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# Knowledge Production and Contradictory Functions in African Higher Education

Edited by Nico Cloete, Peter Maassen and Tracy Bailey

AFRICAN MINDS

*A NOTE ABOUT THE PEER REVIEW PROCESS*

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CHAPTER 10

# UNIVERSITY ENGAGEMENT AS INTERCONNECTEDNESS: INDICATORS AND INSIGHTS

*François van Schalkwyk*

## Introduction

In one of the most famous scenes from the James Bond movie franchise,[1] 007 is shackled to a solid gold table in arch villain Goldfinger's hi-tech lair. As an industrial laser beam progresses ever higher between Bond's parted lower limbs, the nervy but unshaken secret agent goads Goldfinger: 'Do you expect me to talk?' To which Goldfinger replies: 'No, Mr Bond. I expect you to die.' What Goldfinger goes on to say is less well-known: 'There is nothing that you can talk to me about that I don't already know.'

Universities are more commonly likened to ivory towers than to the impenetrable and typically remote lairs of Bond villains. However, their isolation from society is common to both. And while it is not the intention of this chapter to make inferences as to similarities between Bond villains and university vice-chancellors, universities are often criticised for assuming, as Goldfinger does, that there is little to be gained in the knowledge enterprise by engaging with intruders into their domain. And yet, Bond always finds a way in, without creasing a collar. Capture inevitably follows but escape is guaranteed and, moments later, the secluded villainous facility self-destructs. While there are those who predict the extinction of the university as we know it, perhaps an analogy that ends in self-destruction begins to waver at this point. However, it remains true that academics are increasingly expected to engage with those beyond their ramparts and that, in doing so, they are expected to exchange knowledge in order to contribute to the development of society.

A central tenet of the Higher Education Research and Advocacy Network in Africa (HERANA) project is that Africa needs a robust, differentiated higher education sector in order to bolster the continent's development. A critical element in such a differentiated

1 Close to one million views on YouTube alone (as at 30 October 2013).

system is a cluster of research-intensive universities producing new knowledge to stimulate innovation and development at regional and national levels. However, findings from the HERANA Phase 1 research indicated that the eight African flagship universities under study were engaging in activities (such as consultancies or service-orientated work), fuelled by the need to secure external research funding, that were responding to the needs of communities but that were not necessarily contributing to the production of new knowledge.

As part of the second phase of the HERANA project, the current study sought to examine more closely the impact of university–community engagement projects on the university, and therefore by implication on development, as academics grapple with the tension between engaging with those external to the university while simultaneously strengthening the core university functions of knowledge production (research) and transfer (teaching).

Expanding on the work done in the HERANA 1 project, the following three propositions were put forward in this study:

*Proposition 1*: University–community engagement must contribute to building stronger universities – in both teaching and research – in order for the university to fulfil its potential contribution to development.

In sub-Saharan Africa, in a context of relatively underpaid and poorly incentivised permanent academic staff, engagement is often synonymous with consulting work. Furthermore, there are those who warn of the dangers of engaged research becoming dislocated from the academy and from home-grown development prerogatives and strategies, as researchers genuflect to the research prerogatives of government and international funding agencies (Cloete et al. 2011). As Mkandawire (2011: 19) states:

> *The aid establishment today commands much of the intellectual resources devoted to development through its own research agenda, through the consultancy industry and through its selective support of research programmes and epistemic communities in developing countries. … Many academics inside and outside have been drawn into this system as they move freely through the revolving door linking academia, the consultancy industry, philanthropic organisations and international financial institutions.*

Following the 2012 AsiaEngage summit, Sharma (2012) reported in *University World News* that:

> *[U]niversities and non-governmental organisations alike were beginning to think of community engagement not as an ad hoc activity, but one that was important to sustain and could become as vital to universities as teaching and research. [However] it was clear that community engagement had to be integrated into research for university-community engagement to be sustainable.*

At the national level in South Africa, a study commissioned by the Higher Education Quality Committee indicates that many engagement initiatives carried out by universities are, in fact, ad hoc in nature, fragmented and not linked in any way to the academic project (DHET 2013: 39). Hinting at the possibility of state funding being linked to engagement activities (as it currently is in the case of research outputs and teaching), the *White Paper for Post-School Education and Training* (ibid.) states unequivocally: 'it is likely that future funding of such initiatives in universities will be restricted to programmes linked directly to the academic programme of universities, and form part of the teaching and research function of these institutions.'

The university in the guise of service provider to the community, that does little more than import and transfer existing knowledge instead of creating new knowledge, will at best make a marginal, short-term contribution to development. In fact, one could argue that community service organisations and corporate social initiatives are better placed to deliver services to the community; that the state has an obligation to do so; and that the university would do better to partner with these entities to deliver services, thus allowing universities to maintain their focus on their core functions of teaching and research.

*Proposition 2*: An empirically grounded notion of university–community engagement is required in order to provide an indication of the nature and impact of current engagement activities.

'Engagement' is a slippery concept. It means different things to different universities and stakeholders, and there is no single universal definition of engagement. 'Service learning', 'outreach', 'community engagement', 'scholarly engagement', 'university–industry linkages', 'third mission' and even the 'popularisation of science' are examples of university-based activities that fall under the umbrella term of engagement. Given that the concept of 'engagement' is highly contextual and ideologically embedded, and therefore problematic when attempts are made to quantify, qualify or compare engagement-like activities, and that an empirically grounded concept is sought to operationalise research on engagement activities, the concept of 'interconnectedness' is offered as a way out of the ideological quagmire.

Interconnectedness describes the relationship (in tension) of academics engaging with those outside of the university while simultaneously linking back to the university. Interconnectedness is operationalised along two dimensions: (i) articulation, which describes the extent to which engagement activities link to the university's strategic objectives and to external constituents, and (ii) the academic core, which describes the extent to which engagement activities link to the university's core functions of research and teaching and learning.

*Proposition 3*: It is neither helpful nor sufficient to introduce a new concept such as interconnectedness into the already murky waters of engagement.

At present there is a dearth of even the most basic data on university–community engagement activities (such as the number of projects, who they are engaging with, how they are engaging, etc.). Watson et al. (2011), in a study of engagement activities at 20 universities across the globe, found that 'very few' universities in the sample could account for the number, nature or impact of their engagement activities.

In his 'Engagements with engagement', Muller (2010: 85) concludes as follows:

> *This does not absolve us from the requirement to find ways of identifying it [engagement], providing funding for more rather than less promising efforts, and finding robust ways to measure it. But it does mean that theory will only help us so far, and that although an inductive process of identifying successful engagement practice will be time consuming, it is probably the only sensible way to begin constructing a typology of engagement best practices that might suit the diversity of institutional and development contexts.*

Therefore, interconnectedness needs to be quantified so that higher education stakeholders (including the state, steering bodies and funders) may glean the actual nature and impact of engagement activities on universities; in particular, the extent to which engagement activities are impacting on the university as key knowledge producer.

However, to claim a single, unopposed function for the university is to mask the complexity of the socio-political context in which universities seek to thrive. Castells (2001, 2009), in his historical analysis of the functions of universities, identifies four roles for the university. He points out that these functions are not mutually exclusive and that universities must be robust and dynamic enough to withstand and manage the tensions inherent in the simultaneous performance of multiple, often contradictory, functions. Two such university functions that emerged (and that stand in opposition) as the university was expected to become a 'productive force' (see Chapter 1) are that of the university being connected to the informational economy (by fulfilling its role as a primary knowledge-generating institution in society), and of simultaneously being connected to the socio-cultural changes in society (by fulfilling a role of applying its store of knowledge to challenges faced by contemporary society).

Castells' analysis is not that dissimilar from Cloete et al.'s (2011) conflicting notions of the university's relationship with national development at play in African universities. Cloete et al. identify a dichotomy between an instrumentalist notion of the university as a service provider responding to the needs of society, and an influential notion of the university as an engine for development participating in innovation systems by contributing new knowledge. In both these authors' conceptions of the roles and functions of the university, the university must navigate, respond to and manage the tensions that emerge as it is expected to dance to different tunes.

The strategic response of the university to external pressures in terms of its role in society is mediated by what Clark (1983) refers to as the 'middle structure'. In the middle structure, university management confronts and interprets external pressures in the interstitial position it occupies between the state (and supranational agencies and global funding source), and the discipline-loyal cadre of academics forming the 'academic heartland' or 'under structure'. But the under structure, in the execution of its daily tasks, formulates its own response as it calculates how to behave in the face of conflicting demands to respond to society by engaging

with those outside of the university, while simultaneously remaining loyal to the core function of disciplinary progress through the creation of new knowledge (most often presented as 'basic' or 'blue sky' research). In this sense, the university academic as the primary knowledge worker in the under structure must become interconnected – rather than simply connected in a unilateral fashion – and must constantly mediate the tension inherent in the contradictory demands of being connected to both society and the knowledge enterprise.

From within the 'engagement movement' there appears to be a tacit acknowledgement that key information on university engagement projects is not being adequately recorded, and that more research on university engagement and its impact is needed. A fuller and clearer understanding of what effect engagement is having, both on external communities and on the university itself, is required. In addition, there is awareness that the success of engagement as a sustainable academic activity is contingent on it being integrated into the core functions of the university.

In light of the above, the key research question that this study seeks to answer is:

1. How are academics at African universities negotiating the tension between (i) engaging with those external to the university and (ii) ensuring that their activities link to the core functions of the university in a manner that is both sustainable and in alignment with the strategic objectives of the university?

In order to answer the primary research question, this study endeavours to answer the following set of secondary questions:

2. Can a set of indicators be developed to quantify the extent to which university engagement activities link to both stakeholders and to the university's core functions of teaching and research, in a manner that is both sustainable and in alignment with the strategic objectives of the university?
3. Can the collection of indicator data be designed in such a way that it can be easily replicated by universities? And, can the indicators be represented in such a way that they are useful to universities in recording, tracking and assessing the engagement activities of academics?
4. When applied to university engagement activities at two African universities, what do the indicators reveal about the extent to which such engagement activities can be described as being interconnected?

## Conceptual framework

That academics have always engaged with those outside of the university is not contested, despite claims of their perennial seclusion in ivory towers (Anderson 2001). Merton (in

Etzkowitz et al. 1998) shows that between 30–60% of university-led scientific innovation in the 17th century was in response to the needs of those located outside of the university – that is, government and industry. A study by Cantoni and Yuchtman (2014) shows how the universities of Germany contributed to the economic growth of that country over 500 years ago. They pragmatically acknowledge that universities were not the only contributing factor to economic growth, but that universities were established in response to the increase in economic activity in medieval Europe. Whether a causal contributor or a direct response to the economic revolution of the time, there is an implicit relationship between the university and the economically active sectors of society that preclude the possibility of the university as an ivory tower, disconnected from the market towns of Europe. What is undoubtedly different for the modern-day university and for the academics working within their ever-more porous glass walls are new pressures that are being brought to bear on the university as organisation and on its core productive activities of knowledge creation and transfer.

## *New exogenous pressures for change*

Fundamentally, the notion of 'engagement' or 'third mission' in the higher education literature is used to denote the university's closer relationship with the market and/or society in order to meet the needs of society. These 'needs' originate from changes in, and the concomitant pressures exerted by, society for higher education to make a contribution to the well-being of society at large. The most commonly referred to pressures are globalisation, accountability, massification and reduced public funding (Brennan 2008; Gornitzka 1999; Maassen & Olsen 2007; Neave & Goedegebuure 2000). Other pressures emerge from changes in the environment, paramount amongst these being the advent of the internet and rapid advances in information and communication technologies (ICTs). Peterson (2007) identifies seven environmental dynamics as change drivers, namely: diversity, telematics (or ICT), quality, new learning markets, economic productivity, globalisation and resource constraint. Tierney (2004) identifies the following four pressures that are a result of changes in the environment in which universities operate:

- Limited resources (increasing costs associated with decreasing income);
- Changes in the workplace (both on campus in the case of academics and university administrators, and off campus in the case of graduating students);
- The rapid uptake of new technologies, particularly in terms of the impact this has had on communication; and
- The dilution of both academic culture and common purpose.

Within the context of these exogenous pressures for change, the contemporary university is required to develop strategies on how to engage with those outside of the university in order to ameliorate the effects of external pressures as the university adapts or conforms to

the expectations of external constituents. That higher education is undergoing a period of intense pressure to change is neither a contested nor a revelatory statement. Nor is it true that universities have not had to face external pressures in the past. What is contested is the process by which these contemporary pressures will transform universities as we know them.

Among the constellation of contemporary environmental pressures is the 'growing requirement to pursue, warrant and improve quality, effectiveness, efficiency and responsiveness in all the strategic higher education activities (didactic, research, curricula innovation, staff and budgeting)' (Vaira 2004: 490). If engagement with those external to the university is assumed to be inherent in the notion of a responsive university, and if engagement has become a more formalised requirement of the contemporary university, then the extent and form of its incorporation into the university will inevitably be shaped by and depend on adaptive strategies at organisational level. As Muller (2003) cautions: it would be erroneous to conclude that the market is the only directive power; it is equally important to consider the contribution of the universities themselves (endogenous factors) to facilitate or resist external directive power (exogenous factors).

The claim that higher education – with its long history and established values and norms – constitutes an institution identifies a critical organisational-level contextual dimension that determines how a university as organisation responds to external demands (Higgins 2007; Meyer et al. 2007; Muller 2003, 2005; Oliver 1991; Scott 2001). Most importantly, it is a reminder of the university as institution, which may dictate the success of adaptive strategies within the university as organisation. In addition, consideration needs to be given to the distribution of power in universities, particularly the fact that in many university systems power still vests with academics rather than with those tasked with managing the university. If external pressures for an engaged university are acceded to at management level within the organisation, there may nevertheless be resistance to the acceptance and integration of engagement at other organisational levels, if engagement is interpreted to be in conflict with the values, norms and beliefs of the university as part of the institution of higher education.

## *Stakeholders and communities*

The pressures referred to above have the inherent danger of tending towards abstraction. They are not the kind of pressures that, at the level of interpretation, translate directly into action. One cannot, for example, imagine a vice-chancellor or dean explaining that they took a particular course of action in response to globalisation.

Social change is interpreted by various agents belonging to a diverse set of social groupings and these groups apply pressure for change. In the case of higher education, such pressures are exerted by relevant individuals or groups, most often referred to as 'stakeholders', 'constituents' or 'communities'. Stakeholders may include students, staff (academic, administrative and management), alumni, professional bodies, firms, labour unions, social movements, civil society organisations, donor agencies and government (including its agencies) (Jongbloed et al.

2008). These groups are engaged in a mutually beneficial exchange or transactional relationship with the higher education system as a whole or with a particular university. Stakeholders may be internal or external to the university and, with the advent of information technologies, are no longer required to be in close proximity to the university. As such, the power or influence of stakeholders is no longer spatially bound.

Implicit in the corporate origins of the term 'stakeholder', and key to understanding the pressures exerted by stakeholders, is the fact that stakeholders 'participate in higher education institutions' decision-making as representatives of external society' (ibid.: 5). This forges an inexorable link between issues surrounding engagement and stakeholders, particularly in terms of how the university manages its relationship with an ever-increasing constituency of stakeholders (Brennan 2008), and which stakeholders are ultimately prioritised and engaged with (Singh in Kruss 2003). Such a process of 'stakeholder management' determines how and with whom a university chooses to engage.

It is also important to keep in mind that the constant interpretation and management of stakeholder demands in a changing social context must be understood within the enduring, steady state of rules, procedures, norms and beliefs that constitute the university. As Brennan (2008: 383) states:

> *In pointing up some of the major social, economic and political changes which characterise the modern world, it is important not to make a priori assumptions about responsiveness and change within higher education. While these changes in higher education's global and local environments may be expected to almost certainly provoke changes … its traditional autonomies are not necessarily lost overnight and it remains an empirical question as to how far higher education does actually change.*

## Academic core and third mission

From a research perspective, the key question that this study seeks to answer is: How are academics at African universities negotiating the tension between engaging with those external to the academy and strengthening the core functions of the university? Implicit in this question is a theory of knowledge transfer between the university and prospective knowledge consumers – transfer that ultimately feeds into innovation and development. This link between knowledge and development is central to an appreciation of why a strong academic core is critical to the university's ability to contribute to development. As Cloete et al. (2011: 12) state: 'As a core knowledge institution, the university can only participate in the global knowledge economy and make a sustainable contribution to development if its academic core is quantitatively and qualitatively strong.'

Key to the relationship between higher education and development is the establishment of a productive relationship between knowledge and university engagement activities. If there is

an overemphasis on the basic knowledge activities of teaching and research – in other words, a predominantly inward orientation towards strengthening the academic core – the university becomes disconnected from the needs of society. However, an overemphasis on connecting to those external to the university through engagement activities potentially weakens the academic core, and the university has little new or relevant knowledge to offer in a bidirectional exchange relationship. As academics engage with those external to the university, a fundamental question therefore needs to be raised: To what extent do these engagement activities link to the core technologies of the university? The challenge for universities, then, is to deal with this inherent tension between 'buffering' (protecting) the core technologies of the institution and 'bridging' (linking) those with external actors (Scott 2001: 199–211).

There are those who will claim that the third mission of universities (i.e. providing services to the communities – broadly conceived to include industry – in which they are embedded) is, in fact, a core function of universities. The work of Etzkowitz and Leydsdorff and their concept of the 'triple helix' is often cited as providing a model in which research, teaching and service are inseparable (Anderson 2001; Benner & Sandstrom 2000; Jongbloed et al. 2008). While third-mission activities in contemporary universities may well be commonplace and perhaps even inescapable, it is still both conceivable and possible for these activities to be performed by organisations external to the university. Civil society organisations, government agencies, corporate social responsibility departments, as well as organisational structures created at the periphery of the university, are all capable of delivering third mission-type services to communities. Not so in the case of knowledge creation and, in particular, knowledge validation and accreditation, which remain the guarded preserve of the academy (Muller & Cloete 1986).

## *Engagement as (inter)connectedness*

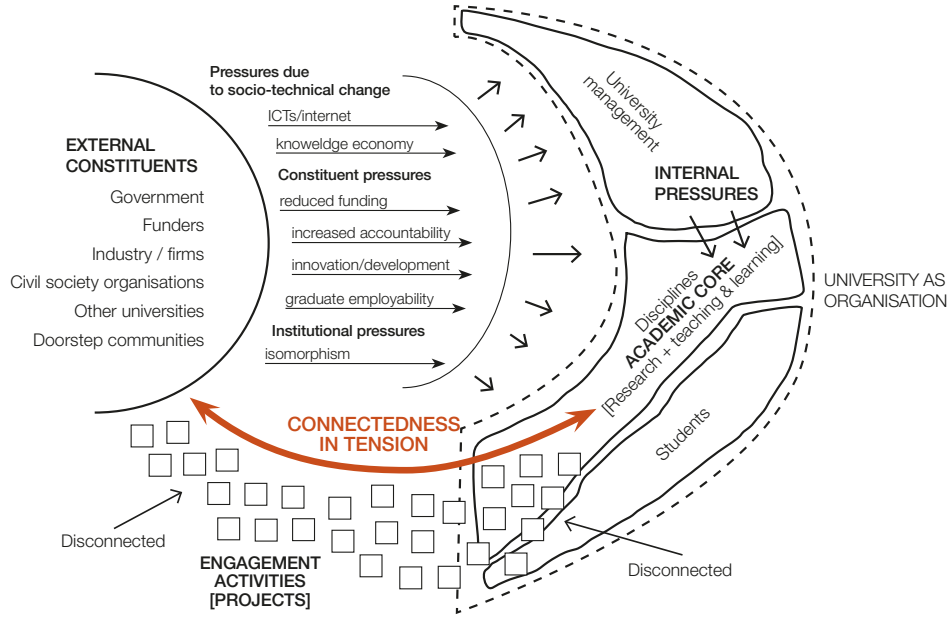
For the purposes of this study, engagement is understood to mean formalised activities where academics and/or students engage with those external to the university for the purported mutual benefit of the community and the academic enterprise in order to develop society at large. This definition is deliberately as broad as possible as its intention is to capture all types of engagement activities, of which, as highlighted earlier, there are many (e.g. service learning, outreach, community engagement, scholarly engagement, university-industry linkages, third mission and the popularisation of science). This study did not seek to type engagement activities; rather, the intention was to capture as many and as broad a possible range of university engagement activities in order to gain some insights into how each engagement activity links to the academic core and how they are articulated.

Given that firstly, the concept of engagement is highly contextual and ideologically embedded (see Muller 2010; Van Schalkwyk 2011), and therefore problematic when attempts are made to quantify or qualify engagement-like activities across universities, and that secondly, an empirically grounded notion is sought to operationalise research on how certain academic activities are positioned on the periphery–core continuum, the concept of 'connectedness'

offers a way out of the ideological quagmire. 'Connectedness' is operationalised along two dimensions, namely the extent to which *academic activities strengthen or weaken the academic core*, and the extent to which engagement activities *align themselves with policy priorities, ensure their financial sustainability, and connect to innovation/application agents* ('articulation'). Activities that strengthen the academic core and are highly articulated are described as 'interconnected' to indicate that they are well connected to both external and internal constituencies, and are in alignment with the policies and values of both. Conversely, activities that are closely linked to external constituents but weaken the academic core and are poorly articulated are described as 'disconnected'.[2] Creating this continuum of connectedness, which extends from interconnected to disconnected, provides the basis for the quantification of engagement activities.

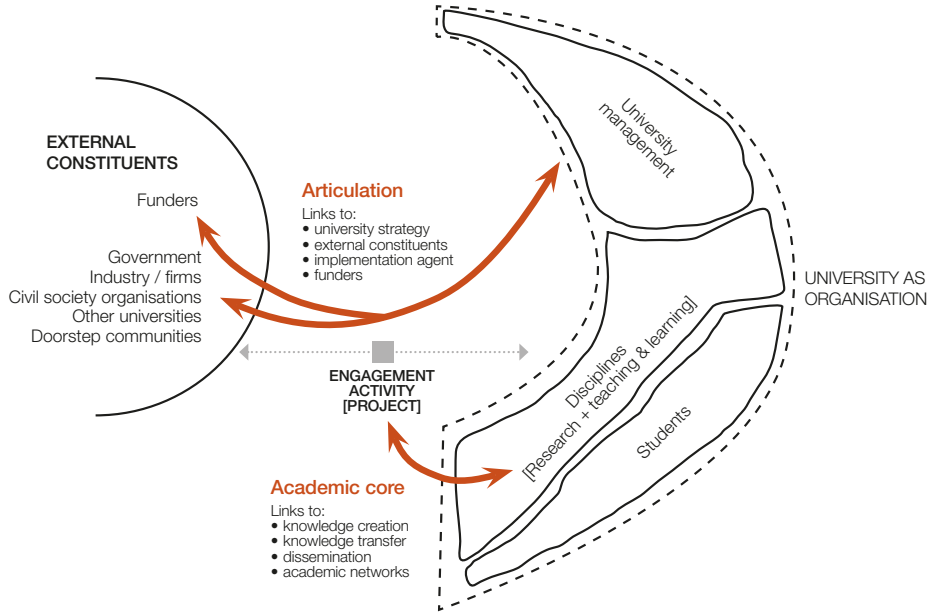
Figure 10.1 illustrates the pressures, both external and internal, exerted on academics and the external constituents with whom they may elect to engage in order to alleviate some of these pressures. The liminal space between the university and external constituents is shown to be populated by a variety of engagement activities, each occupying a position along a continuum of interconnectedness. Figure 10.2 illustrates articulation and linking to the academic core as dimensions of interconnectedness.

**Figure 10.1** Engagement as connectedness between external constituents and the academic core




2 Activities linked closely to internal constituents (i.e. other academics) and that include no external linkages could also be described as disconnected; however, such activities are not engagement activities according to the definition of engagement adopted in this study.

**Figure 10.2** Articulation and linking to the academic core as dimensions of interconnectedness




## Research design

This research project used a set of indicators to assess the interconnectedness of university engagement activities. Indicators are a means of quantifying the complex properties or states of social arrangements, such as organisations (including universities). Indicators may reflect a property or particular state – either at a specific point in time or as these properties and states change over time. These properties or states are subject to the influence of extraneous conditions.

### *Indicators of interconnectedness*

Previous studies have attempted to quantify the engagement activities of academics and universities. For instance, Jensen et al. (2008) developed individual-level indicators to investigate the correlation between the research performance of researchers and their popularisation activities (i.e. how active they are in communicating scientific knowledge to a wide, non-specialised audience). Neresini and Bucchi (2011) developed a set of organisational-level indicators to assess whether what they call 'public engagement' activities are being integrated into the institutional culture of European research institutions. Public engagement refers mainly to the communication of science to the public; that is, the sharing of existing expert knowledge with non-experts. The HERANA Phase 1 project (Cloete et al. 2011) focused on

projects and centres rather than on individuals or organisations. In addition, there was a shift in the focus on knowledge production: whereas the European studies seemed to be concerned with the dissemination of knowledge post-production with those outside of the university, the HERANA 1 research was concerned with the application of existing knowledge and the creation of new knowledge in exchanges between academics and those external to the university.

Certain limitations exist in the HERANA 1 data that precluded it from providing a more detailed picture of the universe of engagement activities at a particular university; namely, being able to differentiate between projects in different academic disciplines and between projects of different durations. Both disciplinary field and temporality are taken to be variables that either have the potential to impact a project's interconnectedness or are claimed to be mitigating factors in a project's interconnectedness. In this regard, Muller (2003) cautions that the propensity to engage may well be a function of a particular discipline's knowledge creation cycle; in particular, the period and possibility of making the transition from basic to applied knowledge. Following Clark's (1983) conception of the independence of the disciplines from one another for their survival, it is conceivable that engagement may prevail and thrive within one discipline without any impact on another discipline. The inclusion of disciplinary differentiation across projects would therefore not only provide an indication of which disciplines are finding it more difficult to engage in a sustainable manner, but also highlight projects that are engaging successfully despite the perceived barriers inherent in their discipline.

The HERANA 1 sample included activities that assumed a variety of structural arrangements including projects, programmes and centres. Each arrangement seems to infer a different temporal dimension to the activity in question and may result in differing levels of articulation and bearing on core activities. For example, 'projects' appear to be shorter, one-off activities and the 'projectisation' of engagement activities (often driven by funders and funding) may certainly place limits on the sustained impact on the academic core that a particular engagement activity may have. A temporal dimension indicating the duration of an engagement activity could provide a useful picture in terms of the sustained impact on knowledge creation that a particular activity may have. It could also provide some evidence of a possible correlation between more enduring activities (i.e. those that are more programmatic) and the extent to which such activities strengthen the academic core. Data on the duration of engagement projects were therefore collected.

In addition, data on whether a project was complete or ongoing were deemed to be of relevance. Links to the academic core can be protracted as they depend on research being finalised and on knowledge being vetted. The implication of any lags is that early-phase projects may well score poorly in terms of their interconnectedness owing to a low academic core rating. Such projects nevertheless retain the potential to link to the academic core as the project matures. It was therefore deemed important to be able to differentiate between those projects that are complete and those projects that are ongoing.

## *Operationalising 'interconnectedness'*

As highlighted earlier, 'interconnectedness' was operationalised along two dimensions. The first dimension is 'articulation', which has a number of characteristics. Firstly, articulation includes the extent to which the aims and outcomes of engagement activities articulate with the university's strategic objectives. Secondly, articulation includes the linkages engagement activities have with external stakeholders such as government, industry, small businesses, non-governmental organisations and others. Another link is the extent to which there are connections with an 'implementation agency' (i.e. an external body that takes up the knowledge and/or its products generated or applied through research or training). Thirdly, articulation takes into account linkages generated through sources of funding in three respects: whether the engagement activity has obtained external funding; the number of funding sources secured; and the extent to which the project has developed a relationship with its funders over time. The second dimension of interconnectedness incorporates the extent to which engagement activities serve to strengthen the academic core of the university. This includes the extent to which the engagement activity generates new knowledge (versus applying existing knowledge); feeds into teaching or curriculum development; is linked to the formal training of students; enables academics to disseminate their research; and is linked to international academic networks.

The various aspects relating to 'articulation' and 'strengthening the academic core' were converted into a set of eight indicators that could then be applied to an analysis of the engagement activities included in the study. Four indicators were developed for each of the dimensions to ensure an equal weighting between the articulation and the academic core indicators. A maximum score of 2.0 was assigned to each of three articulation indicators and to each of three academic core indicators, and a maximum score of 1.0 to one articulation indicator and to one academic core indicator. Each dimension could therefore score a maximum of 9.0 by adding up the scores of each of the four indicators for each dimension. On the basis of the indicator score totals for articulation and for the academic core, the projects were plotted on a graph depicting the intersection between 'articulation' and 'strengthening the academic core' in order to provide a graphic representation of the extent of each project's interconnectedness. Interconnectedness is represented on a third axis, which bisects the articulation and academic core quadrants, and which ranges from disconnected (-9) to interconnected (9). An engagement activity's interconnectedness score is calculated by halving the sum of the articulation and the academic core values for each engagement activity. Table 10.1 provides a full list of indicators, a brief description of each indicator and the score assigned to each of the indicators.[3]

3 A full description of each of the indicators is given in the research report of this study, which is available at http://www.chet.org.za/papers/engagement-interconnectedness.

**Table 10.1** Indicators of interconnectedness and scores per indicator

| | Articulation indicators | Reference | Score | Max score |
|---|---|---|---|---|
| A1 | Alignment between project and university strategic objectives | A1.1<br>A1.2<br>A1.3 | For each project objective in alignment with university mission/vision = 0.25 | 1.0 |
| A2 | Initiation/agenda-setting | A2.1 | Self-initiated = 1 | 1.0 |
| | | A2.2 | Proposal more than one author = 0.5 | 0.5 |
| | | A2.3 | Project plan/terms of reference flexible = 1 | 1.0 |
| | | A2.7 | Advisory group and meets at least once per annum = 0.5 | 0.5 |
| A3 | Links to external stakeholders (non-academic) and to implementation agencies | A2.6<br>A3.1.2 | For each link to an external stakeholder = 0.25 (max = 1) | 1.0 |
| | | A3.2<br>A3.3<br>A3.4 | Direct link to implementation agency = 2<br>OR Indirect link to implementation agency = 1<br>OR Self-implemented = 1 | 2.0 |
| A4 | Funding | A4.1 | For each source of funding = 0.25 (max = 1) | 1.0 |
| | | A4.1 | Long-term funding (more than three years) = 0.5 | 0.5 |
| | | A4.1 | Renewable funding (at least one source) = 0.5 | 0.5 |

| | Academic core indicators | Reference | Score | Max score |
|---|---|---|---|---|
| C1 | Generates new knowledge or product | C1.1 | New knowledge or product = 1.25<br>OR New data = 0.5 | 1.25 |
| | | A1.4<br>C1.2.5 | Publicly available = 0.25 | 0.25 |
| | | C2.1<br>C2.3.2<br>A1.4 | PhDs linked to project = 0.5 | 0.5 |
| C2 | Dissemination | C1.2.2<br>C1.2.3<br>C1.2.4<br>C1.2.6<br>C1.2.7<br>C1.2.8<br>C1.2.9 | For each publication/presentation listed = 0.25 | 2.0 |
| C3a | Teaching/curriculum development | C2.1<br>C2.2 | Changes to courses/modules = 1<br>OR New courses/modules/programmes = 2 | 2.0 |
| C3b | Formal teaching/learning of students | C2.3.1<br>C2.3.2 | Students involved = 0.5 | 0.5 |
| | | C2.4 | Participation in project is course requirement = 1 | 1.0 |
| | | C2.5<br>C2.6<br>C2.7<br>C2.8 | Other roles for students in project = 0.25 per role | 0.5 |
| C4 | Links to academic networks | A3.1.1 | Links to academics from other universities = 1 | 1.0 |

## Method

This study set out to ensure a larger, more equally distributed set of engagement activities in its sample than was the case in the HERANA Phase 1 project. Ideally, a large and randomly selected sample of university engagement activities would need to be generated in order to negate the effects of selection bias. For such a selection process to be a realistic option, universities would need to be in a position to provide comprehensive lists of all engagement activities. Universities are not, however, in a position to do so. It is for this reason that Kruss et al. (2012) resorted to surveying all academics at the universities participating in their study. While this study succeeded in collecting data from a much larger sample of engagement activities, the selection of engagement activities was still left in the hands of the participating universities.

To ensure that the engagement activities in the sample were comparable, stringent selection criteria were drawn up. The unit of analysis was more clearly defined by providing a clear and unambiguous set of criteria for the kind of activities to be included in the sample. This provided the assurance that all activities included in the sample were *engagement* projects and of a *similar* structural type. A working definition of what constitutes an engagement activity was formulated and provided to each project leader on the cover sheet of the questionnaire distributed. The definition provided read as follows: 'Engagement activities are understood to be activities where academics or students engage with those external to the university for the purported benefit of both the community and the academic enterprise.' In addition to the definition, the unit of analysis was clearly stipulated on the cover page. The requirement for the inclusion of an engagement activity in the sample was that it should constitute the smallest unit of coordinated activity, with formal links to a faculty and consisting of at least one full-time academic. This focus on the 'smallest unit' allowed for the inclusion of both projects and programmes, but prevented multi-project programmes or the activities of entire research units/centres from being included in the sample.

Two universities were included in the Phase 2 research – Nelson Mandela Metropolitan University (NMMU) located in Port Elizabeth, South Africa, and Makerere University located in Kampala, Uganda.[4]

NMMU was selected because it was found to contain several exemplary engagement activities identified in the HERANA 1 project. The intention was to interrogate these exemplary activities using the refined Phase 2 methodology. In addition, NMMU makes for an interesting case because it is a so-called 'comprehensive' university – a university type created following the merger of a technical university with a research university. Each of these pre-merger university types engenders a different proximity to those external to the university. Technical universities (or 'technikons' as they were known in South Africa), with their emphasis on vocational training, enjoyed a closer working relationship with industry. Research universities, on the

4 Note: the NMMU was selected for inclusion in this particular study, rather than the University of Cape Town (which is the South African flagship university in the HERANA group of institutions included in HERANA Phase 2), because this study sought to build on the data and methodology developed in HERANA Phase 1, which included the NMMU and not the University of Cape Town.

other hand, as a general rule, were more used to setting their own agenda, relatively unaffected by demands made by those external to the university. As a comprehensive university, NMMU therefore provided an interesting mix of those familiar with and those foreign to frequent engagement with external stakeholders. Embedded in this mix is an enduring commitment by the university leadership to the 'scholarship of engagement'. This commitment finds structural expression in the form of the university's dedicated engagement unit, the Centre for Academic Engagement and Collaboration.

Makerere University is regarded as Uganda's national flagship and premier research university. Research shows that compared to other African flagship universities, Makerere has shown a marked increase in recent years in its research output, both in terms of publications and in terms of doctoral graduates (Bunting et al. 2014). At the same time, Makerere relies heavily on donor funding to support its research activities (Makerere University 2013). This combination of an increase in research output and a reliance on donor funding makes Makerere a potentially interesting case from the point of view of using the methodology to establish whether donor-funded engagement activities are contributing their share to the increase in research outputs, and whether academics at Makerere involved in such engagement activities can therefore be described as interconnected.

At each of the universities, two faculties (or colleges in the case of Makerere) from which to collect data were identified: one faculty or college more likely to be engaged and a second faculty or college perceived to be less likely to be engaged (see earlier discussion on possible disciplinary differences). In the case of NMMU, the Faculty of Science and the Faculty of Arts were identified. At Makerere, the College of the Humanities and Social Sciences and the College of Agriculture and Environmental Science were identified. At both universities, a target of 30 completed questionnaires was set. Because the study was intent on collecting a large sample, some flexibility was permitted in collecting data from other faculties or colleges in order to ensure a larger sample. A total of 22 valid questionnaires were returned at Makerere and 77 at NMMU.

While the working definition of engagement makes provision for both students and academics as potential actors engaging with those external to the university, the project approached only university academics who had led or who were leading engagement projects at the time the questionnaire was administered. Project leaders were taken to be representative of their project's engagement activities, and were regarded as the likely transitional locus between the engagement activities for which they assume responsibility and the core technologies of teaching and research.

In order to ensure greater consistency in the data collected, a structured questionnaire was developed. Questionnaires collected data in three parts: Part A collected data on project leaders (including their position at the university and the number of projects they were leading and involved in); Part B collected indicator data on a single engagement project selected by the project leader; and Part C collected data on project leaders' perceptions of university engagement in relation to the goals of being an engaged academic, how

the university supports or hinders engagement, and the future of university engagement activities. Questionnaires were distributed electronically and in hard copy to engagement project leaders with follow-up interviews for clarification where necessary. Following approval from the research ethics committee (in the case of NMMU), data collection was done by the universities themselves. At NMMU, data was collected by the Director of the Centre for Academic Engagement and Collaboration, while at Makerere data was collected by the university's Quality Assurance Directorate.

### *Limitations of this study*

Both impact and quality are notoriously difficult to quantify in an objective fashion, devoid of the influence of those with vested interests (such as funders and publishers, to name but two). The method proposed in this study does not in any way claim to capture or reflect the impact of engagement activities on those constituents with whom academics elect to engage. In this sense, impact is only measured in one direction: that is, on the university. It is conceivable that projects that score low in terms of the extent to which they strengthen the academic core may nevertheless have a meaningful and positive impact on a particular community. To assess such impact, a separate set of indicators from those proposed here would have to be developed.

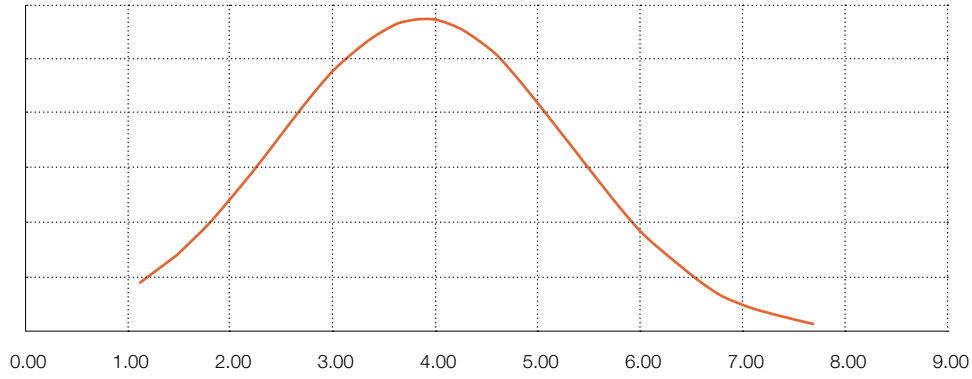
The proposed method also does not purport to capture the quality of the academic outputs of the engagement projects when assessing links to the academic core in the form of knowledge products such as publications, or in the form of changes to teaching and learning. All outputs are equally weighted, regardless of the type of output, the journal and its impact factor, or the publisher of the output. Similarly, for teaching and learning, no assessment is made of the quality of any changes introduced as a result of an engagement activity. The only requirement is that a link exists between the academic output and the act of engaging with those from outside of the university. Modifications could easily be made to this instrument should anyone wish to assign weighted values to a range of possible academic outputs.

## Findings and discussion[5]

The indicators of engagement as interconnectedness captured variance in the interconnectedness of university engagement activities. Some engagement activities returned a high score based on the indicators used and can therefore be described as interconnected, while others returned a low score and can therefore be described as disconnected. The distribution of scores for all 99 engagement activities are shown in Figure 10.3.

5 The full dataset from this study is available as open data from http://dx.doi.org/10.7910/DVN/27507

**Figure 10.3** The distribution of interconnectedness scores at two universities (n=99)




The articulation, academic core and interconnectedness scores for engagement activities at the two institutions are presented in Figures 10.4 and 10.5. The extent to which each engagement activity can be said to be articulated, and the extent to which each activity links to the academic core, is presented in graphic form, creating an institution-wide snapshot of the university's engagement activities.

Figure 10.4 shows that engagement projects at Makerere are fairly evenly spread out across the middle of the connectedness spectrum. Projects from the sample located in the College of the Humanities and Social Sciences and the College of Agricultural and Environmental Sciences appear to be the most successful in mediating the tension between linking both externally and with the academic core. Projects located in the College of Veterinary Medicine, Animal Resources and Bio-security and, to a lesser extent, the College of Computing and Information Science, appear to be struggling to link their engagement activities to the academic core of the university.

At NMMU, Figure 10.5 shows that the Faculties of the Arts and of Engineering were doing best in managing the tension between engaging externally and strengthening the core. While the Faculty of Health has some projects higher up in the cluster of projects in terms of being interconnected, it also has five projects (mainly from the Department of Nursing) that populate the disconnected end of the spectrum, mainly owing to poor academic core ratings. These same five projects also fare poorly in terms of their articulation.

Of interest at NMMU is how the engagement projects located in two extension units in the Faculties of Science and in Engineering (Innoventon and Entsa, respectively) compare with projects located in the parent faculties. In both cases, the engagement projects at Innoventon and Entsa score lower on the interconnectedness dimension than projects located in the faculties, although the Entsa projects still score relatively well compared to the broader population of engagement projects at NMMU. This would suggest that these extension units, set up to facilitate interaction between the university and external communities, were less successful in linking their activities back to core functions housed in their parent faculties.

**Figure 10.4** The interconnectedness of engagement projects at Makerere University

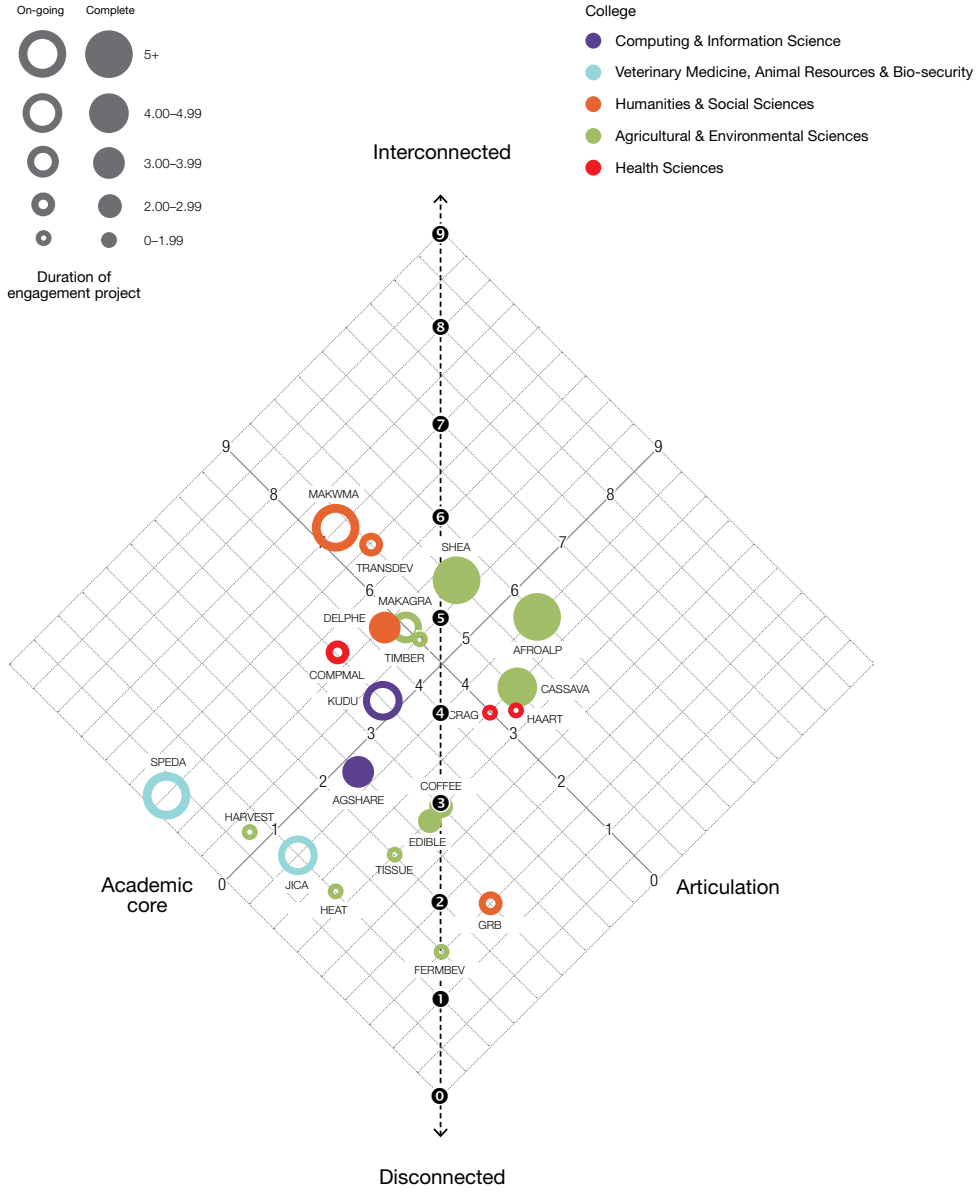
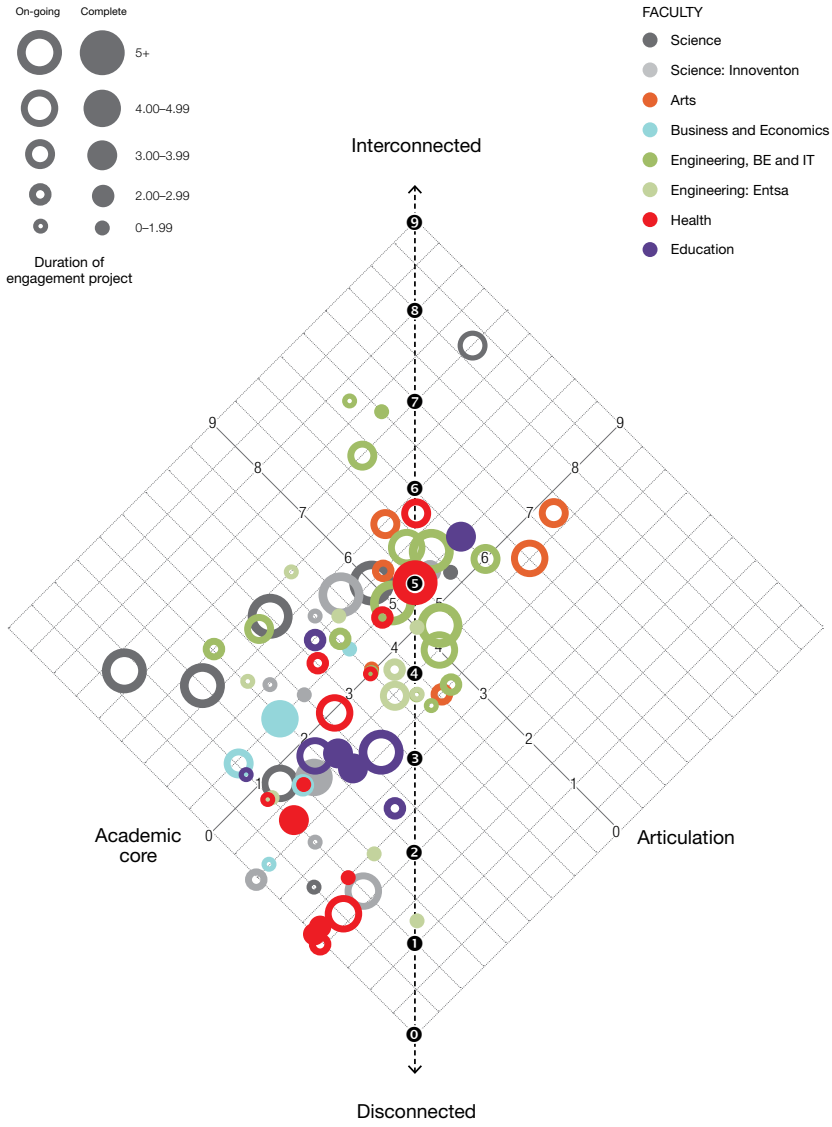


**Figure 10.5** The interconnectedness of engagement projects at Nelson Mandela Metropolitan University




At both universities, engagement activities scored higher on the 'articulation' indicators than on the 'strengthening the academic core' indicators. A closer examination of the articulation scores reveals that engagement activities at both universities scored well in terms of the project initiation and agenda-setting indicators. However, on average, projects scored relatively poorly when it came to the other three articulation indicators.

At both universities, engagement activity scores were low in terms of their links to specific institutional strategic objectives, as expressed in each university's mission and vision statements. At NMMU, the data shows that projects mostly linked to between one and three of the institutional objectives, most often to NMMU's commitment to regional development. By contrast, the data shows that the objective relating to NMMU's Africa and global development mission was consistently absent from the objectives of the university's engagement projects. An analysis of funding sources (see Figure 10.6) shows that firms located in the region, as well as funding from the province and the city, made up the bulk of the project funds at NMMU. It would appear, therefore, that for project leaders the local reality in which a project operates trumps the continental and global aspirations of the university. In the case of Makerere, the data shows that, on average, projects linked to at least two of the university's strategic objectives. As in the case of NMMU, responsiveness to global needs was very rarely cited as a project objective, and most projects indicated an aspiration to respond to national needs (rather than regional needs, as was found to be the case at NMMU). Unlike NMMU, though, projects at Makerere relied more heavily on funds from foreign donors, with limited funding from government and from industry (see Figure 10.6). Perhaps the fact that NMMU is regionally focused while Makerere is nationally focused is unsurprising given Makerere's position as a national flagship university, while NMMU is seen to fulfil an important regional role within the national higher education system.

In the case of external linkages, the scores indicate that, on average, projects linked to only one external constituent other than the project's funders.

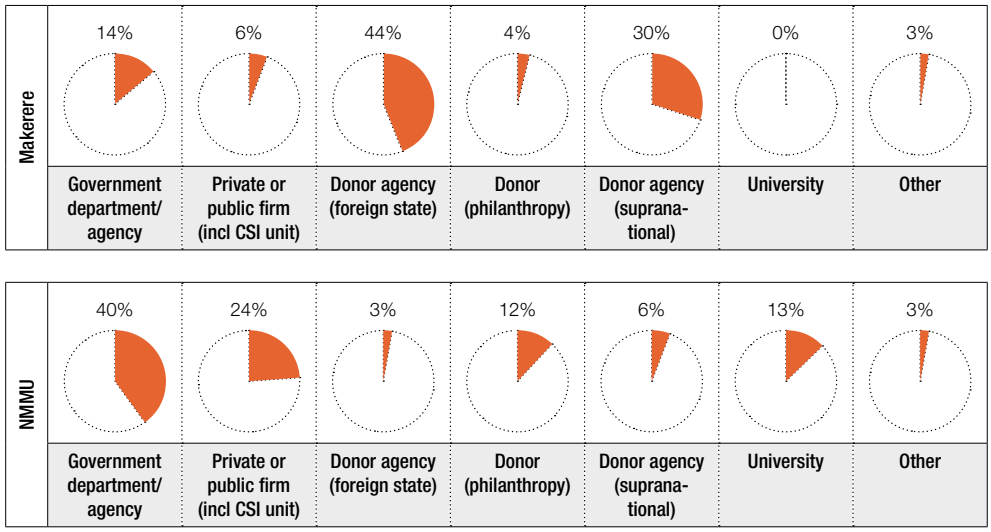
The academic core indicators reveal which projects are high producers in terms of the production, transfer and dissemination of *new* knowledge. From a different vantage point, the academic core indicators also reveal which projects are not linking the knowledge created (assuming such knowledge has indeed been created) to the academic core, even if they are engaging successfully with those external to the university. This makes it possible to examine why such projects are not linking to the academic core in attempts to uncover blockages in, or even resistance to, creating such linkages.

At Makerere, projects scored relatively well in terms of knowledge creation, public availability of knowledge and linking to PhD programmes. Projects at Makerere scored less well in terms of how they linked to teaching and learning. Of concern at NMMU is the fact that, on average, projects did not generate new knowledge. Weighing down NMMU's score to some extent is the fact that much of the knowledge created by its projects was not publicly available. In particular, many projects (24%) at NMMU received funding from industry, which results in embargos being placed on the dissemination of knowledge that is taken to be proprietary. Makerere, in contrast, scores much better on the public availability of knowledge. And, in the case of Makerere, funding came predominantly from foreign donors (78%) that prize openness and accessibility of knowledge (see Figure 10.6).

Several observations can be made in this regard. Firstly, with some exceptions, projects that scored lower on the academic core indicators tended to be projects that were ongoing

rather than complete. Certainly in the case of Makerere, it is evident that completed projects scored better on the connectedness axis than did ongoing projects. In fact, the samples at both universities tended to have a preponderance of ongoing projects rather than completed projects. Given that many of the engagement activities in the sample were still in the early phases, they have the potential to score more highly on the academic core indicators as they mature. This highlights the importance of not only producing snapshots of university engagement activities at a particular moment in time, but also of tracking engagement activities over a period of time in order to observe possible improvements in linking to the core functions of the university.

**Figure 10.6** Weighted proportional funding sources of engagement projects




Source: Van Schalkwyk (2014)

The aggregation of scores across an institution provides some insight into *general* areas where there is room for improved linkages – either externally, or to the strategy of the university, or to the core technologies of the university. However, aggregation can mask both strengths and weaknesses of *specific* projects and lose the insights to be gained from how projects in different disciplines, or of different durations, interconnect.

While very few projects at either university scored well on the academic core indicators, it is possible that some projects may choose to focus exclusively on research or exclusively on teaching and learning.

An argument could be put forward that research, and the natural outcome of such research (i.e. new knowledge), is the only imperative for any university academic – be they engaged or

otherwise – and that everything else, including teaching, follows. This stance challenges the inclusion of teaching and learning as an equally weighted contributor to the academic core. The knowledge creation imperative is not disputed; however, conceiving of the knowledge creation and transfer process as one that is unitary is contested. In a differentiated process, it is conceivable that specialisation occurs, with different actors playing different roles at various stages in the knowledge creation and transfer process. Knowledge creation remains a critical and non-negotiable first step in this process, but it seems possible to conceive of a process in which certain academics specialise in knowledge creation while others specialise in knowledge transfer (including teaching and even application). That those with specialist roles in the knowledge creation and transfer process are linked together is essential in ensuring an uninterrupted flow in the process.

The method presented here captures engagement projects that embody a unitary process of knowledge creation, transfer and application, and rewards such projects with a high academic core score. As such, the method offers a mechanism for monitoring the mix of research- versus teaching-only engagement projects. From a systemic perspective, the methodology could be used across multiple universities in a single system or between different sectors of a national post-school system to ensure a mix of research- and teaching-only institutions, assuming that links exist between institutions for the transfer of new knowledge. From an organisational perspective, a university structure (e.g. a centre or unit) could take a differentiated approach to how its projects connect to the academic core. If this differentiated approach is one that is coordinated and managed, then it is possible that none of the projects may score well individually but that the centre as a whole may well do so. In other words, the sum of the parts should be taken into consideration before dismissing a coordinated cluster of projects as limited in their links to the academic core. As highlighted earlier, NMMU is a comprehensive university (i.e. a mix of both a research- and a teaching-intensive university). It is therefore not surprising to find a mix of both teaching- and research-focused projects. As Uganda's flagship university and with a clear commitment to becoming a leading research university in Africa, it is perhaps not surprising that projects at Makerere show a strong leaning towards engagement linked to research.

Based on an examination of NMMU's interconnectedness graphic (see Figure 10.7a below), it becomes apparent from the pyramid-shaped distribution of the engagement activities on the academic core axis that the majority of the projects are not strengthening the academic core. As a comprehensive university, with engagement activities that link both to research and teaching, one would expect a more rectangular distribution of activities on the chart (see Figure 10.7b).

The shaded area in Figure 10.7b is suggestive rather than prescriptive. It suggests an interconnectedness score of between 2.5 and 8.0, based on the anticipation that at NMMU, certain engagement activities that are of the outreach type, and may never exhibit strong links to the core functions of the university, will continue to be part of the university's engagement landscape.

**Figure 10.7a** Current shape of engagement activities at Nelson Mandela Metropolitan University

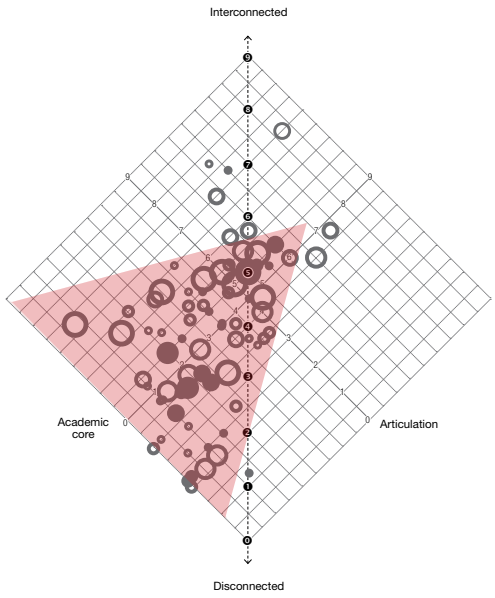
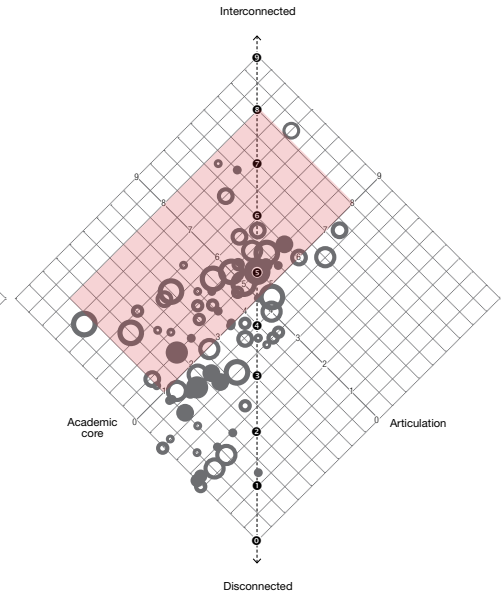



**Figure 10.7b** Proposed shape of engagement activities at a comprehensive university




## Conclusion

The overarching objective of this research project was to examine how academics at African universities are negotiating the tension between engaging with those external to the university, on the one hand, and ensuring that their activities link to the core functions of the university, on the other, in a manner that is both sustainable and in alignment with the strategic objectives of the university.

It is has been shown that it is possible to develop a set of indicators to assess the extent to which university engagement activities are articulated and strengthening the core functions of universities. The concept of interconnectedness provides a useful framework for operationalising research on engagement activities. The project was able to assign an interconnectedness score to each engagement activity. The score denotes whether such activities can be described as interconnected (i.e. the activity effectively manages the tension between connecting to those outside of the university and with the core functions of the university), or whether such activities are disconnected (i.e. the activity is weakly connected to external communities or weakly connected to knowledge production and transfer). The

indicators and their graphical representation provide a useful tool for identifying patterns, and for revealing and confirming informative dimensions of university engagement activities at the two universities. Both universities have expressed interest in using the indicators to record, track and assess their engagement activities. Future advocacy work that will form part of HERANA Phase 3 will seek to promote a broader acceptance of this methodology at African universities. The research component of HERANA Phase 3 will further explore the usefulness of the indicators to universities, and work towards additional refinement and more automated data collection methods.

The indicators reveal a mixed picture at the two universities: in both cases there are exemplary projects that can be described as interconnected and there are also projects that are clearly disconnected. 'Articulation' scores at both universities were stronger than the 'strengthening the academic core' scores. However, the preponderance of engagement activities in the sample was ongoing and this creates the possibility of these activities' academic core ratings improving over time.

The interconnectedness of engagement activities also appeared to be in alignment with the institutional type and focus of the two universities. Engagement activities at NMMU, as a comprehensive university, showed more variation in the academic core scores, reflecting a mix of research with teaching and learning activities. There was also evidence of a strong residual culture of service learning and outreach-type engagement activities that fared poorly when it came to linking with research. On the other hand, at Makerere, with its drive to become a research-intensive university, there was evidence that engagement activities linked more consistently with research rather than with teaching and learning functions.

In Goldfinger, Bond is ultimately kept alive by his nemesis, despite the villain's initial posturing that 007 has nothing to offer him. Perhaps this is a tacit acknowledgement on the part of the villain that there is, after all, knowledge to be gained by keeping the intruder in one piece. At the very least, future engagement between Bond and Goldfinger remains a possibility. Similarly, this study suggests that engagement between university academics and those external to the university is active. The nature of this engagement, however, varies considerably. And, more portentously, based on the findings of this study, the degree to which such engagement activities can be said to be strengthening the African university as a key knowledge-producing institution is uneven and too frequently marginal.

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