and one specialized national university (Kyushu Institute of Technology) (for basic features of the five universities, see table 5.1).

MISSION STATEMENTS

How are university-society relationships reflected in

Table 5.1: Basic features of the five Japanese universities in the study

Key data Selected Universities	Year of Foundation	Student numbers (Fall 2017 – 18)	Campus location(s)	Number of Staff members	Operating budget (2017 – 18)
The University of Tokyo (UTokyo)	1877	28 250	Three campuses: Hongo, Komaba, Kashiwa	10 670	¥ 259,493 Million (around €2.01 billion)
Kyoto University (KyotoU)	1897	22 700	Three Campuses in the Kyoto Area: Yoshida, Uji, and Katsura	7 300	¥ 174,107 Million (around €1.4 billion)
Keio University	1858 (as School of Western Studies) 1920 (authorized as university)	33 630	Main campus: Downtown Tokyo and 10 more campuses	2 720	¥ 154,683 Million (around €1.24 billion)
Gifu University	1949	7 285	Main campus: Gifu Prefecture	940 (2016)	¥ 38,777 Million (around €310 million)
Kyushu Institute of Technology (Kyutech)	1907	5 649	3 main campuses in Fukuoka Prefecture	656	N/A

the universities' missions? The University of Tokyo (UTokyo) emphasizes as a key element in its mission the synergy between excellence and diversity, which it considers to be the basic driving force that refines education and research at the university, and allows it to collaborate globally at the forefront of science. As articulated through its Vision 2020, an important dimension is the notion of the public role of the university, in which the meaning of 'public' should not only be social and spatial, but also historical and temporal. For example, the university wants to consider the long-term consequences of its actions, for what is thought positive in the present may be damaging to the welfare of future generations. By the same token, it wants to press forward with an action if that action will contribute to humanity in the future, even if it is difficult to achieve or it is unlikely that UTokyo will gain support from the public in the present. Kyoto University's mission emphasizes the importance of producing global citizens equipped with ethical values and wisdom, relevant technical skills and carrying out outstanding research. The commitment of the university towards the development of the world and to a harmonious coexistence of the global society and ecological environments is also reflected in the basic policy on military research at Kyoto University (KyotoU). Under this policy, everyone engaging in research at KyotoU agrees that these activities must be carried out with a comprehensive perspective and with a clear understanding of subjective judgments, as well as future implications and potential effects on the global society. In line with this, all military related research that may threaten any of the above principles is not allowed at KyotoU. If concerns arise that any research activities do not comply with this policy, a standing committee established by the president will investigate each case individually. In its mission it indicates that its relationship with society is characterized by four features, that is, 1) being a research-oriented institution; (2) having a strong commitment to academic freedom and open science; (3) having a historic vocation for fieldwork; and (4) having a leading vision on industry-academia collaboration. Gifu University's mission shows a commitment to produce graduates ready to contribute to the region and to engage in active roles throughout the world.

It wants to maintain high standards of research to serve as the foundation of outstanding education. It also aspires to be a hub for advanced, original research in specific fields, such as life sciences and environmental studies, and to transfer the products of research to society. Keio University, embraces a traditional mission that is expressing the basic values for the university since its establishment in the following way "Keio University is not merely a place for academic pursuit. Its mission is to be a constant source of honorable character and a paragon of intellect and morals for the entire nation and for each member to apply this spirit to elucidate the essence of family, society, and nation. They will not only articulate this essence in words, but also demonstrate it in their actions, and by so doing make Keio a leader of society." At the same time, Keio University is also committed to "making further contributions to our global society and bolstering our presence as a leading research university". The Kyushu Institute of Technology (Kyutech) also refers back to the ideas and vision underlying its establishment and expresses as its mission the production of talented engineers, not only with technological expertise but also with uprightness and high moral sense who contribute to industrial development in Japan. It is committed to the promotion of local interests through the study of the environment and the energy sector, and through tightening the connection between industry and academia.

Each of the five universities has a Charter, strategies and/or action plans for realizing their mission. In these we can see various examples of reflections on the place of the university in society. Two overall impressions emerge from these institutional documents. First, there is a high level of variety among the five universities, ranging from UTokyo and KyotoU being more explicitly globally oriented and strongly anchored in the frontier of science, Gifu University combining elements of a research-intensive university, with a region and local community development orientation, Keio University presenting itself as a research-intensive university that strongly emphasizes certain values in its operations, and Kyutech being more focused on contributing to the industrial development of its region and the Japanese society at large. These differences also

become visible in the universities' internal innovations and KT and engagement activities that will be presented in the next section.

INITIATIVES AND PRACTICES FOR STRENGTHENING THE UNIVERSITIES' RELATIONSHIP WITH SOCIETY

Innovations in primary processes

Japanese universities have introduced various initiatives for innovating their educational activities, and for focusing their research more effectively on society's challenges and needs. They have implemented a series of novel educational practices which attempt to establish a reinstated, more outward-looking and less static educational profile. To this effect, the selected universities seek, first, to internationalize their curriculum content and teaching delivery, and, second, to diversify their pedagogical approaches by making them more student-centered; this includes the use of digital technologies.

UTokyo and KyotoU are focusing strategically, amongst other things, on the use of digital technologies in their educational activities. UTokyo emphasizes, for example, its role as Japan's pioneer in MOOCs, and currently 14 courses are available (seven via Coursera and seven via edX). More than 370,000 students from over 185 countries have enrolled in these courses, spanning from Sustainability Science, Quantum Mechanics, and Game Theory to Postwar Tokyo and Contemporary Japanese Architecture. Moreover, UTokyo's advertised "PEAK programs" (for example, Environmental Sciences) are entirely offered in English and seek to augment the collaboration between local and international students, while the Global Science Course is an undergraduate program that offers scholarships and full accommodation stipends, in order to enroll the best pool of applicants in basic research and disciplinary contexts. In addition, all the departments offer MA and PhD programs exclusively delivered in English (over 20 programs across fields). Further, based on Sustainable Development Goal 4 (Quality Teaching), UTokyo has developed an Interactive Teaching Program in which a flipped classroom protocol is used.

This program has enrolled over 24,000 people on and off campus, and is employing new pedagogical methods, such as publishing the online content of the class through an online fast portal (JREC-IN) which can animate the classroom experience.

KyotoU has taken a large number of initiatives in expanding and internationalizing its educational activities, which include 13 MOOCs under Kyot-oUx offering courses across a wide range of field, such as The Chemistry of Life; Introduction to Animal Ethics; and Culture of Services: Paradox of Customer Relations. Another example is the ELCAS program (Experienced-based Learning Course for Advanced Science), which is aimed at bringing high-school students from all over Japan in contact with advanced research at the University. It started in 2008 in the Department of Science and has since developed into a university-wide scheme, which offers courses to high school students in more than 20 fields. Further, KyotoU aims at connecting its new teaching and learning endeavors with practices that have societal impact, particularly in the area of natural disasters and climate change. An example is the China-Japan-Korea (CJK) SERVE Initiative of the Hong Kong Polytechnic University, Peking University, Ewha Womans University in South Korea, and Kyoto University. It consists of a joint summer program, where students learn about natural disasters and recovery. Students participate in workshops and other activities to learn about policymaking and proposal writing, in cooperation with local residents and governments. An important aim of these new initiatives is to raise local and international awareness about practical problems, while reinforcing students with interdisciplinary learning and practical problem-solving skills that are of relevance to society.

Since 2014 Gifu University has broken new ground with the establishment of joint and double degree programs, in order to ensure a more objective and effective method of teaching for students that seek to expand their learning horizons in more than one discipline. This innovative line is also reflected in Gifu University's "Advanced Global Program" (AGP) initiative and the establishment of two summer schools (inbound and outbound), where

courses are taught solely in English, and with a student curriculum that focuses on skills of competitive international standing. Keio University has created Japan's first Internationally Accredited Business School in order to establish new international, English-based credentials in the Japanese university context in the area of business administration, and attract highly talented international students. Also Kyutech has sought to internationalize its teaching portfolio with English-based and internationally competitive courses, amongst other things, by organizing a Space Engineering International Course and an International Material Course. Given its technical character, Kyutech's teaching and learning activities are mainly organized around laboratories, and not in more traditional disciplinary settings. An important aspect of its educational policies is Kyutech's collaboration with international foreign partners (33 countries and 133 institutions), which are expected to contribute to the mobility and diversity of Japanese students.

Knowledge transfer and Community engagement

The Japanese universities are highly committed to a direct transfer of research-based knowledge to their communities, with an intention to impact both objectives of social justice and economic development. Every university displays different degrees of sophistication in this area, but as contrasted with Western standards and practices, these kinds of initiatives are neither fully quantified nor very explicitly advertised in Japan.

UTokyo is emphasizing in its KT strategy and activities the cooperation with industry. It has an impressive track record in this with a large number of inventions and patents produced by its staff, 1600 collaborative research projects each year, and the establishment of over 200 startups around the university. This cooperation is supported by a central administration unit called Division of University Corporate Relations (DUCR) which is under the direct control of the University's president. The Division is organized into two offices; the Office of Innovation and Entrepreneurship, which engages in activities to achieve its goal of implementing UTokyo's outcomes of "creative research" to society;

and the Office of Intellectual Property, which manages intellectual property and supports its practical application. Community engagement is less strongly institutionalized in UTokyo's organizational structure. The university does, for example, not have a Center of Community (COC) funded under the Ministry's COC program. A recent engagement initiative is the UTokyo Future Society Initiative (July 2017), under the direct leadership of the university president. The aim of this initiative is to promote effective collaboration and to contribute to the future of humanity and the planet, based on the university's mission. Some information on its community engagement is also presented through its *In Depth* webpage, with an exposition of its "Science Index", namely, it highlight advances in matters of environmental matters or ethics and law. In addition, UTokyo has an active social media presence and issues every year an activity digest in English entitled Tansei, which describes what UTokyo contributes to its stakeholders and the international community.

The knowledge transfer from KyotoU to industry takes place mainly through the activities managed by the central Office of Society-Academia Collaboration for Innovation (SACI). Its mandate is to promote collaborative research among academia, industries and the government; to support business start-ups by researchers or students; and to manage and utilize the university's intellectual properties. The Office uses three structures for stimulating KT, first, Kyoto University Innovation Capital Co., Ltd. (Kyoto-iCAP), which is an investment firm wholly owned by KU, whose venture fund invests in start-ups and early-stage ventures seeking to commercialize knowledge generated by the university's researchers; second, the International Science Innovation Building, which provides facilities, such as rental offices and laboratories that can be leased long-term as bases for society-academia collaboration projects. It also houses the Kyoto University Venture Incubation Center (KUVIC). Third, Kyoto University Original Co, Ltd, which is a subsidiary owned by KyotoU as a special type of corporation dedicated to sharing KyotoU's research outcomes with industry and civil society, and to investing the revenues from these activities to upgrade KyotoU's research capabilities and infrastructure. KyotoU has taken various

initiatives to engage with its local and international community. For example, with programs such as the Children museum, the Museum Open day, and the Kyodai weeks, KyotoU offers guided tours, open lectures, participation in nature observation sessions or first-hand experiments to children and adults from the whole of Japan. Further, among the many engagement initiatives of KyotoU is the “Omoro Challenge” program through which KyotoU wants to stimulate student-centered learning. The program supports undergraduate students to create their own, unique international project, and commit to promote it around the globe and at their own institution. Further, KyotoU is selected by MEXT as a Designated National University (DNU). KyotoU’s DNU’s concept shows how it wants to contribute to society by promoting cross-disciplinary and international research so as to create new value and societal impacts; also rethinking multi-sectoral collaboration efforts to give more back to the community. Exploring new forms of social engagement is intended to take place through industry-government-academia collaboration in the Kyoto University Model, which allows the University to establish and operate three companies that can receive capital investment from the University and use it in the areas of: (a) Consulting and think-tank services; (b) Technology transfer; and (c) Venture support. These three companies are overseen by a holding or umbrella company in charge of promoting effective management and cooperation with the private sector. Beyond the current framework of industry-government-academia collaboration, this initiative also seeks to stimulate the implementation of an innovative scheme for organization-to-organization research collaboration.

Gifu University has been intensifying its efforts to promote regional revitalization, by successfully applying to the government’s Center of Community (COC) program. The resulting COC is used to expand Gifu University’s collaboration with local governments, local enterprises, and other universities both in and outside the prefecture. Aim of the COC is to synthesize recent advances on energy, environmental, earthquake, fiber materials, photovoltaic, and subatomic science. The university is also expanding its socio-economic impact by investing in the Gifu University Hospital, an important economic asset

for the university, and the most esteemed institution in the provision of health services in the Gifu Prefecture, with an esteemed track record, for example, on allergy research and analysis of rare and incurable diseases.

Keio University is combining three global initiatives in its KT activities, dubbed as “transdisciplinary initiatives on longevity, security, and creativity”. First, the longevity initiative seeks to investigate the cross-section between family structures, the labor conditions of older people, and social security/public finance (in collaboration with the EU, the World Bank, and the World Economic Forum). The weight of this initiative is put on regenerative research and technological reform for medical nursing care. The second branch focuses on the topic of security, and seeks to improve the quality of the air, the grass root potential of cyber security, and the sound fiscal market structure and governance in the region, with the intention to reduce geopolitical, economic, and environmental risks. Last, the creativity research harnesses the potential of basic research for truly original outcomes, such as new communication technologies (haptic communications), component measurement technologies (metabolomics analysis) for drug and food production, and new materials research (plastic optical fibers), with media expression research and management research. Keio University works very closely both with universities from the USA, (see, for example, the U.S.-Japan Research Institute), and with industry giants as Hitachi, but it seeks to revolve its efforts mainly around blending basic research with community engagement.

Kyutech has adopted a more entrepreneurial approach in its KT and community engagement initiatives, envisioned primarily through its high employability rates (around 99%), its successful industry outreach for capital investment in R&D, and its many spin-off venture companies. Kyutech’s entrepreneurial character is endorsed via a series of community initiatives, with a prime focus on environmental issues. For example, the “Eco-Town R&D Center for the Environment and Recycling” is offering public awareness and live demonstrations of economically effective and environmentally-friendly utilization of urban and rural biomass, while the “Advanced Mold

Table 5.2: Overview of relevant offices and units per Japanese university

Universities	1. Knowledge/Technology Transfer Offices 2. Society/community engagement units/programs (all mentioned websites were accessed January 2019)
The University of Tokyo	1. Division of University Corporate Relations (https://www.ducr.u-tokyo.ac.jp/en/index.html) 2. UTokyo Future Society Initiative (FSI) (https://www.u-tokyo.ac.jp/adm/fsi/en/index.html)
Kyoto University	1. Office of Society-Academia Collaboration for Innovation (SACI) (https://www.saci.kyoto-u.ac.jp/en/about/) KyotoU's social engagement approach
Keio University	1. Research Development and Cooperation (https://www.keio.ac.jp/en/research/collaboration/) 2. Top Global University Project (http://www.tgu.keio.ac.jp/en/)
Gifu University	1. Organization for Research and Community Development 2. Center for Collaborative Study with Community (https://www.gifu-u.ac.jp/en/centers/centers_gu/center_for_collaborative_study_with_community.html)
Kyushu Institute of Technology	1. Organization for Promotion of Research and Innovation (http://www.kyutech.ac.jp/english/library_facilities/innovation.html) 2. Organization for Articulation and Collaboration with Elementary/Secondary School (in Japanese) (http://www.kyutech.ac.jp/cooperation/)

and Die Technology Center” is a pioneer in engineering education, creating a strong synergy between the local industry, government needs, and advances in engineering and materials studies.

Organizational structures for supporting knowledge transfer and social engagement

All five Japanese universities have developed strategies and specific approaches for supporting knowledge and technology transfer to society, and all have established central offices for technology or knowledge transfer. In addition, some of the universities have set up specific units for supporting the university’s community engagement activities, for example, in the form of a Center of Community (COC). In table 5.2 an overview is presented of some of the offices and units or programs.

CHALLENGES

Japan’s current socio-economic situation, which is marked by large financial deficits, sustainability challenges, an aging population and low birthrate, poses general challenges also for the Japanese universities. More specifically the following two main challenges with respect to the universities’ relationship with society can be identified. First, for all national universities the decreasing public funding levels combined with a lack of increases in university autonomy form a major challenge. What this means in practice is that it is, for example, very difficult for these universities to compensate the decrease in public funding with other sources of income. Even though public universities in Japan may receive funds from the private sector, comparatively speaking the levels of private sector funding are rather low; hence the impact of private funding is much smaller than in other countries. National universities are, thus, restrained in their ability to act more autonomously for overcoming their financial struggles and operate more independently from governmental control.

Second, all Japanese universities continue to be governed from an instrumental perspective by the Ministry of Education (MEXT). This is in line with one of Olsen’s visions introduced in chapter 1 regarding the

university as a national political instrument. From this perspective the main role of the universities is to satisfy through their study programs and research activities society’s needs for future human resources and relevant knowledge. These needs consist mainly of providing graduates with technical skills and knowledge in a particular field, and producing relevant research to address social challenges or specific problems. This vision on the place of the university in society tends to underline the importance of a strong controlling role of the government and traditional university characteristics rather than allowing, let alone stimulating universities to develop themselves more direct engagement relations and partnerships with society.

In addition, some challenges apply especially to the larger, research-intensive national universities. For example, the challenge of the implementation of major governmental university programs, such as the Top Global University project and the DNU program. As argued by some of the universities, delays in the actual transfer of funds and reductions in the agreed upon amount of funding make it difficult for the involved universities to realize the intended outcomes of their projects. Further, like in the German university sector, also in Japan the professors are relatively autonomous, and especially in the research-intensive universities many professors are more focused on basic research per se than on addressing socio-economic needs. Another challenge concerns the bottom-up, grass-roots nature of many social engagement activities at the universities. As a consequence, these activities are in general not regarded as part of the university’s social engagement with society, and remain rather invisible. Finally, as a result of the decentral nature of the Japanese universities’ governance and administrative structures and practices, there is a relatively lack of vertical and horizontal coordination and cooperation within the universities, which makes the development and implementation of institutional strategies for enhancing the relationship with society difficult.

CONCLUSION

Japanese higher education is characterized by a

very high participation rate, a large private sector, a low level of public funding concentrated in a relatively small group of national universities, and a gap between the intended level of university autonomy, as expressed in national reforms, and the actual level of autonomy as experienced by universities in practice. In this complex university governance landscape a number of key issues pose important challenges for universities in their efforts to strengthen their relationship with society. These include the impact of the Ministry of Education (MEXT), especially through its strategic policy programs, on the room to maneuver the universities have for changing their relationships with society. One of the consequences is that Japanese universities to a larger extent than the universities in the other five countries covered in this report, manage, organize and develop their relationships with society through programs, projects and framework conditions set by the responsible Ministry.

What do the strategies and activities of the Japanese universities tell us about their current place in society? All five universities address in various ways the nature and importance of their relationships with society, with each of them emphasizing in this their relationships with government and industry. An important intention here is to contribute through KT and the establishment of spin-off companies to industrial development, innovation and economic competitiveness, nationally, regionally and locally. UTokyo, KyotoU and Keio University focus in addition also on their global contributions to economic and social developments through their basic research activities. Gifu University strongly emphasizes its role in and relationship with its regional and local communities, for example, through its Center of Community (COC) program. It also has a global orientation, but less strongly articulated and operationalized than at the other three universities. Kyutech has a long tradition in supporting and cooperating with local industry, as is visible in the nature of its spin-off venture companies and community initiatives. A specific characteristic of the KT activities at the five universities is their relative fragmented administrative organization. The administrative structure of Japanese universities consists in general of many relatively small units, which also applies to the administrative structure for supporting the universities' KT activities: many

relatively small units, referred to as offices, divisions, programs, or projects.

All five universities address the importance of their engagement with society. While this means for Kyutech connecting through its educational and research activities to industry, the other four universities have developed a broader understanding of engagement. Strikingly, cooperation with local governments is regarded as a key element in their engagement activities. Many engagement activities are undertaken, nationally as well as internationally, with an emphasis in the national activities on bringing society in contact with advanced research, facilities, and courses at the universities. There is less emphasis on engagement partnerships with society, with the exception of the already mentioned partnerships with local authorities.

When it comes to the relevance of the six KT types introduced in the first chapter, at first sight the five universities put less emphasis on KT through people, that is, KT through their students and academic staff. With respect to the other KT types the transfer activities are to a large extent comparable at the five universities, with all of them focusing on collaborative research with national industry, on supporting start-ups, and on intellectual property and licensing. UTokyo, KyotoU and Keio University are also focusing extensively on their international collaboration with industry, as well as KT collaborations with other universities. KT through consultancy, that is, 'domain-specific advice and training' to clients in the public and private sector, is hardly referred to in the universities' transfer strategies and activities. All in all the five universities have comparable structures and intentions in their KT activities, and all are focused on the commercialization of university research findings. The main difference can be found in the size of these activities, the importance of global oriented KT activities, and the academic areas KT activities are anchored in.

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ENDNOTES

- 1 Japan has the lowest birthrate of all OECD member states, and the ‘greyest’ population with about one third of the population being over 59. The country’s population shrank by a record 448,000 in 2018. Strikingly, while the number of upper secondary school graduates has declined by almost 40% since 1990, university graduation rates are relatively stable the last ten years, and currently 40% higher than in 1990, while graduation from junior colleges has declined 70% since 1990.

CHAPTER 6

South Africa

ZACHARIAS ANDREADAKIS AND PETER MAASSEN

NATIONAL CONTEXTS

In discussing the current governance approach to higher education in South Africa two issues are highly important. First the continuous influence of the legacies of the apartheid state, and second the role of South Africa as the main frame of reference in the development of higher education governance arrangements, policies and policy instruments in many Sub-Saharan African countries.

The year 1994 marked the transition from the repressive apartheid state to a democratic political order with consequences also for the South African universities. The apartheid regime's governance approach had created various categories of universities, with the 'historically white' universities having a remarkable degree of institutional autonomy in certain areas, having a basic research mission, and receiving significantly higher levels of public funding. The governance approach for the 'historically black' institutions can on the other hand be characterized as a traditional bureaucratic model tainted by the apartheid ideology in the sense of control by legislation backed up by hierarchical central government administrative executive powers with respect to academic and administrative structures, access, student affairs and funding, as well as the appointment of senior members of staff. The 'in-between' category of universities did not have the same advantages as the white institutions, but were treated somewhat better than the black institutions, who formed the bottom of the higher education sector.

The National Commission on Higher Education (NCHE), installed to advise the Mandela government on a new higher education governance approach, referred to the apartheid state's higher education system as discriminatory, non-participative, unaccountable, divisive, inequitable, and undemocratic. As a consequence, developing a new governance approach could not be based on a rational diagnosis of the functioning of the previous governance arrangements. The whole set of arrangements was to be rejected (at least rhetorical) and had to be replaced. No policy incrementalism as in the other five countries in this study, instead the new government had to distance itself fundamentally from the previous regime. In line with this the NCHE proposed a 'cooperative governance approach' as a combination of a western higher education governance approach and governance relationships in the rest of Africa. The government stated in its 1997 White paper that it "accepts a model of cooperative governance for higher education in South Africa based on the principle of autonomous institutions working cooperatively with a proactive government and in a range of partnerships". In this White Paper it was further indicated that higher education should be planned, governed and funded as a single national coordinated system in order to overcome the fragmentation, inequality and inefficiency which were the legacy of the past. Under the Higher Education Act 101 of 1997, the Ministry of Education is obliged to formally consult with the Council on Higher Education (CHE) in its policy making processes. CHE also operates as South Africa's quality assurance body, with the ability to both pursue quality audits of universities and to

determine the accreditation status of new and existing programs. Under the new governance approach and quality assurance framework, universities were expected to be aligned with public accountability and national needs for relevant skills and knowledge. In addition to the 1997 White Paper also the 2001 National Plan for Higher Education emphasized the importance of transformation, in the sense of the need to increase student participation in higher education, the need for greater responsiveness from the universities, and the need for increased cooperation and partnerships in university governance.

Despite the broad agreement and support, the new governance approach did not produce in all respects the transformation outcomes aimed at. First, the enrolment of black students increased, but in general in less prestigious fields and overall throughput rates decreased. Second, historically disadvantaged, black universities experienced a decrease in students and funding, in retention and graduation rates, and in their research output. Third, employers reported shortages of professional workers. Fourth, instead of a unified system some scholars argued that South African higher education after 1997 became in a number of respects more segmented. Fifth, universities developed in a way that led to a widening credibility gap between higher education and society.

After the early 2000s the higher education policy focus shifted gradually from higher education's role in transformation to its role in the country's economic development. This shift is clearly visible in recent White Papers and National (Development) Plans from the Ministries of Higher Education and Training, and of Science and Technology, which emphasize that higher education is an important driver of the knowledge system, linking it with economic development.

Within these changing national governance approaches, the South African universities are characterized by a number of specific features, which also pose barriers for a more effective relationship with society. Two of these features can be mentioned to illustrate the nature of the barriers. First, the higher education sector in South Africa is characterized by a combination of low participation and high attrition.

The sector currently comprises 26 public universities and 124 private higher education institutions. The public universities include twelve traditional universities, eight professionally oriented universities of technology, and six so-called comprehensive universities, which offer a mix of traditional university and university of technology programs. The overall participation rate in South African higher education is approximately 20% of the relevant age group, with around 975 000 students (headcounts 2016) enrolled in the 26 universities. Less than 25% of the student population is finishing its studies within the nominal time.

The second feature of South African universities is financial disconcert. There are currently three income streams for the universities. First, state sources transferred either via a block grant formula or through earmarked funds for specific projects; second, student sources, namely, tuition fees, residence and accommodation fees; and third, contract and other third-stream sources, which include private donations, endowments, external research contracts, and income from investments. The total of these revenues amounted to over ZAR 69 billion in 2016, with each revenue stream being steadily increased in the span of 10 years. However, costs persistently outpace growth in funding and universities are currently confronted with rising cost pressures. Direct government funding constitutes on average only around 40% of the universities' income, while this subsidy does not fully cover personnel costs. Consequently, universities have increased their student fees, which has led to growing unrest on the side of the students and their families. This has resulted in student protests since 2015 (#FeesMustFall) inspired by worries about the accessibility of university education in South Africa. The government responded, amongst other things, by appointing a Commission of Inquiry into Higher Education and Training (2017). From a variety of alternative policy options developed by the Commission the preferred option is one in which only students from families with a combined annual income of over ZAR 350 000 have to pay tuition fees. Presently, an assessment of the further development and impact of the issue and the selected policy option is premature, in spite of compelling indications that it might be financially unsustainable and open

Table 6.1: Basic features of the six South African universities in the study

Key data Selected Universities	Year of Foundation	Student numbers/ headcounts (2016)*	Campus location(s)	Number of university staff (2016)*	University income (2016)*
University of Cape Town (UCT)	1829	29 232	Main campus in Rondebosch, Cape Town	4 909 (1202 academic staff)	ZAR 6.09 billion
University of the Witwatersran d (Wits)	1922	37 448	Main campus in Braamfontein, Johannesburg	3 231 (1192 academic staff)	ZAR 6.46 billion
Stellenbosch University (SU)	1918	30 161	Main campus in downtown Stellenbosch	3 541 (1122 academic staff)	ZAR 5.31 billion
University of the Western Cape (UWC)	1970 (as university)	21 796	Main campus in Bellville, Cape Town	1 631 (678 academic staff)	ZAR 2.1 billion
The Tshwane University of Technology (TUT)	2004	58 901	Spread over 9 campuses	3 089 (961 academic staff)	ZAR 3.07 billion
University of Pretoria (UP)	1908	53 232	Spread over 7 Campuses	3 970 (1271 academic staff)	ZAR 6.41 billion

*Source: <https://www.chet.org.za/data/sahe-open-data>

to unintended consequences of further propagating inequalities by benefiting the more affluent social strata. In addition, given the persistently high youth unemployment rates (53% in 2016), the issues of low participation and unsustainable economics still dominate the agenda of the South African higher education, with the sector being commonly denoted as the lynchpin for social struggles and the inextricable dilemma between growth and equity.

For looking into more detail in how the relationships between South African universities and society are developing we have selected six universities, that is, the University of Cape Town, the University of the Witwatersrand, Stellenbosch University, the University of the Western Cape, the Tshwane University of Technology, and the University of Pretoria (for some basic features of the six universities, see table 6.1).

MISSION STATEMENTS

The South African universities in the study have mission statements that in addition to a specific mission also include a vision, a specific set of institutional values, or an extensive set of institutional goals.

In its mission the University of the Western Cape (UWC) expresses its commitment to excellence in teaching, learning and research, to nurturing the cultural diversity of South Africa, and to responding in critical and creative ways to the needs of a society in transition. The latter is further elaborated in a number of aims, including the aim to design curricular and research programs appropriate to its southern African context, and to assist educationally disadvantaged students in gaining access to higher education and succeed in their studies. UWC is positioning itself as an ‘engaged university’, and has elaborated in its Institutional Operating Plans (IOPs) the central elements in the university’s understanding of engagement. The University of Cape Town’s (UCT) mission shows an institutional commitment to engaging with key issues of our natural and social worlds through outstanding teaching, research and scholarship. UCT seeks to advance the status and distinctiveness of scholarship in Africa through building strategic partnerships across the continent, the global south

and the rest of the world. UCT’s qualifications are intended to be locally applicable and internationally acclaimed, underpinned by values of engaged citizenship and social justice, with its scholarship and research having a positive impact on the South African society and the university’s environment. The mission of the University of the Witwatersrand (Wits) positions it as a leading research-intensive university with global stature and a gateway to research engagement and intellectual achievement in Africa, building on the principles of intellectual excellence, international competitiveness and local relevance. Wits is committed to providing high-quality, internationally competitive education, founded on high academic standards, cutting-edge research, public engagement, and productive partnerships with leading institutions throughout the world. The Tshwane University of Technology (TUT) emphasizes in its mission its intention to support its students to achieve their highest potential in a safe, enabling and conducive environment by fostering a scholarship of teaching and learning, by providing relevant and competitive academic programs with seamless articulation pathways; by investing in state-of-the-art technology; and by conducting relevant research and promoting innovation, engagement and social enterprise. One of the institutional goals attached to the mission is to promote mutually-beneficial academic, social and economic partnerships. Stellenbosch University (SU) expresses in its mission that it is a research-intensive university, which attracts outstanding students, employs talented staff and provides a world-class environment; a place connected to the world, while enriching and transforming local, continental and global communities. The University of Pretoria’s (UP) mission shows the university’s intention to pursue recognition and excellence in its core functions of research, teaching and learning, and integrating engagement with society and communities into these. UP will use quality, relevance, diversity and sustainability as its navigational markers. In the values underlying this mission it is, amongst other things, expressed that UP must produce graduates who appreciate the importance of community service, entrepreneurial endeavors and innovative actions in generating employment and development in our local communities. All in all the six South African universities’ mission statements display a strong adherence

to the public good, particularly seen through the dissemination of scholarly excellence and innovation, along with the critical position of their graduates in leadership positions locally, nationally and internationally. The six universities refer in various ways to the important challenges the South African society is facing as a consequence of the repressive apartheid regime, including inequality and social exclusion. They all indicate their commitment to contributing to society through their education and research, and through knowledge transfer and social engagement. The South African universities are more clearly and explicitly including these key ‘third mission’ dimensions in their institutional mission statements, than most of the universities in the other five countries covered in this study.

INITIATIVES AND PRACTICES FOR STRENGTHENING THE UNIVERSITIES’ RELATIONSHIPS WITH SOCIETY

Innovations in primary processes

A central component in the educational innovations and changes in the research orientations at South African universities is their strong commitment to serving their local and national (and in some universities also global) communities in an effective and fitting way. However, given the systemic asymmetries of the sector, the modalities of these innovations are configured uniquely for each university.

UCT has taken the initiative in 2016 to start a structured process for critically transforming its curricula and pedagogy with two main aims. First, to reduce the marginalization and exclusion of particular identities and scholarly traditions and perspectives, especially from Africa and the global south. Second, to stimulate and strengthen multidisciplinary learning experiences of its students. For that purpose a Curriculum Change Working Group was set up to facilitate this transformation process. The Working Group’s mandate was to identify curriculum innovations and interventions already taking place in various parts of the university; to develop an enabling and responsive environment to facilitate organic curriculum change; and to continuously identify, document and

where possible disseminate information surrounding critical issues emerging from the curriculum change dialogue process. As part of the process also the procedures for the approval of new course offerings were changed. An example of a UCT course that has been adapted from a decolonizing the curriculum perspective is “Global Change Ecology”. The adapted curriculum is argued to focus on diversity of views and challenging dogma, and to address important socio-ecological issues. As a consequence it is expected to equip students with perspectives and skills relevant to the world outside of the ivory tower. UCT is strongly promoting the creation of interdisciplinary areas of research strengths or UCT research hubs. The identified hubs receive university support when they meet a number of strategic objectives and encompass a critical mass of researchers. There are currently 17 interdisciplinary hubs at UCT, including Astronomy, cosmology and gravity; Climate and development; Democracy, Citizenship and Public Policy in Africa; Neurosciences; Poverty and inequality; and Schools improvement.

Through its Transformation Office Wits is focusing strongly on transformation as a process essential to sustain academic excellence in its educational and research activities, its support services, and its social engagement. Transformation at Wits refers in practice to change processes in curricula with the aim to reflect diverse sources of forms of knowledge from within South Africa, Africa and across the world as well as the use of different teaching methodologies, diversification of the demographic profile (gender, race, ideology, nationality, class etc.) of both its staff and students without compromising on merit, qualifications and standards as well as an inclusive institutional culture which is characterized by a nurturing, supportive and inclusive environment necessary for the realization of academic excellence.

One of Wits’ strategic objectives as a research-intensive university is to produce increasing amounts of research with impact. In this context, research with impact is defined at Wits to include research that changes disciplinary thinking – discovery research; research that influences policy and practice – translational research; and research that can be taken to the market to generate economic

activity – innovative research.

SU is currently innovating its study programs through the increased use of digital technologies for teaching and learning purposes, as well as a consequence of its new language policy. The latter promotes multilingualism and provides for three delivery modes, i.e. Afrikaans and English for subdivided class groups (parallel-medium), both Afrikaans and English in undivided class groups, and either Afrikaans or English in accordance with the assigned lecturer's language proficiency. The digitalization of SU's educational activities includes two massive open online courses (MOOCs), the new online learning design service SUNOnline, the mobile application of the institutional learning management system SUNLearn, and the ability to conduct real-time interactive virtual classrooms through SUNStream. In its research strategy and activities SU is strongly focused on developing research products and services that can bring about economic and/or social improvement in the country. SU has expanded existing and created new multi-disciplinary research entities, such as the Centre of Renewable and Sustainable Energy, and the Stellenbosch University Water Institute.

UP's Department for Education Innovation is set up to support the implementation of innovative methodologies, teaching and learning technologies, and data-driven solutions to actively support UP's teachers to prepare students for their future workplace or for further studies. For two decades, UP has offered a blended approach to teaching and learning in the sense that the university has adopted a delivery model that makes use of traditional learning tools, such as classroom-based learning in combination with technology-supported platforms. This model and the experience of UP in offering a blended teaching and learning approach is rather unique on the African continent. Since 2014, UP has significantly expanded the online component of its hybrid learning model. In addition to stimulating the overall use of online elements, the university offers half a dozen online programs, most of which have been running for a decade or more. UP focuses its research on areas of importance to developing nations, especially those of Africa. In this way it

aims to increase the impact and international visibility of research at UP, and to concentrate resources where the greatest impact can be leveraged. Since 2012, UP has concentrated resources in a select number of institutional and faculty research themes, such as HIV/AIDS in Education; Environmental and Water Utilisation Engineering; Management of Crime; and Knowledge Management.

Through its Higher Education and Development Support Office (HEDS) TUT is providing development and support services to students and staff at the university under the heading of educational innovation and student success; HEDS' primary goal is improving student success at TUT. HEDS covers four broad areas, including Cooperative Education, which is managed by a Directorate responsible for the collaboration between TUT, industry, commerce and the public sector in order to enhance student learning, graduate recruitment and employability. Key components of the Directorate's activities are a Work-integrated Learning program, and graduate recruitment and employability services, which attempt to link TUT's students to potential employers. In 2014, TUT adopted a new strategic plan and the goal for research has shifted from purely focusing on capacity development to one focusing on consolidating the gains achieved through years of capacity building. As a relatively new university of technology TUT intends to develop research and innovation capacity in strategically selected areas of strength (niche areas) that are relevant to national and regional needs, priorities and opportunities. Currently approved niche areas include Appropriate Architecture for Africa; Climate Change and Disaster Management; Critical Studies in Visual Arts; and Information and Communication Technology for Development.

At UWC service learning is an important educational component in the Health and Allied Health Sciences. Service learning takes places through the clinical work performed by students enrolled in study programs in various fields, such as dentistry, nursing, physiotherapy, social work, and pharmacy. UWC's clinical platforms stretch over a broad area and includes UWC's two hospital sites of which one is located in a very low-income area. The Faculty of Dentistry is also active in community service and

annually students participate in outreach activities in various communities in the Western Cape. UWC students also work on the national Phelophepa Train project. The train visits remote areas in South Africa where health services are not readily available to treat patients and consists of six on-board operational Clinics. Each of the clinics has dedicated train carriages that have been specifically designed to meet the needs of each clinic. Further to the on-board facilities, each clinic also has an outreach program that visits surrounding areas and schools, to reach those who may not be able to make it to the train. In addition, as the first South African university UWC will from 2019 on offer an accredited Postgraduate Diploma in e-Skills with Immersive Technologies Stream, which incorporates Augmented Reality and Virtual Reality. The one-year program will run in partnership with a leading international immersive technology company - EON Reality. The program structure is such that students are required to work on industry problems and this is expected to allow for the development of new relationships and partnerships. UWC is focusing an important part of its research activities on issues of relevance for its local and regional environment as well as for South Africa as a whole. Examples of these are the Institute for Poverty, Land and Agrarian Studies (PLAAS), which focuses on issues of land, natural resource management and rural development, and the Centre of Excellence in Food Security. The latter is based at UWC, but jointly hosted with UP. It brings together expertise across various disciplines from South African and international universities with the aim to undertake research, capacity building and dissemination activities to promote a sustainable food system that brings about food security for poor, vulnerable and marginal communities.

Knowledge transfer and Community engagement

UCT displays a clear commitment to knowledge transfer particularly via research and innovation. UCT's technology transfer office (called Research Contracts and Innovation) has currently 125 active technologies in its portfolio and has received ZAR 36 million in revenue since 2001 from commercialization. The office has also been actively supporting spin-off companies (24 in total). Many innovation

projects at UCT are focused on health care, for example, projects on dendritic cell vaccines that fight cancer, on theranostics for cancer diagnosis and treatment, a new palladium-based drug, and on the Caperay imaging system for breast cancer diagnosis. The emphasis on medical advances divulges a strategic ambition of UCT towards health and welfare, as seen through one of the most persistent local and global needs, cancer treatment. However, cancer treatment is only one of the pillars of the university's knowledge transfer and community engagement activities. UCT's social responsiveness report presents five university-wide initiatives: Schools Improvement Initiative, African Climate and Development Initiative, Safety and Violence Initiative, the Poverty and Inequality Initiative, and the Global Citizenship Initiative. All these initiatives are fostered by a strong network of synergies with the governmental sector and various international institutions. Currently, these endeavors are ranked among the highest in terms of community impact in the country and serve as exemplary models to other institutions for the effect of curbing local inequalities, with the ultimate goal to reaffirm UCT's function as a reliable producer of relevant and empathetic knowledge in its communal setting.

Wits Enterprise, a company wholly owned by Wits, is committed to the commercialization and successful marketing of the University's intellectual capital through short course management, entrepreneurial development, research support, intellectual property management and technology transfer. Wits Enterprise supports entrepreneurial activities through research and innovation, yet is unique in placing emphasis particularly on short courses, both for the wider public and for entrepreneurs who seek to expand their knowledge platforms both broadly and also on highly specialized areas (particularly to mining, nuclear, and aeronautical activities), who have direct synergies with the industrial sector. The development and eventual transfer of the knowledge breakthroughs into society and/or the economy provide all interested stakeholders with fund raising, marketing, spinouts/incubation, and contract negotiation expertise and support, which are intended to contribute to its broader community. Moreover, the Tshimologong Digital Innovation Hub (incubating new start-ups and joining their forces with giants such as IBM and

Microsoft), the Wits Health Consortium and Wits Donald Gordon Medical Centre (stimulating the commercial potential and training of the local medical faculties), as well as the Gauteng City Region Observatory (an intersectional partnership to support regional economic development), all synthesize Wits' account of social responsibility, as well as its direct benefits to its social environment. Wits is strongly committed to matters of social equity. As a case in point, Wits undertook the establishment of the Center for Applied Legal Studies, which draws its lineage from the apartheid era and ensures the constitutional rights of its community by protecting the interests of the most vulnerable parts of the population, such as victims of recent weather destructions. In the same line of reasoning, the Wits Justice project seeks to combine the interdisciplinary expertise of advocacy, journalism, and education in order to make more transparent some of the most pressing issues of the vexed South African criminal justice system. The Student Equity and Talent Management Unit (SETMU) was established in 2007 at Wits as a pilot project with the intention of facilitating access to educational opportunities for previously disadvantaged young people. The unit was institutionalized in 2009 to assist the University in developing strategic partnerships which actively contribute to the public good. The unit is now part of the School of Human and Community Development.

SU displays a highly symmetrical structure to that of Wits, by prioritizing technology and innovation in its attempt to engage with and transform its community. First, it promotes Innovus, Stellenbosch's official technology transfer and innovation center that commits to foster entrepreneurship, create new products, new services and, primarily, new jobs for its community. Innovus' Launch lab is an illustrative example of the early success of this endeavor, which provides networking opportunities, mentoring and affordable rental rates in an entrepreneur-friendly environment. Since 2000, Innovus has helped towards the development of 578 business ideas, leading to 23 spin-out companies. In doing so, Innovus obtained 282 provisional patents, 76 licenses, and filed 118 PCT applications. In its entirety, SU estimates its impact on the Stellenbosch region to be over ZAR 5.5 billion in 2018, with both tangible effects of economic

growth in the community, and important yet unquantifiable externalities, such as the establishment of The Stellenbosch Institute for Advanced Study (STIAS), a center of interdisciplinary dialogue of elite scholars and leaders in search of sustainable solutions to local and global issues. However, SU foresees its commitment to the public benefit not only by entrepreneurial activities, but also, through the learning capacities and opportunities of learners from unconventional settings. The Maties Community Services (MCS) has centered its approach on community service and enrichment around entrepreneurship development, education and training programs, which aim to help beneficiaries empower themselves through volunteer work. MCS is run by student volunteers with the help of other professionals and community volunteers and offers for over 60 years primary health care services to the communities in Stellenbosch and its surroundings, allowing the students to experience and engage with community issues besides the classroom and textbook treatments. Similarly, the HIV/AIDS awareness and testing initiatives seek to counter the biggest challenges of the country, by instructing and mobilizing the Cape Metropole community. A number of initiatives, such as the Stellenbosch Literary Project (SLiP) and MathOR Program seek to address issues of access to the knowledge environment and counter ingrained biases from excluded and disadvantaged communities that have escaped previous attention of knowledge transfer to the communities.

UP positions itself in a perhaps more traditional way, as a research-intensive university. It operationalizes its KT mandate in two specific ways: via research outputs and via cultivating student talent. Regarding its research mandate, it envisions its set of KT activities first as a platform of inquiry that combines the topics of energy, well-being, genomics and zoonotic research, human rights, and ecosystem services and livelihoods as springboards for the study of sustainability and the ensuing sustainable development goals. UP strongly promotes its engagement with the South African SDG Hub, and seeks to embed the perspective of sustainability in all its research operations, including vexed and longstanding issues, such as gender mainstreaming and fiscal accountability. Second, regarding its student-centered understanding of community outreach, UP attempts to

matriculate independent learners who fit the profile of a research-intensive university and replenish the human capital for the University, or the public or private sectors. To effectuate this ambition for its communities, UP shifts the focus to prominent but locally under-applied teaching practices, such as blended learning and inquiry-led curricula, which seek to promulgate the desirable, community-driven attributes to the students.

TUT construes its communal outreach through the transfer of knowledge in two ways: first through student teaching and learning. TUT places emphasis on its nine “niche” research and innovation areas, but only as mediated through the lens of the student population and particularly the advancement of postgraduate studies. To that effect, Master and Doctoral level enrollments, along with bursaries and fundraising that can enable them, are at the forefront of its communal strategy, which seeks both to provide access to the labor market, but also to enable the smooth transition of the region towards a successful knowledge-based economy. Secondly, TUT undertakes KT directly to its community. The established TUT “Strategic Funding Projects” seek to combine established theoretical knowledge with problem-specific practices that may make a difference to the daily lives of the less privileged. Projects such as Education for Conservation, Mathematics and Science Development, Social Accountability, and Primary Health Care attempt to harness the socio-economic potential of knowledge for the more vulnerable parts of the population and reverse negative social predicaments.

The Zenzeleni project at UWC has been named South Africa’s Best Innovation with Social Impact. It consisted of researchers from the Bridging Application and Network Gaps (BANG) group in UWC’s Department of Computer Science working with members of the Mankosi community in rural Eastern Cape to find innovative ways of providing telephone and internet services to communities not well served by traditional telecommunications providers. UWC continues its involvement with the community through the provision of technical support and research. Another UWC initiative that combines KT with social engagement is the CoLab for e-Inclusion and Social Innovation. It is supported by both the Western Cape

and national government and it focuses on activities such as engaging with multi-stakeholders for skills and capability development for participation in the digital economy; finding and developing ways to achieve digital inclusion; and exploring implications of the digital economy for public organizations and SMEs (*small and medium-sized enterprises*).

Organizational structures for supporting knowledge transfer and social engagement

All six South African universities have developed strategies and specific approaches for supporting knowledge and technology transfer to society, and all have established a central office for technology or knowledge transfer. In addition, the universities have set up specific units or developed support structures for managing the university’s community engagement activities. In table 6.2 an overview is presented of some of these offices and units or programs.

CHALLENGES

In their efforts to strengthen the relationships with society South African universities face a number of serious challenges many of which are related to specific features of the country. Another example concerns the challenges with respect to the safety of students and staff in some projects based in communities that are affected by civil unrest. Also the handling of political student and staff demands and recent student protest movements (#RhodesMustFall and #FeesMustFall) form a challenge for South African universities. A related issue is the increase in student numbers, especially in undergraduate programs, combined with decreasing levels of state funding. This puts a huge pressure on the available staff capacity and facilities. A related challenge is the insufficient bursary and academic support for disadvantaged students and the attrition that this creates, as well as the lack of financial aid for international students, particularly from the rest of Africa, who are not eligible to receive South African government-funded bursaries. Financial strains are also affecting research labs and classrooms. Low and precarious financial support for graduate students

Table 6.2: Overview of relevant offices and units per South African university

Universities	1. Knowledge/Technology Transfer Offices 2. Society/community engagement units/programs (all mentioned websites were accessed January 2019)
University of Cape Town	1. Research Contracts and Innovation (http://www.rci.uct.ac.za/) 2. UCT Social Responsiveness (http://www.socialresponsiveness.uct.ac.za/sr-overview)
University of the Witwatersrand	1. Innovation Support / Technology Transfer unit (https://wits-enterprise.co.za/tech-transfer) 2. Transformation Office (https://www.wits.ac.za/transformationoffice/)
Stellenbosch University	1. Innovus Technology Transfer (Pty) Ltd. (http://www.innovus.co.za/) 2. Division for Social Impact (http://www.sun.ac.za/si/en-za/Pages/Division-for-Social-Impact.aspx)
University of the Western Cape	1. Technology Transfer Office (http://www.tto.uwc.ac.za/home/) 2. Community Engagement Unit (CEU) (https://www.uwc.ac.za/CE/Pages/default.aspx)
Tswane University of Technology	1. Innovation Support Unit (https://www.tut.ac.za/rni/innovation-support/about) 2. Community Engagement (https://www.tut.ac.za/community/about)
University of Pretoria	1. Research Contracts and Innovation Support Office (https://www.up.ac.za/contracts-innovation-office) 2. Community Engagement (https://www.up.ac.za/education-innovation/article/257709/community-engagement)

and low salaries for early career staff have a negative impact on the attractiveness of the academic career and the possibilities of the universities to recruit sufficient high quality new generations of academic staff members. At the same time, senior academics, who are often key to driving the university-society relationships, face multiple demands on their time with priority needing to be given to their teaching and research commitments. The initiation, building and maintenance of relationships with societal partners require dedicated time and effort and this is often not factored into the workload of academics.

In addition, universities are confronted with the fact that vulnerable students are still not adequately addressed from the current academic support structures in place, while in the area of service learning, funding continues to be a challenge, especially in relation to the costs incurred in, for example, transporting and housing students in remote locations, which are not adequately covered by the per capita subsidy, which the university receives from the government for undergraduate and postgraduate teaching.

Further, there is the issue of insufficient dissemination of high-quality research to communities that lack access to knowledge and knowledge-based facts and information. Consequently, there is a need for ways to collect, synthesize, and disseminate research in accessible formats to stakeholders in the public and private sectors, amongst other things, with the aim order to reinforce evidence-based policies. Finally, the realization of the Sustainable Development Goals (SDGs) is addressed as an important strategic aim by a number of the universities. This requires both high-quality discipline-specific and innovative multidisciplinary research, a combination which has proven to be difficult for these universities to realize effectively in practice.

CONCLUSION

In sub-Saharan Africa, South Africa has the most elaborated and sophisticated set of national higher education, science, innovation and technology policies aimed at stimulating the development of a knowledge-based economy and realizing national

development goals. At the same time, as the South African universities in this study show, even though there are many positive examples of university-society relationships, there are still major challenges in realizing the institutional KT and community engagement strategies and goals. As also argued by the Council on Higher Education in a recent sector review, the national governmental policy support for the universities' community engagement activities is insufficient. In addition, South African universities especially in the rural areas of the country are relatively weakly connected to industry and government. The South African university governance approach is in this sense characterized by two-sided political rhetoric in line with both Olsen's 'open society' and 'university as a service industry' visions: the legitimization of public support for prestigious and economically prosperous universities from an economic perspective, with the simultaneous expectation from a social and democracy perspective with respect to the universities' contributions to equitable and sustainable development solutions for communities and citizens that are poor and vulnerable. The South African universities in the study all articulate their relationships with society around this dilemma.

What do the 'third mission' aspirations and efforts of the South African universities tell us about their current place in society? First, the universities' educational initiatives include reaching out to vulnerable and under-represented student groups, and the introduction of new types of study programs. The use of digital technologies in education is of importance, but has not developed as far yet as in some of the other countries in the study. Second, the engagement strategies and activities of South African universities are well-developed in comparison to the situation in other countries in the study, and are highly important for the involved communities. Universities combine the further implementation of engagement initiatives introduced in the 1990s and 2000s with the development of new projects and programs, especially aimed at community engagement. Third, KT to industry takes place especially around the large engineering, natural sciences and medical faculties of the research-intensive universities in the larger urban areas. In addition, the universities of technology, such as TUT play an important role in KT to the private

sector. In rural areas the links between universities and industry have been developed relatively poorly until now also because the industrial foundation in the rural areas is much weaker than in the urban areas. Fourth, key areas in the KT and community engagement strategies and activities of the universities in the study are health care, including the improvement of health care services in informal community settings, and the use digital technologies, especially in regions that are characterized by low internet connectivity, a low number of computers per household, and low levels of higher education attendance.

Of the types of KT introduced in the first chapter, KT through students does receive a lot of attention at the South African universities. The transfer of knowledge by academic staff through events and networking is less developed, and the same goes

for collaborative research projects and partnerships with private companies. Partnerships with public organizations are stimulated and supported, and there are many examples of successful community engagement partnerships and collaborations at the six universities in the study. KT through consultancy, in the form of advice and training' to clients in the public and private sector, is undertaken by South African universities, but not as a key form of transferring knowledge from university to society. Further, licensing in the form of the right to use specific research outputs produced by the university is a KT form that is not very proactively pursued by South African universities. Finally, all six universities have support structures for student and staff start-ups, and four of the universities in the study list the realized startups until now.

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CHAPTER 7

United Kingdom/England

ZACHARIAS ANDREADAKIS AND PETER MAASSEN

NATIONAL CONTEXTS

The higher education system of the United Kingdom (UK) consists of various types of higher education institutions, including universities and university colleges, further education colleges, and alternative providers, that is, any provider of higher education courses that does not fall under the first two categories and does not receive public funding. All UK higher education institutions are autonomous self-governing organizations, with governing bodies or councils responsible for the strategic development and the effectiveness of the overall management of the institution.

Following parliamentary devolution of formal powers in the UK in 1998, legislative powers over education and training were devolved across the UK's four nations. Consequently, higher education policy is developed separately in each of the nations, with the United Kingdom Government, Scottish Government, Welsh Assembly Government and the Northern Ireland Executive each having specific and differing responsibilities for certain parts of higher education and student policies. In this chapter we will focus on the higher education institutions in England, unless otherwise stated.

An independent agency, the Quality Assurance Agency for Higher Education (QAA), is mandated to monitor and advise on standards and quality in higher education in all four nations of the UK. It is, amongst other things, responsible for the development of the UK Quality Code for Higher Education, which is a

key reference point for higher education providers. In addition to the QAA there are a number of other agencies involved in the governance of higher education in the United Kingdom, including the Office for Students (OfS), United Kingdom Research and Innovation (UKRI), the Higher Education Funding Council for Wales, and the Scottish Funding Council. The Office for Students was established 1 January 2018, and forms a merger of the Higher Education Funding Council of England (HEFCE) and the Office of Fair Access. It can be regarded as an independent regulator of higher education in England and, amongst other things, takes charge of the granting of degree awarding powers and the title of university to higher education providers. It inherited the public funding responsibilities with respect to education from HEFCE, while the funding responsibilities for research were shifted to the UKRI agency. The latter is in operation since 1 April 2018, and is responsible for the distribution of research and innovation funding. It is the result of a merger of seven research councils, Innovate UK and the research and knowledge exchange functions of HEFCE. Research England is a new council within UKRI, which oversees UKRI's England-only functions in relation to university research and knowledge exchange. Its responsibilities include providing grant funding to English universities for research and knowledge exchange activities and developing and implementing the Research Excellence Framework in partnership with the UK Higher Education funding bodies.

Within this new institutional matrix, the governance

of English higher education is characterized by a strong underlying competitive, market-oriented vision, which stimulates and rewards performance and accountability. The economic role of higher education is a key feature in the governmental policies in the UK, with the higher education system generating in 2017 an output of over £73 billion and contributing 2.8% of the UK GDP. It is attended by 2.3 million students, including a large number of international students. On the assumption that competition will stimulate further growth, two funds managed by Research England, entitled “UKRI Future Leaders Fellowship Scheme” (budget £900 million), and the “Higher Education Innovation Fund” (budget £210 million) have the objective to support the knowledge-based interactions between universities and the “wider world”. An important aim of these funds is to further foster the university-industry links and to retain the UK’s established competitive advantages in key sectors of the economy. Another initiative of Research England is the Knowledge Exchange Framework (KEF), which is intended to increase efficiency and effectiveness in the use of public funding for knowledge exchange. The aim is to further a culture of continuous improvement in universities by providing a package of support to keep English university knowledge exchange operating at a world class standard. The UK government asked HEFCE to lead the development of the knowledge exchange framework, most recently in the government’s Industrial Strategy ‘Building a Britain fit for the future’ in November 2017. Research England is continuing this work as part of its broader knowledge exchange policy and funding remit. A document detailing proposals for how the Knowledge Exchange Framework (KEF) could work, was published January 2019 for consultation, with a deadline on 14 March 2019. Another initiative of Research England of relevance is the establishment of the Connecting Capability Fund (CCF). This fund supports university collaboration in research commercialization with a budget of £100 million. It aims to share good practice and capacity internally across the English higher education sector, forge external technological, industrial and regional partnerships, and deliver the government’s industrial strategy priorities.

The strong market-orientation in the English university governance approach is in line with Olsen’s vision of the university as a service enterprise, in which it is assumed that the university is most productive if it is stimulated to function as part of a competitive system of market exchange and price systems. The emphasis in this approach is on competitive selection and university entrepreneurship, assumed to allow rapid adaptation to changing circumstances and demands from various stakeholders. This approach is argued to have contributed to the strength of the English university sector as a whole, and the position of a number of English universities among the best in the world. In this approach the role of the university leadership is to assure economically oriented management and to make strategic decisions about the university’s specific niche in the national and global university landscapes. The level of autonomy provides the university leadership with a larger room to maneuver to make financial decisions than in the universities in the other countries in the study. In addition to the important positive opportunities this provides, there are also risks involved. Several universities are reported to have needed bridging finance in 2018 year, at least one was given a short-term loan by the OfS to cover cashflow problems, and there are several universities with a considerable debt¹. The latter could potentially result in a bankruptcy of one or more universities. Another economic issue is the level of tuition fees for university education. The current tuition fee level is up to £9,250 for UK and EU students, and between £10,000 and £38,000 or more for medical degrees for international undergraduate students. This is among the highest in the world for public universities. There are worries about the level of student loan debt which is currently over £100 billion, and per student over £32,000 and with that higher than in the USA, where the level is around £27,000 per student. Another issue related to the economy oriented governance approach is the focus of the public funding of BA and MA level study university programs on programs that are of direct relevance for the economy, that is, programs in STEM (*science, technology, engineering and mathematics*) areas. In practice this implies that English universities do not receive public funding for nearly all their study programs in the humanities and social sciences.

All in all, the English university system enjoys a long period of prosperity and international prestige among its peers. However, facing the uncertainty that the Brexit referendum of 2016 has generated, plus the challenges related to their lack of long-term financial stability, the system is currently trying to prepare for and adjust to a more uncertain future in a post-Brexit era.

In what follows, our examination of five universities, King's College London, Middlesex University, Newcastle University, Queen Mary University of London, and the University of Cambridge, discusses the roles that universities in one specific nation of the UK, England, seek to perform for their local, national, and global communities (for some basic features of the five universities, see table 7.1).

MISSION STATEMENTS

The selected English universities display their firm commitment to their community through their institutional Strategies, which present their overall institutional mission and vision, guiding principles, values and/or strategic goals.

King's College London's overall vision is to make the world a better place. The university's Strategic Vision 2029, launched January 2017, sets out how King's wants to continue to focus on world-leading education and research, while demonstrating a commitment to society that goes beyond those traditional roles. To deliver on its ambitions, King's has established five interconnected strategic priorities, that is, education, research, service, London, and international. These five priorities are each elaborated into five steps, for example, in the area of education one of the five steps is that by 2029 King's College wants to be the leading UK Russell Group university for research-enhanced learning, in research it wants to lead the Russell Group in research impact, while in service it wants to become the partner of choice locally, nationally and internationally, for business, government, health and other sectors. At Middlesex University London, the university's mission, as presented in its strategy 2017-2022 document, is that "Everyone at Middlesex will have the opportunities

and tools to chart their path to success in a community where the experiences we create together are life-changing and our diversity is a strength and inspiration." Middlesex wants to further its mission through "corporate, policy and community engagement, building support for the university and setting agendas in tertiary education and skills." Middlesex is aiming at enabling its students to "chart their path to success in a community", while empowering them to counter some "of the most pressing issues of our time, from social mobility to the skills needed for economic success." Queen Mary University of London (QMUL) has a purpose defined in its institutional strategy, stating that, QMUL is "dedicated to the public good, pursuing the creation and dissemination of knowledge to the highest international standards, thereby transforming wider society and the lives of our students and staff." A set of values is underpinning the university's strategy, including: "We act with integrity and to the highest ethical standards in all that we do", and, "We support and engage with our local community, and more widely with London, the UK and internationally." Its six strategic aims include in addition to research and education also public engagement, and sustainability. Newcastle University's vision is that it is "a world-leading university, advancing knowledge, providing creative solutions and solving global problems." This vision is indicated to express the collective sense of purpose of the university, and its aspiration to be a people-focused university that harnesses academic excellence, innovation and creativity to provide benefits to individuals, to organizations and to society as a whole. One of the strategic aims of the university is to improve the economy, health and wellbeing, and cultural richness of the places in which the university operates. It wants to put the community first, with particular emphasis on playing "a leading role in the economic, social and cultural development of the North East of England". Finally, the University of Cambridge's mission is "to contribute to society through the pursuit of education, learning, and research at the highest international levels of excellence." Like the other universities in the study it has a set of core values, which in the case of Cambridge express the importance of the freedom of thought and expression, and the freedom from discrimination. These are elaborated under the headings

Table 7.1: Basic features of the five English universities in the study

Key data Universities	Year of Foundation	Student numbers (Fall 2017 – 18)	Campus location(s)	Number of Staff members	Operating budget (2017 – 18)
University of Cambridge	1209	19 955	1 Main Campus: 31 Colleges	10 670	£1.714 million
King's College London	1829	>31 000	5 Campuses in London	8 500	£ 841 million
Queen Mary University of London (QMUL)	1887	25 332	Main Campus: London	4 500	£ 461.5 million
Middlesex University London	1878 (1992 University Status)	>19 000 (London campus) 37 000 (worldwide)	Main Campus: London Three satellite campuses in Dubai, Mauritius, and Malta	1 900	£ 189 Million
Newcastle University	1963	28 100	Main Campus: Newcastle upon Tyne Three satellite campuses in London, Singapore and Malaysia	3 479 (2.430 Academic Staff)	£ 495.7 million

of education, the university's relationship with society, the collegiate university, university staff, and other activities.

INITIATIVES AND PRACTICES FOR STRENGTHENING THE UNIVERSITIES' RELATIONSHIPS WITH SOCIETY

Innovations in primary processes

In order to operationalize their pursuit for social impact, the five English universities in the study undertake the task of creating new teaching and learning practices for their communities.

King's College London has introduced a large number of educational initiatives aimed at strengthening its relationship with society. These include the foundation of the King's Maths School in 2014, specializing in mathematics and sponsored by the university. It has widened participation in mathematical degrees and careers at the very best universities and institutions, while, currently, 40% of King's Maths School's intake come from financially challenging backgrounds of the 2018 intake 47% is female, substantially contributing to changing the under-representation of women in STEM. Another example is "Philosophy in Prisons", a student-led initiative which provided in 2016 discussion-based philosophy classes at Belmarsh Prison. In spite of the voluntary participation, the course averaged at 90% attendance and no dropout. In 2017, two further courses were delivered: a re-run of the pilot course, and a new course designed specifically for ESOL learners. Funding has been provided by both King's Faculty of Arts and Humanities and the Evan Cornish Foundation. King's College is currently considering how to continue, evaluate, and expand the project. Another example of curriculum innovation at King's College is in the area of service learning, with the ambition to recognize, accredit and extend the role of service across new and existing modules and programs, including building contemporary issues and challenges into the curriculum. Service modules are those that aim to support King's College's local, national and international communities and to enrich student learning outside of the formal classroom. Service

modules should provide opportunities for cohorts of students from different disciplines to work together, and priority is given to proposals which emphasize cross-faculty breadth and collaboration.

Middlesex University, with more than 25,000 students studying on its London campus, has created new cross-disciplinary, relevant, and practical learning trajectories. To that effect, it has, for example, installed the "Cyber Factory" training facility. In that environment, students are trained to design, develop and maintain the smart factories of the future, inculcating cross-disciplinary techniques (e.g. in automation science) that don't yet exist in the workplace, but will be sought after in the near future. As a further example of addressing practical knowledge challenges of its community, Middlesex has closely collaborated with an industrial partner (ASDa) and developed a BA (Hons) in Distribution, which was designed to equip general managers with improved problem-solving in an applied business environment.

An educational innovation at QMUL is "Centre of the Cell", being the first science education center in the world to be located within working biomedical research laboratories. Centre of the Cell is an online resource, a science and health education center and outreach project. Educational sessions are run in the Centre of the Cell Pod supported by workshops, mentoring and revision programs, online resources and volunteering opportunities. Since its opening in September 2009, over 100,000 young people and adults have participated in Centre of the Cell activities, with approximately one million visits to its website. Within the bounds of this initiative, biomedical scientists have the opportunity to communicate their research in innovative teaching platforms, while current and prospective students can critically engage with ongoing biomedical research. Another innovative education initiative at QMUL is with respect to degree apprenticeship programs, where the university was the first in the Russell Group to deliver such program in 2015. The latest example of this type of program to be launched at QMUL is a Chartered Manager degree apprenticeship program starting September 2019. Degree apprentices divide their time between university study and the

workplace, and are employed throughout – gaining a full bachelor’s or master’s degree while earning a salary and getting real on-the-job experience in their chosen profession.

Newcastle University puts emphasis on its impact through teaching and learning activities and takes pride in the achievement of milestones, such as a gold award in its teaching Excellence Framework, a 9th position in European teaching rankings, and a first place award in the University Compare Student Experience Awards 2017. This commitment to educational innovation is also reflected in Newcastle University’s development of new platforms for engagement, namely, via technologies for supporting the learning of students with disabilities, via the stimulation of the high-achieving students with short-term, paid work assignments (JobSOC scheme), and with the provision of new type of “ncl+ Award” for achievements in extra-curricular engagement such as entrepreneurship or volunteer work. Students are constantly encouraged to expand their learning horizons, reflect online upon their activities via their individualized e-Portfolio, and explore their learning potential through a platform that motivates them to impact their community.

Finally, the University of Cambridge has displayed a significant interest in developing interdisciplinary programs for the benefit of its community. Among the large number of initiatives one prime example is CRASSH, The Centre for Research in the Arts, Social Sciences and Humanities. Established in 2001, CRASSH came into being as a way to create interdisciplinary dialogue across the university’s many faculties and departments in the arts, social sciences and humanities, as well as to build bridges with scientific subjects. It has now grown into one of the largest humanities institutes in the world. It serves at once to draw together disciplinary perspectives in Cambridge and to disseminate new ideas to audiences across Europe and beyond. CRASSH’s mission is to create new resources for thought, stimulate interdisciplinary research and disciplinary innovation, establish new intellectual networks and affiliations, respond to emerging social and political challenges, engage new publics in humanities

research and help to shape public policy. Its programs include visiting fellowships, early career fellowships for Cambridge academics and a variety of interdisciplinary research networks. Clearly, the University of Cambridge, with 31 self-governing colleges and 150 departments, has a large number of innovative education initiatives. The emphasis on the student experience is ubiquitous in the college practices webpages and social media accounts, and seeks to manifest how the students become engaged and relevant in their communities.

Knowledge transfer and Community engagement

English universities have a very strong track record in KT to industry, and the examples provided below from the five universities in the study are illustrative but by no means comprehensive.

King’s College London is strongly committed to both academic KT partnerships and partnerships with private companies, such as Siemens and Unilever. King’s has established a number of units and teams for supporting KT to industry and society. These include King’s Innovation Institutes, the Entrepreneurship Institute, a unit for IP & Licensing, and the Institute for Industrial Strategy. King’s Innovation Institutes are set up to encourage innovation and create impact: the Commercialisation Institute is aimed at accelerating the translation of health research into marketable products, the Policy Institute wants to turn research and expertise into actionable policy, and the Culture team works on facilitating collaborations between the university and the cultural sector. The Entrepreneurship Institute was set up to support entrepreneurial thinking, skills and experiences amongst King’s students, staff and alumni. The Institute is providing support to these three groups through three main program strands: Engage, Skills and Accelerate. The Institute for Industrial Strategy (IFIS) at King’s College was launched in 2018 and was created in response to the emerging national industrial strategy and aims to help shape this area of domestic policy. The Institute intends to critique the ‘Modern Industrial Strategy’, and wants to promote ideas, processes and technologies that challenge and enhance current thinking. It will attempt to

answer the question of how the UK will develop the skills base, infrastructure and innovation which will match the demands of an increasingly competitive global marketplace.

A key example of King's College's rather unique combined KT and engagement activities is King's Global Health Institute (KGHI), a new interdisciplinary center for research, education and training. The Institute is regarded as the voice for global health at King's, and the focal point for its large academic community of global health researchers and students. KGHI is expected to catalyze and champion high-impact interdisciplinary research, focused on improving healthcare in less developed settings. Through KGHI King's is contributing to the realization of the Sustainable Development Goals (SDGs). Priority is given to universal health coverage, health workforce development, chronic disease control, and the impact of the environment on health. King's global health researchers work in mental, palliative, surgical, ageing, cancer, dental, maternal and new-born healthcare, and the impacts of conflict and environment on health. Healthcare delivery, health system strengthening, and workforce development are key priority themes running through all of KGHI's programs.

Middlesex University, contributes over £242m to the local economy, while supporting an estimated 3,000 jobs. The university has created various links with industry, such as Toshiba and has co-created with Toshiba Tech a Positive Enquiry-based Level 5 Diploma in Changing Practice, tailored to help participants align their personal goals with Toshiba's corporate objectives and constraints. Middlesex University has a Knowledge transfer and exchange unit that works in the areas of IP and provides consultancy to industrial partners. In addition, the university emphasizes the importance of the impact of its research in areas such as tidal protection, online safety, brain imaging, and social enterprises^{II}.

Queen Mary Innovation Ltd (QMI) is QMUL's wholly-owned technology transfer company, which is responsible for the commercialization and management of the university's intellectual property and portfolio of spinout companies. QMI has, amongst

others, a Technology Transfer team that is organized in two primary areas of expertise, that is, BioPharma and Technology & Engineering. QMUL has a strong track-record in the area of research-based student start-ups and successful spin-offs, for example, Apa-Tech, based on synthetic bone substitutes, sold in 2010 for around £200 million, hVIVO based in the university's bioincubator QMB with market capitalization of around £160 million, and Actual Experience, with a market capitalization of around £100 million. QMUL's reputable "Innovation Centre in Whitechapel" supports drug discovery start-ups, and has created almost 440 jobs and includes partnerships with major industrial firms such as Pfizer, IBM, and Huawei. The university's annual income from such entrepreneurial activities is around £430 million, of which £140 million is solely research income.

Newcastle University supports businesses in their innovation processes by providing specialist services, facilities and people. The university's support units and teams in this area offer expert solutions, for example, through consultancy, studentships, and knowledge transfer partnerships. In addition, businesses can get access to the facilities and equipment of the university, while the university's Business Innovation Centers work with various kinds of private firms, including innovative entrepreneurs, start-ups, small and medium-sized enterprises (SMEs) and multinational companies. An important KT project Newcastle University is involved in together with Durham University is the Northern Accelerator. The aim of the project is to create an innovation based eco-system where talented business leaders will be attracted to high technology, innovative commercial opportunities both created and developed in the North East of England^{III}.

The University of Cambridge is in many respects among the most active and effective universities in the area of KT to the private sector, not only in the UK and Europe, but in the whole world. This can be illustrated by referring to the 'Cambridge Cluster', which began in 1960 with the foundation of Cambridge Consultants, aimed at stimulating the links between Cambridge researchers and industry. With the establishment of Cambridge Science Park by Trinity College in 1970, the cluster began to grow

rapidly. Between 1960 and 1969, 39 new companies were formed; in the 1970s, 137 were formed, and by 1990, company formations had reached an average of two per week. Currently (2019), Cambridge cluster is Europe's largest technology cluster: around 57,000 people are employed by the more than 1,500 technology-based firms in the area, which have combined annual revenue of over £13 billion. University of Cambridge staff and ideas are at the heart of many of the companies in the cluster, whether the company is a spin-out based on university research, or founded as a start-up by a member of the university. The "Cambridge Enterprise" is a fully-owned subsidiary of the university established to facilitate all aspects of the commercialization process in three ways: through consultancy, technology transfer, and seed funds. More than 1,000 IP licensing, consultancy and equity contracts are currently under management by Cambridge Enterprise.

KT to industry is complemented by community (public or social) engagement activities, initiated in many cases with the aim to reach out to the less privileged parts of the communities of these universities. Examples in this area are abound. King's College London has taken a large number of social engagement initiatives with its communities. Case in point, the "King's Civic Challenge" is an annual initiative that invites staff and students to collaborate with local authorities, charities, organizations, and community groups to identify local challenges and opportunities, and propose imaginative approaches or solutions in front of a team of experts and attempt to win seed-funding in order to put these ideas into practice. As an additional example of these social engagement practices, the "Acts of Random Kindness (ARK) Project" is an initiative that King's College London's Student Islamic Society (ISOC) launched in 2012, aiming to provide students with a platform to serve the London community. Since its inception, its adherents have led various activities, such as tackling homelessness by working in conjunction with charities and food banks. Similarly, with its "Sanctuary Programme", King's community of staff and students collectively responded to the refugee crisis beginning in 2013. Amongst other things, a refugee education program was started in Jordan and Lebanon, five sanctuary scholarships for talented refugees to study for an undergraduate degree

were awarded, and dental students have volunteered in Lebanon and in the refugee camps in Northern France. In addition, the "Parent Power" initiative, run by King's Widening Participation Department in partnership with Citizens UK, supports groups of local parents (over 200 parents involved since 2017) to campaign on issues of educational inequality, such as the unaffordability of summer schools or private tutoring, or the inaccessibility of university open days, and help individuals from less privileged backgrounds to pave their journey into higher education. Finally, King's Local Partners Initiative consists of a cross-university framework that aims to strengthen and deepen King's relationship with its local boroughs. This framework is intended to encompass the different elements of King's local relationships: collaborative teaching, internships, service learning modules, research partnerships, space-sharing, as well as volunteering. Middlesex University's "Home Community Kitchen" serves hot meals and provides a friendly space for homeless or less privileged people to relax in, while the university's volunteer nursing students and doctors provide free medical aid, alongside trained mental health nurses and psychologists. QMUL is among 30 universities to sign a new Civic University Agreement which pledges to put the economy and quality of life of the local community top of its list of priorities. Another example is the Festival of Communities QMUL organizes annually, aimed at bringing local people together to explore living and learning in the East London borough of Tower Hamlets. The festival is a collaboration between QMUL and over 40 local partner organizations, aiming to build connections across the borough. Also Newcastle University's engagement activities take many forms. The university is, for example, encouraging relationships with voluntary groups and social enterprises across the north-east to catalyze regional growth, sustainability and social mobility. It also has a program aimed at widening student participation, called "PARTNERS Programme" that attempts to work with schools and colleges to support and encourage eligible students who have the potential to succeed at Newcastle University. At the University of Cambridge public engagement is described as "the many ways in which the activity and benefits of higher education and research can be shared with the public for mutual benefit". In order to stimulate

public engagement among its staff the university has created a Public Engagement Starter Fund that offers small grants (£500 - £1,500) to Cambridge researchers to undertake innovative public engagement with research activities. Further, the University of Cambridge organizes hundreds of public events, including the annual Cambridge Science Festival, and the Cambridge Festival of Ideas.

Organizational structures for supporting knowledge transfer and social engagement

All five English universities have developed strategies and specific approaches for supporting KT transfer to industry and the wider society, and all have established central units for supporting KT transfer. In addition, the universities have set up specific units and teams, or developed support structures for managing the university's public (social or community engagement) activities. In table 7.2 an overview is presented of some of the offices and units or teams.

CHALLENGES

Obviously, an important challenge all UK universities currently face is Brexit and its potentially negative effects, for example, on the universities' attractiveness for EU students, and access to EU research funding, including the European Research Council (ERC). Aspects of the Brexit-related worries are addressed in many documents of individual universities, of UK Universities^{IV}, and of university alliances, such as the Russell group^V.

A specific challenge with respect to the universities' relationship to society, in England as elsewhere, concerns difficulties related to measuring the extent to which universities have achieved their goals. A large part of the public engagement projects at universities represents 'bottom-up' initiatives and a drive to institutionalizing and measuring all university engagement activities runs the danger of killing the grassroots enthusiasm and energy that is driving engagement in the first place. In the English case this also applies to the government assessment methods that have been introduced. Among these methods,

the Knowledge Exchange Framework (KEF) runs the danger of merely measuring commercialization, which could potentially have a negative impact on the universities' room to maneuver and capacity for engagement activities. A related issue is the set of economic conditions for engagement activities of staff and students. For example, the current level of tuition fees raises, at least for some of the universities in the study, the question how much space in student time can be contributed generally to community engagement, and what students get in return from a career and labor market perspective. Also the funding of engagement activities can in some cases be problematic.

A related challenge English universities face concerns declining student satisfaction, and growing worries among students about the value of their education in relation to the high level of tuition fees. Universities have already been cautioned over misleading advertisements. Further, many UK universities are complaining about the lack of reliable, long-term funding. It has been argued that a growing number of UK universities can be expected to try to find ways to get money that is not reliant on fees or politicians^{VI}. The University of Oxford has, for example, indicated that it raised £750 million from its first bond issue in 2017.

CONCLUSION

The UK university sector has gone the last decades through a remarkable development, as illustrated, for example, by their attractiveness for international students and staff; their position in global university rankings; their research productivity, amongst other things, in the form of publications, patents, research-based start-ups, and partnerships with industry; and their success in the competition for research funding in the EU Framework Programs, and especially the prestigious European Research Council (ERC), where since 2007 more than 20% of all awarded grants are hosted by UK universities. This has also affected the relationships between UK universities and society, where both the KT from university to industry and the university engagement with society have developed in many respects in an impressive

Table 7.2: Overview of relevant offices and units per English university

Universities	1. Knowledge/Technology Transfer Offices 2. Society/community engagement units/programs (all mentioned websites were accessed January 2019)
University of Cambridge	1. Cambridge Enterprise (https://www.enterprise.cam.ac.uk/) 2. Public engagement (https://www.cam.ac.uk/public-engagement)
King's College London	1. King's Commercialisation Institute (https://www.kcl.ac.uk/commercialisation/index.aspx) 2. King's Local Partners (https://www.kcl.ac.uk/london/kings-local-partners.aspx)
Queen Mary University of London	1. Queen Mary Innovation (http://www.qminnovation.co.uk/) 2. Local community (https://www.qmul.ac.uk/about/community/)
Middlesex University	1. Knowledge Transfer and Exchange (https://www.mdx.ac.uk/business-and-partnerships/knowledge-transfer-and-exchange) 2. Increasing Community Engagement (https://www.mdx.ac.uk/about-us/what-we-do/our-strategy/building-support-for-our-mission)
Newcastle University	1. Knowledge Exchange Activities (https://www.ncl.ac.uk/work-with-us/knowledge-exchange/) 2. Engagement (https://www.ncl.ac.uk/who-we-are/engagement/)

way. At the same time, these relationships have been strongly affected by the political national context where, especially in England, firstly, government can be argued to have withdrawn more strongly than in the other countries in the study from the provision of various kinds of public services. Secondly, there has been a growing emphasis on the economic contributions of universities, as illustrated by the focus in the public funding of study programs on STEM areas, and the introduction of assessment methods such as the Knowledge Exchange Framework. As a consequence, the public engagement activities of the English universities are not as visible and as clearly organized and managed as the universities' KT activities to the private sector.

What do the 'third mission' aspirations and efforts of the English universities tell us about their current place in society? First, educational innovations are very important at English universities. They consist of pedagogical changes and the use of digital technologies, as well as the academic adaptation of the curricula in relation to changes in society. In addition, the universities in the study have taken many innovative educational initiatives in their efforts to engage with society. These include specific initiatives for enhancing the access to university opportunities for underrepresented student groups, as well as the introduction of new types of programs together with societal partners. In this there is a remarkable variety among English universities which obviously is related to the university profiles. Public engagement at Middlesex University, King's College London, and QMUL is, for example, strongly influenced by their specific location in London, while also the geographical location of Newcastle University is of importance for its engagement activities. At the University of Cambridge public engagement is less geographically determined, and is more characterized by the research-intensive nature of the university. Also in the area of the research innovations of the universities inter-university diversity can be observed, not only influenced by the geographical location of each institution and its research profile, but also by the universities' history and traditions.

How do the English universities in the study see their own place in society? While all five universities

address in a number of ways their relationships with society in their institutional mission and vision, their strategy statements and documents, on their websites, in their use of social media, and in other forms of communication, also in the case of the English universities the emphasis in all these is on their primary activities. In all five universities there is an impressive range of activities taking place in their interaction with society. But the universities strategic goals and intentions underlying their 'third mission' activities, as well as the intended outcomes of these activities are not as clearly articulated, organized and institutionalized as one maybe might expect.

Finally, the six types of KT introduced in the first chapter KT were derived from the way KT is interpreted in practice at the University of Cambridge. Obviously at Cambridge as well as at the other universities all six types of KT are of relevance, even though KT through students other than as part of engagement activities does not receive as much attention as the other KT types. The transfer of knowledge by academic staff through events and networking is very important as are collaborative research projects or partnerships with private companies. Partnerships with public organizations are stimulated and supported, but there are in general fewer examples of public than of private KT partnerships and collaborations at the five universities. KT through consultancy, in the form of advice and training' to clients in the public and private sector, is a more visible, more often used, and more important form of transferring knowledge from university to society in England, than at the universities in the other countries in the study. Further, licensing in the form of the right to use specific research outputs produced by the university is a KT form that is very actively pursued by four of the five English universities. Finally, four of the five English universities have a large number of new businesses and start-ups, with the University of Cambridge being one of the most successful universities in the world in the area of KT to industry, as illustrated by key statistics^{VII} on the success of the Cambridge cluster, including the number of knowledge intensive companies based on university research, or founded by a member of the university.

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ENDNOTES

- I See, for example, the Guardian: <https://www.theguardian.com/education/2019/feb/09/reading-university-in-crisis-amid-questions-over-121m-land-sales> (accessed 9 February, 2019).
- II For additional examples, see: <https://www.mdx.ac.uk/our-research/research-profiles>
- III For more information, see: <https://www.ncl.ac.uk/work-with-us/companycreation/northernaccelerator/>
- IV See: <https://www.universitiesuk.ac.uk/policy-and-analysis/brexit>
- V See, for example, <https://russellgroup.ac.uk/news/warning-against-no-deal-brexit/>
- VI See. <https://www.bbc.com/news/education-42413636>
- VII See: <https://www.cam.ac.uk/research/innovation-at-cambridge/innovation-in-numbers>

CHAPTER 8 CONCLUSION

The place of universities in society: characteristics, changes, and challenges

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This chapter presents the way in which selected universities in six countries see their place in society and have developed their relationships with key societal partners. We discuss similarities, differences, and highlight certain trends that we have observed. We follow the structure of the country chapters by discussing university missions, innovations in universities' primary processes (education and research), universities' KT and social engagement activities, as well as some of the main challenges universities face in their efforts to strengthen their relationships with society. The chapter also introduces some reflections on the overarching question on how we can currently understand the place of universities in society. In this we have to be careful, given the limitations of the empirical basis of the study. Nonetheless, the general picture emerging is one of proactive universities that are in a transformation process, in which their relationships with society are becoming a more central element in their institutional identity, their strategies and activities, without this growing importance having been translated yet into adequate communication, institutionalization and management.

NATIONAL CONTEXTS

In an era characterized by efforts to understand the nature and impact of globalization the question can be raised what the national context still means for understanding the place of universities in society. The global nature of knowledge, the ever-intensifying global research connections, the impacts of the growing use of ICT in education, the emergence

of global alliances of universities have all added to the impression that the university is the ultimate global institution. Consequently, it has been argued that national university reform agendas are derived from global reform scripts, with the assumption that there will be a gradual convergence of basic features of higher education systems around the world. While it cannot be denied that national university reform agendas have become more similar, reform implementations have not necessarily produced the expected convergence. Instead, what can be observed is the persistence of specific national features of university systems in areas such as funding, organization, and governance of universities. Consequently there are continuous and in some cases even growing differences in key issues between university systems. Various theoretical perspectives have been used for interpreting this phenomenon, including the impact of path dependency, the importance of the working of national and institutional filters, and the relevance of varieties of capitalism. In the academic literature in the area of higher education studies¹ the impact of New Public Management (NPM) and managerialism has received a lot of attention. There have been many claims that NPM has had far-reaching impacts on the ways in which universities function and are relating to society. However, many different, and in some cases relatively superficial claims have been made, and many of these have not been substantiated with empirical data, and there is even a lack of agreement on valid conceptualizations of NPM in the area of higher education governance. As is expressed in Olsen's four visions (see table

1.1) competing ideas about key aspects of the universities' relationship with society have influenced national university governance modes and national university policies, as well as institutional strategies and practices.

Still, as indicated above, a global trend can be identified when it comes to growing political and socio-economic expectations and demands about a more strategic university that proactively works on strengthening its relationship with society. At the same time, the university strategies and practices examined in this report do not justify a conclusion about a global trend with respect to the place of universities in society when it comes to the nature and intentions of their activities. In other words, governments agree that their universities should improve and strengthen their relationships with society, but there is no consensus on how to achieve this and on which areas the universities' strategies and activities should be focused. In addition, as illustrated in this report's country chapters, also within the six countries in this study there are important differences among universities. The study shows that even in the wider context of growing expectations and demands from external stakeholders, many of the transfer and engagement activities are also tied to the universities' own initiatives and interests.

When it comes to the policies and programs that the national governments in the six countries have introduced for stimulating specific aspects of the relationships among universities and society, the following main similarities and differences can be identified. To start with, governments in the six countries aim through various policies and measures at stimulating innovation in the universities' primary processes, especially in education. The digitalization of higher education is, for example, argued to improve possibilities of reaching non-traditional students, and reducing dropout rates. Other innovations include the closer cooperation with industry in the development and offering of professional curricula, and pedagogical innovations with the intention to strengthen students' soft skills, and preparing them better for changes in the labor market, including the consequences of automatization. In science policy we can observe a growing focus

on research aimed at contributing to solving the grand challenges that societies face.

Next, in government policies in Canada/Ontario, Germany, and United Kingdom/England, and to a slightly lesser extent South Africa, there is an emphasis on universities' contributions – through knowledge transfer (KT) – to innovation, job creation and economic competitiveness. There is special emphasis on the links between university research and industry, with various public programs and funding opportunities for stimulating and strengthening these links. In Japan and Chile government policies are less explicitly focused on the contributions of the university to the economy. A policy issue that comes up from time to time is whether universities or industry should be incentivized for initiating KT partnerships, and there are examples, also in the six countries in the study, of funding programs aimed at incentivizing industry.

At the same time, the universities' community/social engagement is less clearly and coherently addressed in national policies, while it also denotes more clearly than KT strategies and practices important differences between the six countries with respect to societal features, structures and challenges. For example, Chile and South Africa pay more attention to the universities' role in reducing inequality in society than the other countries in the study while in Ontario universities' community development activities for the indigenous population are a policy issue. Apart from these examples, compared to the governmental interpretations of KT and its assumed benefits it is less clear what is actually included under the issue of 'community or social engagement', who is responsible for what kind of engagement, and what are the intended outcomes. There is no common interpretation of 'engagement' among the six countries' governments, nor is there a clear rationale for the need for universities' social engagement. What is also in general lacking are national programs and funding opportunities for the universities' engagement activities. As a consequence, the interpretation and operationalization of their 'engagement' with society is to a large extent left to the universities themselves.

Further, the Ontario government science the diversity

of the university system, and through Strategic Mandate Agreements (SMAs) specific university profiles have been further developed and institutionalized that also include the various contributions universities want to make to society. In the other five countries there is no comprehensive government policy for developing effective university system diversity. In Germany, Japan and South Africa the government has introduced excellence programs for universities aimed at strengthening the global status, competitiveness and attractiveness of selected research-intensive universities. These programs are focused on basic research excellence and do not have a clear KT or engagement dimension. Until now they have had a limited impact on the diversity of the university system as a whole, but the impact is expected to increase in the coming period.

Finally, the categorization used in the selection of countries included in this study, as presented in chapter 1, consists in essence of three categories. At first sight understanding the place of universities in society as expressed in government policies shows that the countries that are most clearly seeing the university as a service enterprise embedded in competitive markets are the UK/England and Chile. Japan is the country most clearly supporting the vision of the university as an instrument for national agendas, while Germany most clearly promotes various ideas in its university vision, including the importance of democracy, multiculturalism, and an open society. While it was assumed that Ontario would belong to the category of countries emphasizing the university as a service enterprise vision, our examination suggests that the Ontario government's vision on the place of universities in society has key features in common with both the German and the UK/England's governance approaches. South African government's governance approach can be positioned in between England and Germany. South Africa has the highest Gini coefficient, that is, the highest income disparity among its population, in the world. Consequently, South African universities are expected to contribute to economic growth, as well as to the reduction of the level

of inequality and social exclusion in the country.

UNIVERSITY MISSIONS

Institutional missions have become important ways through which universities can express their aimed at institutional profile and identity, and their place in society. Obviously there are important differences among universities and this can be illustrated by the mission statements from the universities included in this study, which range from status confirming (globally leading research-intensive universities), combining various profile elements (including basic research, community development, innovation, student-orientation), to focusing on one specific KT issue (universities of technology contributing to industrial development in their region/nation). Some mission statements have not been changed since the establishment of the university, while others have been adapted recently.

While mission statements provide a first insight into the preferred profile or identity of the university, they do not include much detail on how the institutional mission is going to be realized in practice. The importance and operationalization of university missions are elaborated in institutional documents, such as Charters, strategic documents, or action plans. Here we can find in many cases the translation of one or more aspects of the formal mission into more detailed strategic goals and specific activities that will be undertaken for achieving the goals. In these institutional plans and other documents also the current and intended relationships with society are expressed. The topics included and level of detail of the documents can provide important insights into where and how universities are responding to external (and internal) pressures for enhancing the relationship with society, as well as how their aimed at place in society is explained, operationalized, and discussed internally.

Strikingly, while mission statements are prominently presented on university websites and are usually very visible to the outside world, the Charters, strategic documents, and action plans are in general developed and used more as internal documents. This has an impact on the extent to which the intended

contributions of universities to society are visible and known among the wider public. Consequently, it can be argued that universities could develop a more accessible and effective image of their aimed at place in society. It is also striking that the mission statements and internal documents relatively rarely refer to the university's earlier experience with knowledge transfer, engagement and similar activities. Most of the universities in the study have been actively undertaking such activities for a long time, but it seems like there is little systematic learning from their experiences.

INNOVATIVE EDUCATIONAL AND RESEARCH ACTIVITIES

When it comes to innovations in their primary activities the case universities have been especially active in adapting their study programs and educational portfolio. This includes pedagogical as well as academic innovations. An example is the introduction of various forms of on-line learning and digitalization. In addition, new learning outcomes, such as inter-cultural competences have become more common. Also measures for supporting specific groups of students with high levels of dropout have been developed by a number of institutions. The latter concerns especially universities that enroll a relatively large number of vulnerable students, such as Tshwane University of Technology and the University of Ontario Institute of Technology. The most visible forms of educational innovations can be found in areas where the innovations are addressing problems that the university experiences directly, such as high dropout rates, or in areas where society's challenges also become the university's own, such as the students' ability to pay for their education and cover other costs attached to studying at a university.

Many of the case universities have introduced new types of study programs for attracting non-traditional students or enhance their students' employability. An example is Kyoto University's new international undergraduate program iUP aimed at breaking through the insular culture in Japanese higher education. Another example concerns new study programs, specialization tracks, majors and minors, addressing

'grand challenge topics', such as climate change, environmental issues, alternative energy, and sustainable development goals. At the same time, while all universities refer to the importance of multi-disciplinarity, for example, in addressing grand challenges, there are only a few examples of new, truly multidisciplinary education initiatives that innovatively go beyond traditional study programs in their pedagogical approach and coverage of disciplinary knowledge. Overall, academic changes in study programs are in incremental rather than radical.

In Chile and South Africa individual universities want to contribute to reducing the extreme level of inequality in the country. Innovations include the introduction of special bridging programs, new access practices and procedures, new study programs, close relationships with local communities all aimed at reducing the impact of inequality on student participation and success in the university.

University innovations are less visible in the area of research. This has, amongst other things, to do with the larger autonomy of academics (individually and group-wise) in their research activities than their education activities. As argued in chapter 1, the impact of a prestige economy in the university sector implies that the success of academic staff in the competition for high status external funding in research is in general more important than increasing the educational income of the institution. In addition, the traditional, rather strict disciplinary organizational foundation (also in the administration) of the university forms somewhat of a barrier towards new truly multidisciplinary innovations in research.

KNOWLEDGE TRANSFER

The core of the KT strategies and activities of the case universities is formed by their contributions to the economy, including innovation, job creation, creating partnerships with industry, commercialization of research outcomes, and setting up new, university research-based companies. Socially oriented KT activities are in general captured under the heading of 'engagement' (see next section). KT is in most universities in the study rather strongly

institutionalized, as can be illustrated by the establishment of offices centrally in the universities mandated to transfer knowledge/technology^{II}. The exception is Chile, where KT is in general not as strongly institutionalized as a central function in the country's universities as in the other countries in the study.

There are some variations in the mandates and nature of these knowledge transfer offices, but diversity among universities has as a consequence that there are not only differences between, but also within the six countries. This implies, for example, that the research intensive universities emphasize in their KT structures the support to their academic staff in the development of partnerships with industry, especially large international companies, while the other universities focus more strongly on connecting industry (esp. small and medium sized enterprises) to their academic staff^{III}. The names of the KT offices at the five universities from Ontario can be used to illustrate the careful differences in practice among the universities^{IV}. Also in the other countries there is a wide variety of names used for the institutional knowledge/technology transfer offices.

In the first chapter we referred to six types of KT from universities to society that were identified by the University of Cambridge. Four of these six types were clearly recognizable in the KT practices in the selected universities, that is, a) collaborative research with private companies; b) licensing, that is, the right to use specific research outputs produced by the university; c) consultancy, that is, 'domain-specific advice and training' to clients in the private sector; d) knowledge transfer through setting up new businesses (or the commercialization of research outcomes). There were less examples of KT practices that involved KT by students (e.g. through internships) and academic staff (e.g. through publications and events). In addition, in the case of Chile KT does not take place through some of these six types, but also rather effectively through applied centers, especially in the areas of health care and education, aimed at transferring application-oriented science to relevant communities and groups.

Finally, one of the key issues is the extent to which

universities realize a broader KT involvement of their academic staff and students. Currently in most cases KT is undertaken by the administrative staff of the KT offices, external actors and selected academics, with often only weak direct links to the universities' primary activities.

UNIVERSITY ENGAGEMENT WITH SOCIETY

KT and community (or social) engagement are not always easy to distinguish from each other, neither in the academic literature, nor in the university practice. It can be argued that engagement with society requires some form of KT, while KT without any form of engagement is difficult to imagine. Nonetheless, as the 31 university cases in this study show, KT is in practice still mainly identified with the university's relationships with industry, while engagement is mainly identified with community (or social) development, services, and impact. Another difference in practice is the central, top-down position in the university organization of KT, compared to the decentralized, bottom-up organization of universities' engagement activities and their support structures. A common characteristic among most of the universities in this study is the focus on student engagement, that is, stimulating students to engage in activities such as community development and environmental protection.

In Chilean universities the term extension is used to refer to the universities' cultural engagement, for example, through its museums, while the term outreach is used with respect to the social responsibility of universities. At the University of Chile students can get credit points for participating in outreach activities, and professors can get outreach activities accredited.

As indicated, the engagement activities of universities are not as strongly institutionalized as their KT activities. In many universities engagement programs and opportunities are provided by faculties and departments, and most engagement activities are relatively small and vulnerable. One of the few universities with an Office for Community

Engagement, that is, McMaster University, presents community engagement as a set of opportunities for members of the local community to use the university for satisfying local interests or supporting community initiatives, rather than as a strategic profile element of the university. At the same time, this careful approach does not do full justice to the wide variety of engagement activities, the long engagement tradition of the university, the commitment of many staff members and students to engagement, as well as the impact of McMaster University's engagement activities on its local communities. The engagement practices at McMaster University resembles the situation at other universities, that is, a rather strong commitment to engagement, a wide range of engagement activities and opportunities (especially for students), a rather impressive impact on the local/regional communities, but a relatively weak level of organization and institutionalization, and no directly recognizable university engagement strategy with clearly articulated goals. Also in government policies there is a clearer focus on KT and its assumed economic impacts, than on engagement and its assumed social and cultural impacts. As a consequence, there is also more public funding support for KT, for example, in connection to innovation, than for university engagement. Many universities present in their internal documents data on the economic impact of their KT activities, but it is difficult to verify these data. In addition, while it can be assumed that the universities' engagement activities also have economic effects, there are hardly any data available on these effects.

CHALLENGES IN STRENGTHENING THE RELATIONSHIP OF UNIVERSITIES WITH SOCIETY

In all countries the contributions of universities to society have become a key element in the university's 'mandate', that is, next to education and research, the university is expected to have a 'third mission' expressing how it relates (or wants to relate) to society. While the understanding about the nature, intended outcomes, organization, governance and funding of education and research as the university's primary processes are relatively clear and institutionalized, there is far less clarity and agreement

on the 'third mission', which in general is currently only weakly institutionalized within universities. A consequence of the weak institutionalization is that even though the university's relationship with society is recognized as crucial within universities, it is at the same time still by many within the institution seen as a kind of 'add-on' to the primary processes. For understanding this situation, we can refer to Burton Clark's discussion^v of the imbalance between the demands towards the university and its capacity to satisfy all demands, implying that no university has the capacity to satisfy all expectations, requests, and demands from society. Therefore, each university has to choose how to use their human, financial, infrastructural, and other resources, and universities are obviously inclined to prioritize their primary process. Two factors determine how the remaining institutional capacity is used. First in each national context specific issues and problems are highlighted in the debates and deliberations on how the university is expected to contribute to society. This ranges from a strong focus on the universities' contributions especially through STEM (*Science, Technology, Engineering, and Mathematics*) and life sciences disciplines to economic growth (UK/England), to a more general focus on the universities' role in socio-economic development and innovation (Canada/Ontario, Germany and Japan) and a focus on promoting economic growth as well as reducing inequality in society (Chile and South Africa). Furthermore, the growing political and socio-economic attention paid to long term grand challenges, such as climate change, security, health issues related to demographic developments, water management, and energy, as well as specific societal crises, such as the recent 'refugee crisis' in Europe, have put pressure on universities to become involved in solving these challenges by using part of their academic staff capacity. Government support structures can be found especially in the area of innovation and the economic role of universities, for example, in the form of special funding programs for stimulating innovation; incentives for enhancing the employability of students; and strategic funding by national research councils for stimulating private and public sector innovations and industry-oriented research.

Second, university staff and students can initiate or

become actively involved in KT and engagement activities, without these activities being part of a larger strategic activity of their institution. These ‘bottom-up’ activities are usually weakly institutionalized and often dependent on the commitment of one or a few individuals. However, there are also examples of ‘bottom-up’ activities having been taken over by the institutional leadership, with more secure funding and a safer organizational setting as a result. We have not been able to identify among our six case countries no examples of bottom-up KT and engagement initiatives and activities that have developed into national policies or programs with government funding and regulation leading to their institutionalizing within the system.

This raises the question how much autonomy or room to maneuver (legally and financially) universities have in practice to develop ‘third mission’ initiatives and innovations. On the one hand, there are relatively few incentives in the six countries for strengthening the relationships with society outside the economic contributions of universities, but at the same time the danger of further incentivizing this area is that universities might end up with more governmental detail steering than what they feel is acceptable. This implies that it is important that universities use their autonomy more proactively to move their relationships with society (as their ‘third mission’) from an ‘add-on’ status to a position that is more in balance with the position of their primary processes of education and research. In further developing and institutionalizing their ‘third mission’ it is of importance that universities aim at an appropriate balance between industry-oriented KT and social or community engagement. In addition, in their industry-oriented KT approaches universities should be aware of the relevance for them of both the demands – capacity imbalance referred to by Clark, and the discussions in the economics of innovation literature on the importance of having an effective division of labor between universities and companies. The latter concerns the argument that universities should focus on high-level research and the importance of research-based education, while companies should focus on early stage technology development. In various parts of the world, for example, in Europe, universities often try to do both, many

times with disappointing results and a pressure on the capacity for their primary processes, especially their teaching capacity.

Two specific challenges can be mentioned especially of relevance in Germany and Japan, and Chile. First, the leadership of universities is for the further development and institutionalization of their ‘third mission’ dependent on the willingness, interest and commitment of their academic staff and students to contribute to this development. Especially in Germany and Japan university professors are still rather powerful and autonomous. While many professors are interested in educational and research innovations, as well as in KT and engagement, it is ultimately up to the individual professor to determine whether or not, and if so, how he/she wants to contribute to strengthening the university’s relationships with society. This implies in practice that the room to maneuver for the leadership of German and Japanese universities in strengthening their university’s relationships with society is in a number of ways smaller than at the universities in the other four countries, where the individual autonomy of the academic staff when it comes to the control over their primary activities has in a number of respects been reduced over the last decades.

Further, a challenge is the continuous ‘Ivory tower image’, which especially traditional research-intensive universities still can have in society. In Chile it is, for example, argued that due to historical reasons, the societal indifference with respect to public and private roles of universities limits the ability to strengthen the collaboration between the State authorities and the public universities to jointly tackle national problems, propose knowledge-based solutions and implement effective development strategies.

Finally, there is continuous criticism on universities that their ‘third mission’ strategies and activities are insufficient until now. While our study shows that especially the engagement activities of universities deserve more attention, part of the problem is also a lack of effective communication to society about their achievements so far. In general, one can argue that universities are more active in transferring knowledge to and engaging with society than they

get credit for. This implies that there is a gap between the activities that universities undertake to strengthen their relationship with society, and the visibility and understanding of these activities among the wider audience. A number of universities list the outcomes of KT activities on the websites of their TTO(-equivalent) offices, but these listings are difficult to find and access for the general public, and. In addition, while the listings as such provide evidence for rather impressive university achievements, the nature and importance of these achievements is difficult to understand for lay persons.

Overall the picture emerges that for handling the challenges identified in the study effectively, universities should become more strategic and professional in communicating their reciprocal relationship with various actors and groups. This is not an isolated issue, but rather part of a more general requirement concerning the professionalization of the institutional management, organization, and institutionalization of their third mission. Only through such a professionalization universities can be expected to handle the identified challenges, including the need to learn from and build on previous initiatives and experiences, the need to scale up engagement activities and broaden KT activities to involve more than just the central administration, external actors, and a few selected academics.

CONCLUDING REFLECTIONS ON THE PLACE OF UNIVERSITIES IN SOCIETY

The 31 universities selected for this study have all made deliberate choices in their efforts to innovate their primary processes, and especially their educational activities, to develop their KT strategies, and to strengthen their engagement with society. The digitalization of education, the pedagogical innovations to reduce the drop out of non-traditional students, the growing focus on research agendas on grand challenges such as climate change and on the sustainable developments goals, the institutionalization of industry-oriented KT, and the wide range of community engagement activities all illustrate the changing relationships between universities and society and the aimed at place in society universities would like

to take. The range of intended and actually undertaken activities is impressive, and to a large extent contradicts the widely heard criticism that universities do not take their relationship with society seriously enough. Unfortunately, as indicated above, these activities are not as visible to the outside world as one could hope for. University missions remain in general relatively abstract statements that hardly reflect the growing focus of the university on its relationship with society. In addition, the presentations of both the growing strategic importance and changing nature of the university's 'third mission' as well as of the outcomes of 'third mission' activities are not as visible and clear as one might expect or hope for, nor as comprehensive and insightful as would be necessary for reducing the criticism on universities' lack of 'third mission' progress. When reflecting upon the need for improving the visibility of and knowledge about the nature and outcomes of 'third mission' strategies and activities, an obvious starting point is the universities' websites. These provide currently a somewhat elitist image, with plenty of information for prospective students, and examples of recent research achievements. But overall university websites devote surprisingly little attention and space to the university's place in society. While one can discuss whether the university website is the obvious place for presenting a positive image of its place in society, the overall conclusion nonetheless is that universities could communicate and present their public image in a much more professional way than they are currently doing.

There is some variety among the six countries covered in this study. Ontario and South Africa show the most diversified development when it comes to their universities' 'third mission' profile. In Ontario, as also expressed in the Strategic Mandate Agreements (SMAs) between the responsible Ministry and the universities, each university has developed throughout the last decades a specific institutional profile that also covers the university's relationships with society. Without wanting to over-emphasize the differences in profile between the five case universities, it can be argued that the universities in Ontario have come far in strengthening their relationship with society by developing institution-specific KT and engagement strategies and activities. In South

Africa all universities have initiated a remarkable set of structures, projects and programs for their KT and community engagement relationships with society. This can be argued to be a consequence of the post-1994 transformation of the South African society, and the pressure on universities to distance themselves from the apartheid period and proactively contribute to the transformation of society. Each of the South African universities in the study has, at least implicitly, developed a specific institutional profile also concerning its KT and engagement activities, but unlike the situation in Ontario, the government does not have a national university diversity policy. The UK/English universities have extensive and effective support structures for their impressive KT activities, and their KT profiles are clearly diversified, but also in the English case without a governmental university diversity policy. The UK/English universities are actively committed to public engagement, but their activities in this area are less visible, and not as well organized and managed as their KT activities. In Chile the most research-intensive universities have come a long way in the development and institutionalization of their KT activities, and all universities have developed a large set of community engagement activities. The universities have in some respects developed their own institutional profiles, but these are not as clear as in Ontario and South Africa, and like the situation in South Africa, these institutional profiles are not acknowledged and further developed in national university diversity policy. Universities in Germany and Japan have come far in the development and institutionalization of their KT and engagement activities, but their institutional profiles in this are less diversified than is the case in Ontario, South Africa, UK/England and Chile.

In addition to national contexts, also global university templates play a role in the development of the relationship between university and society. This applies especially to the most research intensive universities in our sample. The developments in how they relate to their societies are strongly influenced

by their strategic aim to also contribute to global challenges and problems. As a consequence, in some respects they resemble each other more than the other universities in their own countries, especially in their focus on global connectedness and contributions, and the importance of excellence in their academic activities. The other universities in the sample show in general more the impact of the national context in their relationships with society.

Finally, an important issue is that the university's 'third mission' strategies and activities, and especially university engagement strategies and activities, are often meant to fill a gap in services previously provided by public authorities or agencies. These gaps have emerged as a consequence of changes in the ideological understanding of the role of government in society. As indicated above, governance reforms have in all six countries affected the public governance system, but the changes in the role of government in providing public services were not the same in all countries. On the one hand we find England where the withdrawal of the state authorities in the provision of public services has gone further than in the other countries, with especially Germany and Japan representing societies where a number of the services that in England have at least partly been moved out of the public domain, are still the responsibility of the government. This has consequences for the nature of the engagement activities expected of universities. In England developing KT and engagement activities is regarded more as part of the mandate of the university, with respect to which the university leadership has to develop its own strategies and activities. In the other countries, and especially Germany and Japan, there is greater need for consultation and collaboration between public authorities, universities and other stakeholders when it comes to the universities' engagement activities. This poses a challenge for the comparability of the social engagement strategies and practices of universities.

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ENDNOTES

- I See, for example, Deem (1998); Krücken & Meier (2006); Broucker & de Wit (2015); and Shepherd (2018).
- II The offices often are referred to as Technology Transfer Offices (TTOs), but e.g. in Ontario only 1 of the 5 university offices had ‘technology transfer’ in its name (see note v).
- III In other words ‘help researchers move their research into society’ (McMaster University: <https://milo.mcmaster.ca/>)
- IV The functions expressed in the names are: Innovations and Partnerships (University of Toronto); Industry Liaison (McMaster University); Research Innovation (University of Guelph); Commercialization (University of Waterloo); and Technology Transfer and Commercialization (University of Ontario Institute of Technology).
- V Burton Clark has published extensively on entrepreneurialism in higher education, see especially: Clark (1998).

UNIVERSITY OF OSLO, HEDWORK RESEARCH GROUP, TIK CENTRE

The University of Oslo (UiO) is Norway's oldest university, with 28,000 students and 6,000 employees. UiO is one of Europe's leading research-intensive universities. It celebrated its 200th anniversary in 2011, and has played a pivotal role in many of the major changes in Norway over the last 200 years. UiO consists of eight faculties, two museums and several centers, including ten national Centers of Excellence. This study is undertaken by researchers attached to one of UiO's centers (TIK Centre) and a research group at the Faculty of Educational Sciences (HEDWORK).

UiO's Faculty of Educational Sciences hosts a number of the world's most productive groups for educational research, including the research group HEDWORK (Knowledge, Learning and Governance: Studies in higher education and work). HEDWORK'S members share an interest in the dynamic interplay between knowledge, learning and governance in higher education and in knowledge-intensive work. By bringing societal, political and epistemic processes together, the group carries out research that examines the conditions for academic and professional development in a society that is more and more based on expert knowledge. Main areas for research are the organization of knowledge, learning and developments in different expert cultures; governance and policy processes of higher education systems and institutions; and teaching, learning and academic development in higher education (See: <https://www.uv.uio.no/english/research/groups/hedwork/index.html>).

TIK Centre for Technology, Innovation and Culture consists of two cross-disciplinary research groups, one within science and technology studies (STS) and the other within innovation studies. Both fields represent major international communities that in various ways study the relationship between society on the one hand and research, technology and innovation on the other. TIK is particularly active in trying to understand transitions like the 'green shift' in energy, the emerging bio-economy and wider industrial transformation, including in-depth studies of sectors and areas such as healthcare, renewable energy, waste and digitalization. There is an emphasis on understanding the role and nature of science and innovation policy. TIK has two master's programs and a PhD program, and it has extensive international collaboration.

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