CHAPTER SEVEN

Towards a transformation agenda for academic engagement in South Africa

Glenda Kruss & Il-haam Petersen
Human Sciences Research Council

Introduction

The starting point for this chapter is that South African universities need to engage with and respond to ever more complex development challenges, in a rapidly changing global economic, political, technological, environmental, and social context. Our universities need to link to global science, and to address local economic and social problems related to local resource conditions. Equally, they need to respond to the enduring legacy of colonisation, racial and ethnic segregation, and the resultant high levels of poverty, inequality and diversity (Albuquerque et al., 2015; Cloete et al., 2011; Kruss et al., 2013; Suzigan & Albuquerque, 2011).

These transformation challenges are magnified for universities embedded in secondary cities, located outside the major metropoles, in regions with higher levels of unemployment, poverty and inequality, and fewer opportunities for economic growth. These universities too, have complex legacies with which they still grapple, of historical under-resourcing, weak institutional cultures and political demand from students. Here, there are stronger and more urgent pressures on universities to act as agents of change that support and catalyse inclusive socio-economic development at local and regional levels (Bank, 2019; Bank, Cloete & van Schalkwyk, 2019; Bank & Kruss, 2019).

A renewed call for transformation was at the forefront of social protests that emerged in the South African higher education system from 2015, calling for change to universities' mandates, orientations, institutional cultures, and curricula (Booysen et al., 2016; Habib, 2019; Heffernan et al., 2016; Pattman & Cornelissen, 2018). In the context of the Covid-19 pandemic, it is also evident that the very nature, and perhaps even the survival, of the university in the form we know it is at stake. Institutions are forced to pivot rapidly to accommodate online learning and research, exposing fault lines in their ability to meet the needs of impoverished students, making calls for transformation all the more urgent, particularly in cities, towns and regions that have been poorly resourced for decades.

The implications for promoting university-community engagement in such secondary cities are significant, and as the chapter will argue, this requires fundamental changes to the prevailing trends.

University-community engagement has typically received sporadic and insufficient attention in mainstream higher education transformation academic and policy debates. A recent study of the national literature on transformation in higher education found that 'community engagement' did not feature at all as a theme of analysis. Instead, the literature focused on analytical themes of transforming teaching and learning in relation to curriculum, structures and access (Du Preez, Simmonds & Verhoef, 2016).

We argue in this chapter that a renewed transformation agenda needs to go beyond the predominant focus on transforming access, teaching and decolonisation of the curriculum, to change the orientations, practices and beneficiaries of the teaching, research ***and*** engagement missions of the university, in an integrated manner. To be transformative, a university needs to ensure that the ways in which academics teach, research ***and*** engage with societal challenges will contribute to shift long-established structures and practices of inequality, and promote inclusive and sustainable development, particularly at the local level.

The chapter draws on a transformative approach to innovation and inclusive development in the Global South (Cozzens & Sutz, 2014; Heeks et al., 2013; Pansera, 2015) to propose how such a renewed transformation agenda can be created. Innovation for inclusive development may be broadly defined as "innovation that aims to reduce poverty and enable as many groups of people, especially the poor and marginalised, to participate in decision-making, create and actualize opportunities, and share the benefits of development" (IDRC, 2011). An innovation for an inclusive development-grounded approach is particularly relevant for universities' community engagement in secondary cities, as it means that a different set of actors are included as partners, a different set of goals are prioritised, and alternative practices are activated.

The analysis draws on a set of empirical investigations conducted over a number of years, which allows for a perspective on evolving trends and practices in different types of universities located in different contexts (Kruss et al., 2013; 2016; Kruss & Gastrow, 2015; 2016; Petersen et al., 2016). The aim is to provide guiding principles for a transformative model of university-community engagement.

As a means of illustrating critical issues and identifying these guiding principles, the chapter draws on empirical evidence from only one comprehensive university, CompUniv, based in a large secondary city. The metropole is one hub for industrial development in the Eastern Cape, a province with high levels of poverty and significant socio-economic development challenges. CompUniv has a long history but was most recently shaped by a merger between a relatively young university and a well-established university of technology (formerly technikon). They had begun to collaborate around 'engagement' oriented to city and regional economic development, even before the merger, and before the national policy imperative towards community engagement.

The chapter proceeds as follows, after this introduction. First, it argues that new South African innovation policy can provide an enabling framework for engagement that promotes the role of universities in transformation towards inclusive and sustainable development. It proposes a distinction between three forms of inclusiveness that can inform engagement policy in universities in secondary cities particularly, in valuable ways: industrial, social and territorial. This framing is illustrated by a vignette describing one engaged research project at CompUniv, to illustrate the kinds of engagement that are more likely to promote inclusion and transformation.

Second, we show the significance of mapping patterns of engagement to identify whether and how the balance of effort across a university is oriented to promote the three forms of inclusiveness, and hence, transformative goals. Again, data from a survey of academics at CompUniv are used to substantiate and illustrate the guiding principles that emerge.

Third, the focus shifts from the macro- and meso- to the micro-level of academic practice, to explore the challenges of engagement with actors in local communities and in informal settings. Here, we suggest new ways to close a gap in current orientations and practice.

Finally, the conclusion summarises guiding principles for how universities in secondary cities can balance forms of engagement for transformation that promote industrial inclusiveness and social inclusiveness, in order to contribute to territorial inclusiveness, towards local socio-economic development.

Guiding principle for higher education policy: align with the framework of innovation for transformative change

Engagement for transformation can best be conceptualised in terms of the changing role of universities in innovation. There is growing recognition that science, technology and innovation policy itself has evolved over the past decades. The most useful distinction to understand the paradigmatic shifts has been drawn by Schot and Steinmuller (2018), who distinguish three consecutive 'framings'. The first frame encompasses a science-push, linear model focused on the goal of economic growth, and would promote universities' roles in driving research and development (R&D) and knowledge intensification. The second frame centres on the concept of building national systems of innovation to promote global competitiveness and catch-up and focuses on universities' roles in interaction with other actors, and particularly, through building university–industry linkages.

The third framing foregrounds transformative change, and focuses on how science, tech-nology and innovation can address socio-economic development needs for inclusive and sustainable development. This transformation frame allows for the extension of the boundaries of innovation system concepts in relation to the critical issues of exclusion, marginalisation and inequality experienced in low-income or highly unequal middle-income economies (Cozzens & Sutz, 2014; Crespi & Dutrenit, 2014; Pansera, 2015; Swaans et al., 2014). It lays the foundation for understanding university interaction through engagement, and promoting innovation for, by and with marginalised groups (Petersen & Kruss, 2018), and is therefore proposed as the most valuable framework for conceptualising university engagement in general, and particularly in secondary cities. How do universities understand their 'engagement' role, and how can they contribute in this frame, with the emphasis on transformative innovation?

By using a framing of transformative innovation, we propose that inclusive 'engagement' with marginalised groups, at the local level, is central for academic knowledge creation that leads to transformative social and economic development. From this perspective, the stark inequalities that are more evident in secondary cities create a stronger impetus to consider inequalities inherent in the practices of producing and using knowledge, which determine who creates and who benefits from university knowledge, innovation and technology development activities.

Posing such questions shifts the focus to a consideration of how engagement can be oriented to promote transformative potential across a university, and at a systemic level, across the higher education system. This section interrogates how current higher education and innovation policy frameworks conceptualise and promote university engagement that is transformative.

Evolving innovation and university engagement policy: towards an integrated conceptualisation

Drawing on international models in developed economies, from the time of the White Paper on Science and Technology (DASCT, 1996), and reflecting the second innovation framing identified by Schot and Steinmuller (2018), South African universities were challenged to build linkages with firms and government to support national innovation and economic growth agendas (Kruss, 2005). The assumption here was that 'university-industry linkages' (UILs) would increase knowledge flows across a national system of innovation in order to enhance economic growth. Academics were comfortable collaborating with their counterparts in firm R&D labs or innovation units, particularly where there was financial benefit to fund research and post-graduate students. Universities drew on the experience of developed economies to create mechanisms for technology transfer, collaborative research and skills development, amongst others.

In parallel, and driven by South Africa's equity and development agenda, from 2005 there was a strong higher education policy imperative to institutionalise 'community engagement' in university policies and structures. How to promote interaction with community, civil society and government actors was increasingly the focus. Extensive debate centred on how 'community engagement' – the predominant term used by most universities at that time – should be conceptualised, who should be the main stakeholders, and how this activity should fit with the mission and mandate of the university (see Bender, 2008; Bhagwan, 2017; Johnson and Cooper, 2014 for terminological debate on this issue).

In South Africa, the origins of 'community engagement' lie in a historical tradition of community service and outreach and have not been linked to innovation policy. 'Community' tended to stand as a proxy term for impoverished black citizens, long marginalised as participants in, and beneficiaries of, formal knowledge practices (Akpan, Minkley & Thrakrar, 2012; Thakrar, Kenn & Minkley, 2014). The result has been much practice that is philanthropic in nature, and that is viewed by many academics as an additional stream of work, not integrated into their main identities and roles (Kruss, Haupt & Visser, 2016), nor into universities' core knowledge functions.

The focus shifted over time, from a concern with terminological and definitional issues (Bhagwan, 2017; CHE, 2010; 2016; Lazarus et al., 2008), to an emphasis on ways to integrate community engagement with the core missions of teaching, particularly through approaches such as service learning (Bender, 2008; Thomson et al., 2011), and the value of working within a framework of 'engaged scholarship' or social responsiveness (Boyer, 1996; Johnson & Cooper, 2014; Mtawa, Fongwa & Wangenge-Ouma, 2016). A Council on Higher Education (2016) review of twenty years of change in higher education reflected these shifting discourses of community

engagement, in relation to national higher education policy imperatives. What was missing however, was a reflection on how higher education 'community engagement' policy aligns with innovation policy.

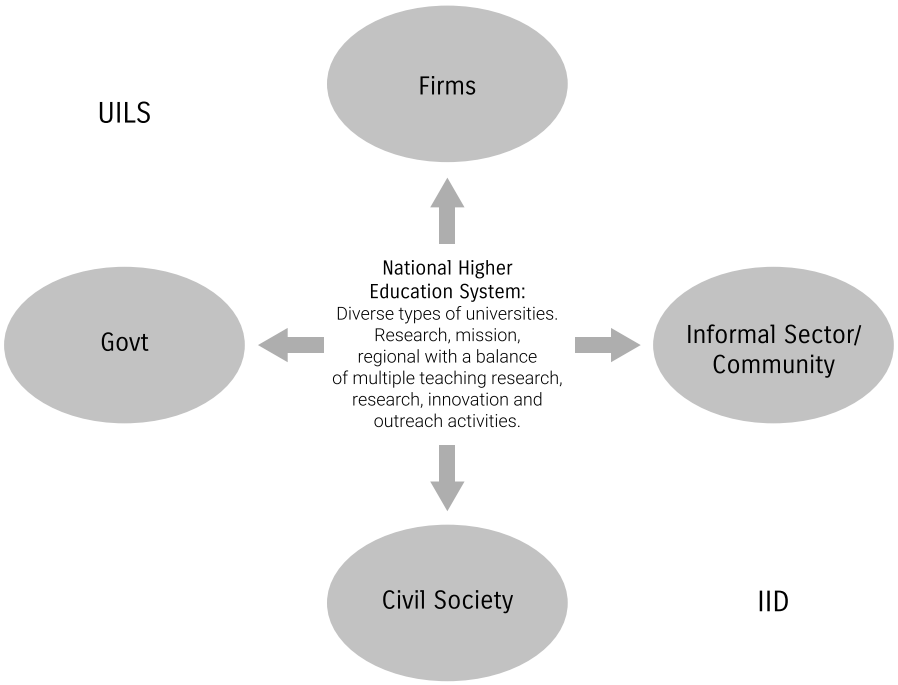

Figure 7.1 Extending academic knowledge to the direct benefit of all external actors

Figure 7.1 summarises these shifts in the conceptualisation of 'engagement' with external actors, in higher education and innovation policy and practice over the past two decades in South Africa. The shifts are uneven and play out in different ways across different types of universities with their specific missions.

One challenge is that two strands of activity – one oriented primarily to firms and the other to communities and civil society actors – have tended to operate largely on parallel tracks, with differing policy assumptions, targets, institutional structures and strategies. A second challenge is that university engagement with firms was informed by the second framing of innovation for catch-up and global competitiveness.

Using the third frame of transformative innovation, it is possible to delineate a conception of 'engagement' that includes activities oriented to multiple actors – in industry, government and civil society – in a coordinated and integrated manner. This should be seen as part of a university's strategic commitments and roles, and as part of academics' core roles and identities.

Such an integrated conceptualisation of 'engagement' is aligned with current innovation policy shifts informed by the third frame in South Africa, to promote innovation for inclusive and sustainable social and economic development, defined as innovation policy that:

> should enable all sectors of society to equitably access knowledge infrastructure and participate in creating and actualising innovation opportunities, and ensure that all individuals share in the benefits of innovation. (RSA, 2019:36)

Opposed to the second frame's emphasis on formal research and large firms in the formal sector, a third frame transformative approach also prioritises improving the well-being of low-income and marginalised consumers; prioritises improving the productivity of informal producers; and emphasises economic ***and*** social development (Bortagaray & Gras, 2014; Heeks et al., 2013). The approach stresses the significance of agency, participatory processes, collective action and understanding the values and institutions of marginalised groups (Petersen & Kruss, 2021).

The White Paper on Science, Technology and Innovation (STI) (2019) set out a new systemic vision, of "science, technology and innovation enabling inclusive and sustainable South African development in a changing world" (DST, 2019:11), which requires partnerships and collaboration between business, government, academia and civil society, driven by a shared and "coherent whole-of-society STI agenda" (ibid). The White Paper on STI (2019) reflects a growing commitment to a transformative innovation policy approach, in contrast to the typical second frame focus on economic growth and competitiveness. In that it promotes purposive and directional innovation to address societal challenges (Diercks, Larsen & Steward, 2019), it allows for a reconceptualisation of engagement that is transformative and oriented to the full range of actors, including those who were traditionally marginalised.

A definition based on extending knowledge to the benefit of all actors

A useful working definition of 'engagement' therefore is that it should involve universities and their academics in "generating, transmitting, applying and preserving knowledge for the ***direct benefit of external audiences***, in ways that are consistent with university and unit missions" (MSU, 1993). Transformative models of 'engagement' should involve ***extending*** knowledge in all of these ways to the direct benefit of the ***full range of diverse*** external audiences significant to the socio-economic needs of the local context, whether private or public sector, whether in formal or informal settings, whether in firms or in households, as depicted in Figure 7.1 above.

Within the umbrella term of 'engagement', forms of engagement oriented to distinct types of external actors can be distinguished, such as 'industry engagement' or 'policy engagement' or 'social engagement' (Mora, Aguiar & Vieira, 2017). Forms of engagement oriented primarily to the core missions of teaching, research or outreach can also be distinguished. However, the integrated relationship between these activities in the practices of individual academics and their organisational units is better captured by distinguishing activities along the spectrum of generating, transmitting, applying and/or preserving knowledge.

A definition based on a broad conceptualisation of inclusion

For a transformative approach, it is proposed that universities conceptualise their 'engagement' within such a framework of inclusion and prepare to extend their knowledge in diverse ways to the benefit of diverse actors in systems of innovation. For this purpose, it is useful to draw on a distinction between three broad objectives of innovation policy that can promote inclusion. The aim may be to promote industrial inclusiveness, or social inclusiveness or territorial inclusiveness (Phaho & Dlamini, 2020; Planes-Satorra & Paunov, 2017). This threefold distinction may be adapted to inform the complex roles and ways in which universities can engage and extend their knowledge in secondary cities specifically.

First, is the role of the university to promote 'territorial inclusiveness', by contributing to narrow the gaps between secondary cities and impoverished regions, and the leading regions in the country. In this regard, there is a growing literature on the role of the university in place-making that provides direction (Bank, 2019; Bank et al., 2019; Thakrar, 2018). The focus is increasingly on universities' roles as key actors in local development networks. Universities may play a role as brokers and intermediaries in local development networks, bringing scientific knowledge to bear, and in turn, generalising insights from the local to the national or global levels.

Second, for a university in a secondary city to promote 'industrial inclusiveness', where many firms are less innovative, there is a critical role to be played in extending academic knowledge to a range of firm actors. Research and teaching can be oriented to enhance their innovation and technological capabilities, across industrial sectors, firm size, local or global ownership, and formal or informal enterprises.

Third, to promote social inclusiveness, universities need to extend their knowledge to impact on the well-being of individuals and groups in a highly unequal society, by promoting broader participation and including actors in marginalised settings. Extending knowledge to the benefit of actors at the community level, based in informal and micro enterprises or local government, remains a challenge, however.

The aim is to engage in ways that are mutually beneficial and that promote co-production and bi-directional knowledge flows, to contribute to inclusive local socio-economic development. As Trencher et al. (2014) argue, focusing at the local level is necessary for transformative change, and this is particularly vital in secondary cities. Nevertheless, it is not easy for all universities, as formal knowledge producers, to engage through their academic teaching and research with users in informal settings, who have traditionally been excluded, or have been passive recipients of knowledge.

Therefore, transformation depends on how universities in secondary cities can achieve a strategic balance in their activities of generating, transmitting, applying and preserving knowledge in an engaged manner, to the direct benefit of the full range of diverse external actors, to promote territorial, industrial and social inclusiveness. Such a framing of engagement gives strong direction to the question of how universities can better contribute to transformative socio-economic development.

Engagement informed by and promoting a transformative approach: a vignette from a comprehensive university in a secondary city

This section is based on a case study conducted at a comprehensive university, of engaged research focussed on enhancing well-being and livelihoods of actors in informal settlements. The vignette we share here for illustrative purposes, demonstrates and reflects such a transformative framing. Notably, at the time of the research, CompUniv displayed a strong institutional focus on the local and regional levels, rather than on its contribution at the national or international levels. CompUniv had a comprehensive and all-encompassing definition of 'engagement' at the heart of its institutional policy, which was implemented in practice across departments in highly varying ways. The case described here stood out in the strength of the networks built up, the commitment to active participation by community-based partners – who would more typically have been included as 'objects' of research – and the creation of livelihood opportunities.

The research project at the heart of the case was initiated at the request of the local municipality, which faced 'service delivery protests' in an informal urban settlement located in an environmentally sensitive area, close to the work opportunities of the residents. A leading university researcher was tasked to work with residents to identify creative solutions to the local authorities' inability to resolve the tension between the environmental conservation needs, and livelihood needs. The lead academic was selected based on prior engagement with local government and conducting relevant research on human settlements.

The local residents engaged in tenuous livelihood activities in formal and informal jobs based in the nearby affluent suburban areas. They faced the threat of resettlement at a distance from their current livelihood opportunities, due to the environmental vulnerability of the area where they resided (see Gastrow et al., 2016). This is a typical South African story, related to patterns of spatial segregation as cities developed, with the result that the issue of sustainable human settlements has become a major social and economic development problem (Bradlow, Bolnick & Shearing, 2011). The research project attempted to manage the tension by avoiding the route of unsustainable traditional construction methods, and instead, involved local actors in identifying technologies that could make the settlement truly sustainable and self-sufficient, while creating further livelihood opportunities for residents.

The project used a highly participative and reflexive mode of engaged research, in a network consisting of the university's department of development studies, the provincial department of human settlements, the metropolitan municipality, a local non-governmental organisation (NGO) network, and residents of the informal settlement. The university research group had a linked master's programme, and students worked with local participants. The lead academic reported difficulties bringing other academic departments into the project, claiming that most academics displayed an 'elitist attitude' that prevented engagement in the same way. Nevertheless, the project had significant traditional academic benefits for the university, in the form of post-graduate students, scientific reports and academic publications, and reputation building local networks in the city. More than that, the involvement of the university led to significant knowledge generation with potential socio-economic benefits. Drawing from the experience of one specific case, academics could create new methodologies and approaches to sustainable human settlements that could be used in multiple settings to enhance social and territorial inclusion.

Furthermore, the project had direct benefit to the specific local residents. The participatory action research approach adopted required that residents explore alternatives and come up with their own solutions and plans for development, including exploration of cost-effective and eco-friendly technology, such as bio-digester toilets, sandbag houses, solar lighting and water harvesting mechanisms. The origins of these technologies were diverse, but generally stemmed from local and international best-practice models identified through previous academic research. None of these technologies were new to the world, but they would all be diffused to a new local setting – and provided a model for wider diffusion to multiple informal settlements.

Local participants were trained to become 'community researchers', elected by the residents, on the basis that they were already in leadership positions in the local area. The action research methodology involved a substantial degree of knowledge

co-construction, with the local participants involved in activities such as feedback about their problems, choices and solutions, which in turn, fed into the research process as a source of knowledge for the academics. Livelihood opportunities for local residents to create new businesses supplying these energy, housing or sanitation technologies were promoted and supported, through linkages with NGOs and local government, enhancing industrial inclusiveness. A less tangible but critical outcome was the cohesion fostered in the informal settlement through the establishment of a committee structure for engagement with academic and government actors.

Such a case illustrates the transformative potential of engaged academic activity that goes beyond the typical practices found widely across the higher education system. It highlights that for a transformative agenda, different kinds of questions should be posed. The national discussion around university-community engagement has tended to focus on defining 'community', debating which 'communities'/university stakeholders should be engaged, and whether all types of universities should be expected to engage at the 'community' level. The more fundamental question to be posed is: how can 'engagement' be promoted to more equitable socio-economic benefit, in the interests of the public good? This kind of engagement is not widely found in academic practice. It is particularly critical in secondary cities that are challenged to contribute to local economic and social development. Action research models and participatory methods in general are well-established paradigms, but a recent trend is their growth in popularity across disciplines and fields. While there are signs that practice is changing, there is not yet a systemic response. How can these models be combined to develop a systematic response (Trencher et al., 2014) across the higher education system and policy domain, to address socio-economic development needs and transformation at the local level?

Guiding principle for university strategic planning: Orient academic engagement to socio-economic benefit towards territorial inclusiveness

The challenge is how to balance the engagement effort within a specific university, and across the higher education system, oriented to a transformative inclusive and sustainable development agenda. Of necessity, such a process must consider each university's context, history, mission and strengths. In this section, we outline ways in which the existing patterns of engagement at CompUniv were analysed, against their ideal model, to identify spaces for change.

Map patterns to ensure the strategic balance of engagement effort across the university is oriented to transformation

The complex history of higher education in South Africa, characterised by the establishment of different types of universities for distinct purposes in different periods, means that research, comprehensive and technology-oriented universities have distinctive balances of the core missions of research, teaching and engagement (Kruss et al., 2013; Kruss et al., 2016; Thune et al., 2016). Universities in secondary cities are more strongly tasked to respond to the distinctive developmental challenges of the regions and cities in which they are located, which are directly linked to the histories of their establishment (Bank & Kruss, 2019). And of course, academics in different fields will interact with different kinds of external actors in different ways (Kruss et al., 2016). So, while all are mandated to extend knowledge to the benefit of all actors, not all universities and not all academics in all disciplinary fields will do so in the same way.

A university in a secondary city needs to understand its own local socio-economic developmental challenges, in relation to national challenges, and to its insertion into the global context. The aim is to determine the most appropriate balance between the missions of teaching, research and outreach, and the set of external actors appropriate to that context. On this basis, a university, department or research group can focus on how to build sustainable capabilities to address these challenges. A coordinated strategy is required across the university to consider disciplinary differences and different forms of interaction (Kruss et al., 2013) that promote all three forms of inclusiveness. For example, collaborative forms of interaction with firms may involve bi-directional flows of knowledge to the mutual benefit of the university and the firm (Kruss, 2005; Kruss, 2012), promoting industrial inclusiveness. In contrast, traditional service-learning forms of interaction that primarily have uni-directional knowledge flows, act primarily to the benefit of the university, and may be limited in promoting social inclusiveness. If the university prioritises limited forms of engagement with a narrow set of actors, this may restrict its ability to promote territorial inclusiveness.

Hence, it is imperative to map academics' patterns of engagement in distinct types of universities and academic fields (Kruss et al., 2012), to provide evidence of the scale and nature of interaction relative to individual, institutional, regional and national mandates. By understanding what exists, university leadership can strengthen existing effort, promote more effort in neglected areas, support emergent niche activities and so on.

One way of doing this was designed for the South African context in different types of universities in 2010 (Kruss, 2012; Kruss et al., 2013; Kruss et al., 2016; Kruss & Visser, 2017). A survey of academics' engagement activity was conducted, and interpreted within an analysis of the institutional mission, policies, structures,

mechanisms and incentives in place to promote engagement (Kruss et al., 2013). The approach has been influential in the literature on engagement in sub-Saharan Africa (Zavale & Langa, 2018). Academics were asked to report on the scale and nature of their engagement with a list of potential actors, including different types of firms, government, civil society, community and welfare partners, at local, regional, national and global levels. Survey questions probed the type, channels, outputs and outcomes, as well as the barriers to interaction. Such mapping analysis points to critical questions for promoting the desired balance of engaged activity in a university or set of universities to promote territorial, industrial and social inclusiveness.

A skewed balance of patterns of engagement

Here we provide insights into how universities balance effort in line with their missions and local demand, through an analysis of the patterns of engagement within CompUniv. Most academics surveyed claimed that they were engaging with external partners, but the scale and nature of this engagement differed widely between faculties (Kruss et al., 2013). There is independent evidence from other studies to suggest that there were competing notions of engagement operating within CompUniv, which were not all contributing to strengthen the 'academic core' (Van Schalkwyk & Bailey, 2011). Nor were they all contributing to development agendas in a strategic and proactive manner (Cloete et al., 2011).

Table 7.1 A teaching-oriented community pattern and a research-oriented firm pattern of interaction

University policy	Broad concept of 'engagement' as a strategic focus, both industry- and community-driven. Four types: through research and scholarship, through teaching and learning, through professional or discipline-based service provision, and through outreach and community service.	
Scale of engagement	• 79% of academics reported they engage with an external partner. • Most – 48% – engage in isolated instances only. • Active interaction (moderate to strong basis) with only one (30%) or two partners (16.5%), with 36% of these interacting with community partners, 23 % with academic partners, and 16% with firm partners.	
Main pattern of engagement: (Clustering using Principal Component Analysis techniques was used to map the types of actors and types of relationship and then, the associations between them were explored using Pearson's chi-squared and Cramer's V value. The categories were all derived from the PCA analysis, with the labels informed by the framing of the analysis in terms of the dominant concept of 'community engagement' at that time.)	*Community, welfare and civil society partners in relation to teaching and learning- oriented types of relationship:* Type of relationship associated most strongly with community partners: student learning, health, and alternative forms of teaching. Alternative teaching most frequent: service learning, student voluntary programmes, education of socially responsive students and customised training. Few research-oriented types of relationship.	*Firms and academic partners in relation to research and technology transfer-oriented types of relationship:* Type of relationship associated most strongly with firm partners: technology transfer; alternative teaching; community participatory. Technology transfer most frequent: Design, prototyping and testing of new technologies; technology transfer; design and testing of new interventions and protocols; contract research; joint commercialisation of a new product. Community participatory: participatory research networks; collaborative R&D projects; research consultancy; community-based research projects.
Main understanding of partners	Individual and households, a specific community, and religious organisations (stering using Principal Component Analysis techniques was used to map the types of actors and types of relationship and then, the associations between them were explored using Pearson's chi-squared and Cramer's V value).	Multinational companies; small, medium and micro-enterprises; large South African firms; national regulatory and advisory agencies.

Examples of engagement	1. A five-year project to offer a social development module where students go into the poor local community and aid in social projects (help with understaffing at health care facilities, establish community gardens etc.). 2. Second year students do voluntary social responsibility projects with local communities (such as orphanages) and request donations from various agencies. 3. Helps to organise fashion shows for local communities in which students design their own clothes. 4. Informal settlements and social network type of project that benefits both students and the community. 5. A ceramic sculpture project with the aim to transfer skills and promote sustainable development, partnering with a local government development agency, and a local municipality. 6. Involved in a community-building and uplifting project linked with NGO agencies.	1. A project with a large sugar company to find ways of using by-products for more purposes. 2. Built a statistical functional model for demand forecasting for a public energy supply company. 3. Collaborated with a small pharmaceutical company to produce an indigenous plant product. 4. Research partnership with small and large landowners on ways to harvest timber on steep slopes, investigating different techniques and new technologies. 5. Working with a company that manufactures pharmaceutical products; company provides resources to the department and they in turn supervise students who would later work in the company. 6. Collaboration with electronics MNE for more than two years; able to establish two laboratories, train employments and catalyse other partnerships.
Challenges and obstacles	1. Resource-related challenges: competing priorities on time, too few academic staff, limited financial resources for competing university priorities and sustainable external funding 2. Not frequently related to the distinct challenges of extending scholarship to the benefit of external partners, or to communities specifically	

Factor analysis of the survey data revealed two distinctive patterns of engaged activity, evident in the practice of separate clusters of academics (Table 7.1).

1. A set of academics who engaged with 'community', 'welfare' and 'civil society' actors through 'alternative teaching and learning-oriented' types of relationship, potentially promoting social inclusiveness.

2. A set of academics who engaged with 'firms' and 'academic' actors through 'research' and 'technology transfer-oriented' types of relationship, potentially promoting industrial inclusiveness.

The dichotomy in the nature of engagement was stark. Engagement with 'community' partners entailed little research centred on activities to generate or apply knowledge. The main types of relationship were related to transmitting knowledge – 'alternative' forms of teaching, such as volunteering, service learning or cooperative learning. For the most part, students in professional programmes such as health, social work, teaching or law, were involved in learning through development projects that took place in local communities. These equipped students to operate more effectively in the South African context in their future careers, but the benefits to local communities or to growing knowledge fields were less clear.

A distinctive feature at CompUniv was that the factor for 'community' partners included religious organisations, linked to projects with a more traditional outreach and service orientation. It also included a concentration on schools and education development projects, which are a core concern for promoting social inclusiveness in the region. Not all engaged activities were directly related to the students' field of study to develop their practice, however. Some activities displayed the potential for social and industrial inclusiveness, such as a ceramic sculpture project that aimed to transfer skills and promote sustainable development, by partnering with local agencies. Notably, as the examples cited in Table 7.1 reflect, many of these engagements displayed a strong philanthropic orientation of outreach and service, rather than being related to the core knowledge functions of the university, or to promote livelihood opportunities for social and industrial inclusiveness.

In sum, the main engagement with 'community' actors related to the transmission of knowledge. Knowledge flows tended to be uni-directional, from the university to the community partners, with students as the main channels of interaction. In terms of outputs and benefits, engagement was more likely to produce academic outputs, with teaching and learning benefits to the university. Less frequently reported were outputs or benefits for the community-based actors involved. Community partners were largely passive recipients, and at best, were involved with students in applying knowledge new to their context, limiting the potential for promoting social or industrial inclusiveness.

A small cluster of 'community participatory research' type of relationships was evident, but these were more strongly associated with firm actors. 'Community' actors based in households and local settings were not significantly associated with these types of relationships. This suggested that they may be involved through intermediary agencies like academic, welfare or government partners, as potential beneficiaries, but not directly as active partners. These types of relationship largely produced academic outputs that had academic benefits, suggesting that they do not easily promote social inclusiveness.

In contrast, the main types of relationship with firm actors were clustered around 'research', 'technology transfer' and 'alternative teaching' types of relationship. These related to distinct historical forms of co-operative education and work-integrated learning, traditionally based in firms, as well as examples of academics offering short courses and training in firms. Here, the main activities involved the generation, transmission and application of knowledge, and knowledge flows could more often be bi-directional. Firms actively collaborated in knowledge activities, potentially promoting industrial inclusiveness. The 'technology transfer' type of relationships, for example, primarily produced academic and firm-related outputs that had mainly firm-related benefits, potentially promoting industrial inclusiveness.

Create a balance of forms of engagement that can effect transformative change for a diverse range of partners

Analysis of the pattern at CompUniv at that particular point in time (if our mapping exercise were repeated in the present, it is possible that a different pattern would emerge) highlighted an imbalance in the nature of engagement, a trend that was not unusual across the university system (Kruss et al., 2013). Unlike firm actors, community-based actors were not strongly or widely involved across the full spectrum of knowledge activities. They were more likely to be passive recipients of formal knowledge produced in the university and diffused by intermediary agencies. The pattern suggests a balance of effort that attempted to promote 'territorial inclusiveness', but that promoted 'industrial inclusiveness' with formal sector firms and related to public and private sector actors only. The university did not strongly engage with informal sector firms, and the forms of engagement with community actors could promote only very limited forms of 'social inclusiveness'.

A more recent study of engagement at CompUniv came to a similar conclusion. The university showed evidence of investment in local partnerships and 'community-focused' teaching and research (Van Schalkwyk & De Lange, 2018). However, increasingly, its engagement patterns were more strongly driven by financial imperatives, a market logic, and a choice to orient activity around a national and global reputation-building mission. These shifts came at the expense of engagement

oriented to "the challenges faced by the communities which share the city with the university" (Van Schalkwyk, 2018:80), to promote territorial inclusiveness in a way that is socially inclusive.

Our analysis highlighted that if the activities within a specific university are to be oriented to industrial and social inclusiveness in a balanced manner to promote territorial inclusiveness, then academic engagement with local actors based in communities and households, informal enterprises, local government and non-profit organisations (NPOs) should also be prioritised. Such transformative engagement should also involve their active participation in the full range of knowledge generation, transmission and application activities.

The challenge is to promote the forms of engagement that can extend knowledge to the direct benefit of typically excluded actors, on a wider scale across the university. And, it is vital to ensure that these are integrated more effectively into academic identity and practice, in ways that are seen to be of value. The vignette showed that transformative forms of engagement may have direct benefit for academics and the university. Significantly, they are critical to inform more sustainable and transformative solutions to complex socio-economic problems in the local setting of the secondary university.

Guiding principle for departmental and academic practice: Create and promote new modes of bi-directional engagement with all partners as active participants

The first section focused on how transformation can be promoted at the macro-level of policy through alignment with the commitment to innovation for inclusive and sustainable development. The second section focused on the meso-level of university strategy, showing how an imbalance of forms of engagement to the detriment of informal and community-based actors can limit the promotion of industrial and social, and hence, territorial inclusiveness. This section moves to focus on the micro-level, of the practices of individual academics and their departments that can facilitate engagement with informal and marginalised actors that promotes all three forms of inclusiveness.

A shift to more participatory, collaborative and bi-directional forms of engagement

There is a growing recognition of the need to create more participatory, collaborative and bi-directional forms of community engagement (Mutero & Govender, 2019; Scheepers, 2019). Preece (2013) for example, calls for the use of an asset-based community development lens. Engagement through listening, reciprocity, community

ownership, and illuminating power relationships can lead to service-learning types of relationship that have a greater chance of effecting change (see also Preece, 2016 for elaboration of an 'adaptive engagement' approach). One creative and potentially impactful initiative, Common Good First, set up a digital network that aims to connect and provide a platform for 'community-driven social impact projects', using tools such as digital storytelling to illuminate a more inclusive range of experiences and stories (https://commongoodfirst.com/about/). Academics are increasingly promoting participatory action research approaches for community engagement (Kearney, Wood & Skerrit, 2013; Nhamo, 2012), particularly in fields like health and environmental management. However, these come with their own challenges (Emmet, 2000). This section considers how the conceptual distinctions proposed in the chapter can contribute to shift these challenges.

The need to build cognate knowledge to facilitate bi-directional knowledge flows

One of the key constraints is the knowledge differential between university academics and community-based actors, usually evident in language differentials, which reinforce power differentials. Central to academics' role and identity is that they are formal knowledge producers, transmitters, appliers and diffusers. Engagements with firm actors, while there are challenges, are more easily facilitated by the fact that firms are formal knowledge users. Interaction is typically ensured through R&D, training, student or researcher exchange, funding and so on. In contrast, community-based actors are typically informal knowledge users, and typically located in under-resourced informal settings, defined as "a set of places where people live, namely, marginalised households and communities, as well as a set of places where they work, namely, the informal economy" (Cozzens & Sutz, 2012:5). The institutional settings are thus also very different, making engagement across formal-informal boundaries difficult.

It takes time to build up the kinds of cognate knowledge necessary to facilitate bi-directional knowledge flows and co-production (Benneworth & Olmos-Penuela, 2018; Petersen et al., 2016; Petersen & Kruss, 2021). Cognateness is multi-dimensional and may involve cognate knowledge about the differing institutional contexts. Academics and students need to have some level of understanding of the social context, at least, what is valued and practised in communities, and their development priorities. If not, an intermediary actor such as an NGO active in the local area may be needed to assist with knowledge transformation. Similarly, community partners are able to gain more from engagement with academics and students if they place some value on formal knowledge. The recognition of the inter-dependency of academic and community knowledge is another dimension of cognateness (Benneworth & Olmos-Penuela, 2018).

Engagement practice that emphasises cognate knowledge bases is more likely to promote social and territorial inclusiveness. It can foster proactive strategies by community-based actors (see Petersen et al., 2016), and hence, lead to transformation. Specific techniques that facilitate the building of cognate knowledge include participatory action research and community-based research methods that enable the co-determination (Sarewitz, 2016 in Benneworth & Olmos-Penuela, 2018) of research questions, agendas, methods and planned outputs, as illustrated in the vignette.

Conclusion: towards a transformative agenda of engagement

The chapter began by arguing for the integration of engagement into the discourse on higher education transformation in South Africa, informed by a conceptualisation of innovation and inclusive development. To be transformative, a university needs to ensure that what and how academics teach and research, and the ways they engage with societal challenges, will contribute to shift long-established structures and practices of inequality, and promote inclusive and sustainable development, particularly at the local level. To contribute to transformative social and economic development, internal transformative change should take place in university policy, academic identities and practices, and the norms and values that underpin institutional behaviour (Petersen & Kruss, 2021). An approach of innovation for inclusive and sustainable development, as articulated in the new White Paper on Science, Technology and Innovation (RSA, 2019), provides a useful overarching framework to promote the university transformation imperative. This approach leads us to think differently about the third mission of the university, through an emphasis on inclusion and participation. A conceptual distinction between the three forms of territorial, industrial and social inclusiveness is important to guide public policy and university strategy. Engagement orientations and practices need to be aligned with each of these, embedded in the distinctive knowledge functions of the university, and extended to the benefit of a diverse range of actors. In particular, a transformative agenda requires socially inclusive engagement with those actors that have typically been excluded or marginalised as knowledge partners. The common practice of uni-directional knowledge flows to passive recipients in communities and informal enterprises will not promote inclusion or transformation, as the evidence shows. A skewed balance of forms of engagement with a limited set of formal sector actors will not enable a university to achieve transformation objectives.

What then are the guiding principles that can be drawn from the analysis, to inform conditions of possibility? First, engagement policy, at the national government and university level should align with the innovation policy emphasis on inclusive and sustainable development. It should distinguish how each of the three forms of inclusiveness may be promoted simultaneously and in an integrated manner. Second, for strategic planning at the university level, it is vital to map existing forms of engagement with diverse partners. This can provide a basis for balancing a suitable range of engaged activity aligned with the mission of the university and its units. Here, the focus on local development imperatives to promote territorial inclusiveness is vital. Third, for practice at the level of departments and individual academics, we need more research and experimentation with action and participatory research methods. More effective forms of engagement that promote bi-directional knowledge flows and co-creation with informal marginalised actors at local level can be designed. Imagine if universities were able to intervene to find solutions to complex societal challenges in networks with communities at local level, using such forms of engagement?

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