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Boundary knowledge in conversation: Imagining higher education through transdisciplinarity and decoloniality

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Transdisciplinarity and decoloniality are two ideas that share much in common and which we believe have the potency to underpin meaningful transformation in post-colonial African universities. Transformation in post-colonial higher education sectors in Africa has been a key developmental goal; however, progress in achieving transformation has been slow. While much has been achieved on the continent that evidences the symbolism of change and transformation, we argue in this article that the epistemic and ideological dimensions of transformation have barely been altered. As a theoretical and conceptual input, the article provides a discussion of the theoretical terrain of the idea of boundary knowledge systems and suggests that the higher education systems have developed over the years and continue to do so on the assumptions behind bounded disciplinary knowledge systems. However, as globalisation intensifies, and as the world faces many complex challenges, disciplinary knowledge models have little potential to contribute to an adequate understanding, let alone resolution of these complex challenges. We also argue that we do not yet have truly African universities but universities in Africa, many of which are copycats of Western models of higher education. We provide seven propositions, which we believe can be used as a competent framework for rethinking the future of higher education in Africa.

Transdisciplinary contribution: The article explores the concept of transdisciplinarity and its potential contribution to addressing the challenges faced by post-colonial African universities. It also provides a theoretical and conceptual framework for understanding its potential to transform higher education.

Keywords: boundary knowledge; transdisciplinarity; decoloniality; decolonial transdisciplinarity; higher education.

Introduction

Transdisciplinarity and decoloniality are concepts that are in vogue in many higher education spaces including here in South Africa. While transdisciplinarity refers to the deliberate crossing of knowledge boundaries in pursuit of a better understanding of and solutions to complex problems of society,[1] decoloniality refers to efforts to unravel the complex sets of factors by which certain knowledge forms seek dominance through processes of silencing, peripheralisation and suppression of other knowledge forms in the world of ideas and practice.[2] For example, climate change, a global phenomenon with catastrophic consequences for the sustainability of our planet, requires solutions, which derive understandings from environmental sciences, geography, the natural sciences, education, economics and ethnographic studies, to name a few. None of these disciplines can possibly offer solutions to the full extent needed to combat the implications of climate change. While natural sciences (e.g. chemistry) can contribute to our understanding of the chemical nature of plastics and how these chemicals interact with other materials and living things in the oceans, biology can add to this understanding through studies of the effects of pollutants on ecosystems and biodiversity. Decoloniality endorses this view as it seeks to level the playing field in the existing knowledge relations where Western forms of knowledge are dominant as the only authentic systems of knowledge worth using in solving the knotty problems and challenges of society. This potential complementarity has given impetus to the thinking that underpins this article. However, we are not blind to potential dissonance and conceptual clouding that may lie inherent in the epistemic, ontological, axiological and methodological assumptions underpinning the two conceptual lenses.

Disciplinary knowledge systems have been the heartbeat of higher education systems for a very long time. Based on traditional subject curricula, housed in bounded departments and taught by

subject specialists, university degrees have traditionally been based on studying sets of disciplinary subjects.[3] For example, a science graduate would traditionally choose three subjects from a set of subjects including, for example, Physics, Chemistry, Biology, Mathematics, Geography and lately Information and Communications Technology and computing studies, among others. Arts students would choose from a range of language studies and humanities, among others. The university was and perhaps shall continue to remain a system of well-demarcated silos where disciplinary knowledge is packaged in traditional subjects of study. The lecturers working in these islands of intellectual excellence also specialise in subject-disciplinary research. However, this traditional discipline-focused approach is increasingly coming under scrutiny in favour of transdisciplinarity.

This article seeks to explore the origins of subject disciplines and why the approach to prioritised university education is increasingly being challenged in favour of transdisciplinarity. The article also seeks to explore the meanings of a basket of concepts that shed light on the idea of transdisciplinarity including multidisciplinarity, interdisciplinarity, cross-disciplinarity and intra-disciplinarity. In addition, the article uses the notion of the decolonial turn as a relevant possibility for growing transdisciplinarity in higher education. The article ends with reflections on how these ideas can be the basis for reimagining the future of higher education in universities of the post-colonial world. We deploy the theory of boundary thinking to facilitate our analysis and synthesis of ideas. We begin, however, by looking at the notion of boundary knowledge.

Theorising boundary knowledge systems

Boundaries can be both enabling and disabling at the same time. As enablers, they yield order to systems that are based on work performed by people belonging to the same communities of practice. In this case, they provide and facilitate semantic conversations about shared topics, enhance knowledge transfer within cohesive networks and provide spaces for pragmatic decision making among the members of a group.[4] However, they can also be disabling, especially when boundaries represent closed systems, which confine and constrain knowledge transfer and scupper possibilities for engaging with other systems that may add value to the issues that concern the confined system. Disciplines represent such closed systems and are not the most effective formations for enabling cross-boundary conversations. In this case, knowledge boundaries are seen in the context of knowledge transfer, an important management function, which contributes to the success of organisations purposed around innovation.[5] It is one thing for an organisation to create knowledge – that is the easy part – and to their credit, disciplinary formations are very efficient at knowledge creation. However, it is quite another to turn the knowledge into usable forms, to transform knowledge into innovation. At this point, and it may already be too late,

knowledge creators must start conversations with the intended users of innovation to minimise the risk of rejection and a lack of uptake. The boundaries now need to be deconstructed and made porous so that serious connections and conversations can ensue between innovators and users. However, if such conversations begin after the knowledge has been created, that represents a top-down process of innovation dissemination, which is fraught with risks of rejection and resistance. Therefore, discipline formations represent a highly centre-to-periphery model, which tends to be undemocratic, non-inclusive and elitist. Thus, there is a need to create mechanisms for boundary crossing from the moment of inception of a problem to its ultimate application by the users.

Boundary crossing is a concept at the heart of knowledge sharing. Researchers on this concept have identified two key facilitators for boundary crossing. These are boundary objects or shared objects[6] and boundary brokers.[7] Boundary objects represent people or technologies that facilitate conversations between the bounded entities and various stakeholders who share an interest in the new creation to help bridge and connect different communities for effective knowledge sharing. Wenger[7] suggests that in addition to boundary objects, there is a need for boundary brokers who can move between and within communities of practice. Brokers tend to be most effective if they have knowledge and expertise in multiple disciplines capable of operating both on the peripheries and within the different communities, yielding an integrative energy that promotes successful knowledge creation and innovation.

In building boundary crossings, it is important to observe the different forms and types of boundaries. Four of these are significant and comprise physical, syntactic or structural; cognitive representing conceptual understanding, cultural or emotional and interpretive capacity; social boundaries representing semantic, interpersonal and trust values; and finally political boundaries, by which people with different political affiliations may need persuasion to transcend their differences and through which questions of leadership and ownership of innovation require negotiation.[8]

From a decolonial perspective, hegemonic-bounded knowledge systems need to be disrupted and deconstructed. This entails dismantling some aspects of institutions and the cultural forces that maintain the colonialist structures, which reproduce and entrench hegemonic power, knowledge and socio-cultural capitals. In transdisciplinary formations, therefore, researchers, especially those in post-colonial settings, working in collaboration with northern partners, need to be aware of the existing matrices of power, knowledge and influence and seek ways to establish conversations that help to not only place their ideas on the table but put in place mechanisms for reaching their self-determined goals. Decolonial scholars sometimes refer to this as border thinking,[9] a process of conceptualising ideas from both the inside and outside, using alternative knowledge traditions to unravel the diverse meanings and understandings of a problem or idea. Mignolo[9] says border

thinking requires shifting the geography of knowing, sensing, and understanding – this means starting from the spaces that have been silenced and seeing how these connect and disconnect with hegemonic knowledge systems. In this sense, transdisciplinarity becomes a conversation between knowledge systems to discover places of connection and disconnection and from that to build something new. We now turn to the notion of disciplinary knowledge systems.

Deconstructing disciplinary knowledge systems

The origin of the term 'discipline' in universities has a tangled history. Its Latin derivative is the word 'disciplina', which refers to limited sets of professions in medicine and law because of the required learning of specialised sets of information and skills.[10] Early universities tended to provide general education to all students and only those who wanted to pursue professional careers were then exposed to special disciplinary knowledges.[11] There is, therefore, a sense in which the notion of disciplines is closely tied with the idea of specialisation, intended to produce the highest form of expertise to resolve society's knottiest problems and challenges.

In local African culture, the word discipline has several meanings. In the Zimbabwean Shona culture, to discipline (kuranga) is to put someone through an excruciating experience to turn around their waywardness. But discipline is also used in the sense of guiding and advising others (kuraira) in appropriate ways to lead their lives more productively. In some Shona dialects, the teacher is called 'murairidzi', the one who advises and guides learners into the required learnings. Although parents assume the first level of instructional resources for children, other people are integrally connected with the processes of imparting disciplinary knowledge to young children. When children become somewhat wayward, especially during periods of transition to adulthood, they are sent to their aunts and uncles to spend time in correctional encounters. While with the aunts and uncles, special disciplinary curricula are transacted, including, for example, respect for adults, dealing with physiological changes, handling relationships and preparing for adulthood, among others. The idea of transdisciplinary instruction is also embedded in how the children are sent to different family members for this important transitional knowledge the children and society need. In the Zulu culture and other Southern African communities, boys go through a process called 'emhlangeni', a rigorous initiation process usually held in the mountains, where the boys are taught hunting skills, military strategies, and other skills for adult living.[12] The rite of passage is marked by the circumcision of the boys as proof of graduation from boyhood to adulthood.[13]

The modern universities that emerged between the 16th and 18th centuries are credited with the development of disciplinary knowledge systems as we know them today. For most of these universities, two main disciplines or fields of study were available to students: the sciences and the arts leading to bachelor's degrees in those subjects. Knowledge in these areas was developed around the 'structures of the disciplines',[14] which meant the building blocks for organising the curricula to engage students in activities and experiences around core ideas of the discipline. They all share certain commonalities, including an identified object or subject of research, specific theories and concepts through which the knowledge can be organised, the use of specific terminologies and technical language, the use of specific research methods and a range of subjects through which they are taught.[15,16] Therefore, disciplines have certain content, tend to be taught and evaluated in specific ways, and use certain theories and concepts as a basis for research to advance knowledge in them. Their relevance to larger societal problems tends to be specific and limited and can only provide partial insights into extraordinarily complex contemporary global and societal challenges. Disciplines are thus bounded knowledge systems, which have an assumed significance in the academy. The prospects of crossing these boundaries are often limited because anything other than the canonised structures is viewed as an unnecessary and undesirable intrusion.

Multidisciplinarity

Multidisciplinarity grew out of the need to provide different perspectives about selected phenomena based on understandings that derive from two or more disciplines. It results in knowledge building from several disciplines about a concept, idea or phenomenon.[17] Multidisciplinarity, however, not only seeks to disrupt disciplinary boundaries but also enhances opportunities for accessing multiple perspectives on a phenomenon and hence multiplies the understanding of those phenomena. There is very little, if any, critical interrogation between the disciplines as the fundamental assumption is based on respect for the integrity of disciplinary structures and assumptions upon which the different disciplines are constructed. The knowledge claims stay within and remain apportioned to the disciplinary boundaries.

Interdisciplinarity

Interdisciplinarity seeks to establish links between disciplines. The objective is to explore the connections between disciplinary boundaries and establish integrated disciplines altogether. Over the years, we have witnessed several boundary crossings between disciplines, creating new disciplines.[18] A few examples include Biochemistry, Physical Chemistry, and Biostatistics, among others. The assumption is that there are phenomena that cannot be fully understood through the lenses of single disciplines. Biology on its own yields an understanding of living systems but these living systems have complex chemical processes happening within them. For example, the lungs can be understood as spongy tissue inside the chest, which promotes the exchange of gases that support life. However, the complex chemical processes by which blood carries oxygen

and disposes of carbon dioxide inside the lungs are the terrain of chemistry. A more coordinated and integrated understanding of the lungs and how they function thus can be developed through such new disciplines as Biochemistry.[19] Thus, interdisciplinarity has led to the emergence of new disciplines arising from the assumed connectedness and interwoven relationships between two or more disciplines.

Transdisciplinarity

The focus of transdisciplinarity is on complex sets of problems, which impact societies in multiple ways.[20] For example, in oil and gas explorations, the approach of fracking is often used. Fracking involves the fracturing of bedrock formations using highly pressurised liquids to extract oil or gas from the depths of the earth. This method of energy sourcing is on one hand a complex engineering issue, which has several impacts, including environmental, seismological, economic, human displacement, ecological and ancestral implications. The need to draw on knowledge from these multiple areas requires an amalgamated approach to high-stakes decision making, which can be emotive and highly contested. An important dimension of transdisciplinarity is the idea of working across geospatial spaces across national boundaries to facilitate processes of knowledge sharing in pursuit of knowledge that works across those boundaries. Bernstein[21] puts it this way:

> Transdisciplinarity represents a change in thinking about research and education, challenging the division of academic labour into traditional disciplines such as English, sociology or geology. Not only ought scholars to study across disciplines, nor should disciplinary crossing be limited to joint and cooperative work on projects of mutual interest across disciplines, but reliance on disciplinary paradigms and an acceptance of disciplines as a basis for organising knowledge, inquiry, and teaching need somehow to be transcended. (Bernstein 2015;11:1)

Lamenting a world that has become too big to know, Weinberger[22] suggests that transdisciplinarity is our only option to understand the huge problems that the world faces. Such problems include, for example, climate change, global terrorism, world economic and financial systems, urbanisation, energy consumption, rural–urban divides, digital divides, poverty and inequality, among others. Such problems cannot be adequately addressed by isolated nations. For example, South Africa is a beacon of political stability on the African continent. However, because of that, and as many of its neighbours on the continent are politically unstable, the flow of human migration to it is causing huge socio-economic challenges. The need for a more unified approach in the confrontation of huge challenges of societies lends itself to transdisciplinary approaches to knowledge creation.

In what has come to be known as Mode 2 knowledge production,[23] transdisciplinarity increasingly seeks to deconstruct the ivory tower image of universities by promoting intellectual and social engagement with various other stakeholders, such as the governments, non-governmental organisations, commerce, business, industry, civic organisation and labour organisations among others as the only way to produce knowledge that works among groups with highly competing priorities.

Globalisation has been identified as a major driver towards transdisciplinary knowledge creation.[24,25] The rapid interconnectedness of distant places through technological and digital enablers have combined to create what has been popularly recognised as a global village: a place that requires joined-up thinking, working together and collaborative problem-solving. However, globalisation itself is a contested idea and process because of its origins and links with capitalism, neo-liberalism, colonialism and empire building; concepts, which ordinarily are related to development, at least in the more advanced nations, but which have a 'darker side'[26] that seeks to entrench the global matrices of power, which ensure the perpetual dependence of less developed economies on Western economies and their models of development. As such, even if technological and digital advances are key enablers in transdisciplinary mechanisms of knowledge creation, multiple questions arise about these new relations. For example, whose knowledge is being prioritised; for whose primary benefit is the new knowledge being created; who gets to lead the new knowledge creation mechanisms; who funds the knowledge production and what are the funders' primary motives; what conditions are set for collaboration and who do these favour or prejudice? These and other questions are fundamental to the decolonial issue to which we now turn.

The decolonial turn

The decolonial question is an affront to the pre-ordained status of the Western canon as the only authentic and legitimate way through which the world should be understood, seen and made to work. The Western canon, built around ideas of industrialisation, capitalism, imperial influence, modernisation, colonisation and liberalism has been developed to become a dominant discourse and lens through which all the world's problems should be understood and resolved. The following four key pillars of the Western canon have been particularly devastating in their influence: (1) the scientific worldview, which discards other ways of knowing to the trash. If anything cannot be proved using the models of science, it is as good as non-existent; (2) Christianity that subsumes total submission to higher influences while underplaying the power of human agency in changing their circumstances; (3) use of the English language as lingua franca and the peripheralisation or decimation of local languages and finally; (4) the imposition of Western cultures, including ways of knowing the self, social interactions, worshipping, playing and entertainment, among others. These four pillars have been used effectively especially on colonised people and have resulted in alienation and uprooting of people from their cultural, social, economic and intellectual roots wherever the colonisers took control. In essence, formerly colonised people have become what Fanon[27] describes as black skins-white minds.

TABLE 1: Theoretical assumptions: decoloniality and transdisciplinarity.

Critical assumptions	Decolonial turn	Transdisciplinarity	Convergences	Divergences
Epistemological (the nature of knowledge)	Multiple knowledge bases Equality of epistemological canons Critical of the dominance of the Western canon	Multiple knowledge bases Hierarchies of canons Not expressly critical of the Western canon but accommodating of others	Knowledge making in multiple disciplinary formations Accommodating of different knowledge systems Focus on creating new disciplines	Decolonial turn stronger on critique of dominant knowledge systems
Ontological (the nature of reality)	Multiple realities Reality as a social or personal construct	Acknowledgement of multiple realities Need to construct new realities	Multiple realities and the construction of new realities as a key focus	Multiple realities not always treated or seen as equal
Axiological (underpinning values)	Inclusivity Fairness Equity Pro-poor focus	Inclusivity Broad participation Focus is on elegant solutions	Inclusivity and broad representation in knowledge creation	Decolonial turn has a stronger focus on the poor and marginalised
Methodological (approaches to knowledge creation and development)	Mixed methodological approaches Collaborative partnerships Deconstruction of power hierarchies	Multiple methods Collaboration and partnership working No specific focus on deconstructing power hierarchies	Use of multiple methods	Decolonial turn has a stronger focus on deconstructing knowledge hierarchies

More recently, the decolonial turn has grown to be a strong movement, especially among scholars in Latin America, Eastern Europe and the Caribbeans and Africa. It interrogates three fundamental edifices of coloniality: a process by which the colonial matrices of power, knowledge and of being are entrenched, reproduced and sedimented in post-colonial nations.[28] While decolonisation aims to deconstruct the edifices of colonisation or colonialism from the human experience, decoloniality seeks to interrogate the three forms of coloniality from the human experience. Elsewhere, we have defined coloniality as a tendency of a previously colonised people and the systems, which govern their lives to return to the colonial condition[29] and decoloniality as attempts to unravel or undo these tendencies. Therefore, the decolonial turn questions and seeks to subvert the epistemological, ontological, axiological and methodological assumptions of the Western canon. In Table 1, we attempt to analyse and compare the critical assumptions underpinning the decolonial turn and transdisciplinarity with the hope of identifying the convergences and divergences as a basis for considering opportunities and constraints of deploying both lenses in new imaginaries of post-colonial higher education systems.

There is more in common between the theoretical assumptions underpinning the decolonial turn and transdisciplinarity than there are divergences. Firstly, both discourses underpin the non-universality of knowledge but highlight rather its multiversity, a system of diverse knowledges about phenomena that needs to be brought near to create new understandings, which have greater capacity and potency for resolving the world's knotty problems. Secondly, both view reality as multifaceted and not pigeonholed into the imperatives of science rationality alone. For example, issues of poverty, inequality and climate change are best tackled in both local and global contexts, considering specific local contexts, which can only be unravelled through close engagement with the local people, systems and structures but also through global knowledge formations in distant locations, which may be experiencing similar kinds of challenges. In addition, the engagement of multiple stakeholders recognises the diversity and multiplicity of interests and the priorities and concerns of different groups, which must be carefully weighed and considered in the formulation of new solutions. Both discourses embrace values of fairness, equity and democratic participation and lend themselves to diverse knowledge creation mechanisms.

However, there are fewer divergences between the two, based on what we think is ambivalence and a lack of explicitness about whether knowledge systems are equal in status and whether in the actual practice of collaboration and partnership working, power hierarchies can or should be dissipated to yield to the development of real creative commons in the new knowledge development processes.

Based on the above arguments, we ask the question about fresh imaginaries of future higher education in post-colonial societies. To that end, we briefly discuss eight hypotheses on which future higher education systems could be developed. We preface the discussion by rehearsing the status of higher education in post-colonial countries in Africa.

Higher education in colonial and post-colonial Africa

Higher education across the African continent is a vestige of colonial machinations. Early universities on the continent were created as offshoots of institutions in Europe, and to a lesser extent, North America. For example, the University of Rhodesia and Nyasaland established in the early fifties was a college of the University of London in the United Kingdom. So too was Makerere University in Uganda. The oldest university in Africa, the University of Sierra Leone was established in 1827 as a college of the University of Durham in Scotland. The curricula, examinations and certificates were produced in the colonising countries and many of the lecturers and professors in those early universities were brought in from overseas. Following independence, many of the universities dropped their colonial names and started developing their own curricula and examination systems and recruited more local lecturers. They expanded access to broader cross-sections of students in line with the democratic principles upon which the

new nations were founded. Over the past years, there has been a significant surge in research focusing on decolonisation[29,30] and the Africanisation of various fields.[30,31]

Despite these changes, three processes conspired to maintain and reproduce the colonial character of post-colonial universities. Firstly, the system of external examiners, whose responsibility was to put their stamp of quality on university programmes. Because of previous associations, many of these external examiners were flown in from the founding universities in Europe and the United States. To that extent, quality remained linked to the extent to which university programmes, curricula, standards and teaching resembled those in the founding universities in Europe and the United States. Secondly, the staff development programmes. Local staff were provided with scholarships and bursaries to further their studies at master and doctoral levels in European and American founding universities. These staff generally became conduits of the knowledge, values and habits gathered in the colonising countries, which they advertently or inadvertently transmitted when they returned to the posts. Thirdly, partnership arrangements to facilitate research. Essentially, partnership and collaborative research projects are generally sponsored by Western grant-awarding institutions in Europe and the United States. Western partners are expected to assume research leadership and thus develop the research questions and methods to be used in such partnership programmes. Associated publications from the research are generally published in Western journals as these tend to have a high impact compared with low-impact journals on the African continent. This tends to emasculate local researchers from the knowledge they help produce while the dominance of Western knowledge systems continues to strengthen at the expense of local knowledge systems in the post-colonial nations.

Contemporary higher education systems in Africa

There is currently a diverse system of higher education on the African continent, including public government-funded institutions, comprising a clear majority; private institutions, many of which are affiliated with external universities in the West; church-based universities, such as the Catholic and Methodist universities in many parts of Africa; and branch campus institutions which are part of the abroad internationalisation modality adopted by many overseas institutions. Many technical institutions have been upgraded to or merged with the existing universities with the hope of raising the quality of programmes and delivery. The following 11 portraits of African universities developed by researchers on the continent[27,13] paint a rather gloomy picture of the current status of university institutions in Africa:

1. Overall, it is true to say that we do not have African universities, but universities in Africa. Fredua-Kwarteng[32] asserts:

   Most African universities and other higher education institutions imitate with a high degree of exactitude Western universities' academic curricula, objectives, content, assessment approaches and learning materials.[32]

2. Most universities on the continent have become mass institutions in line with the objectives of their governments related to widening and increasing participation, especially for previously disadvantaged groups in society. This has placed substantial burdens on financial sustainability and quality in many higher education institutions on the continent.

3. Many universities in Africa now enrol a significant majority of local students taught by mostly local lecturers and led by black vice-chancellors. However, what is taught and how it is taught has generally remained entangled in the Western canons of knowledge and teaching.

4. Disciplinary formations dominate teaching and learning and research in many universities while multidisciplinarity, interdisciplinarity and less still, transdisciplinarity are tentatively being introduced in response to calls by funders and the increasing connectedness and complexity of societal and global challenges and problems.

5. Many local students face material and financial poverty challenges and because of insecure knowledge preparation in primary and secondary schools are generally ill-prepared for successful navigation of higher education requirements. Consequently, students from low-income households tend to contribute to the abysmal wastage phenomenon in higher education.

6. Failure rates, non-completion, dropout, low rates of academic progression and uptake to employment and labour market sectors tend to trace the contours of race, class and privilege in many universities with the most affected being local students from poor socio-economic backgrounds.

7. Universities in Africa are variously described as the last posts of colonialism,[33] as untransformed spaces of Western learning and as imitators of Western institutions.[34]

8. There is an upsurge in the discourse of decolonisation in many African universities led especially by students, through movements, such as the Rhodes Must Fall and Fees Must Fall in South Africa.

9. The recent COVID-19 pandemic exposed and exacerbated existing inequalities in Africa's higher education systems. The turn to online teaching and learning exposed the wide inequalities in access to knowledge-creating processes, especially by students from low-income family households and the tendency of universities to adopt middle-class solutions, which do not always work for working-class students.

10. While most universities have achieved the symbolism of change, they remain fundamentally untransformed, especially in terms of curricula, pedagogies, teaching and learning and knowledge production.

11. Higher education systems across the world including those in Africa were faced with the challenge of the COVID-19 pandemic. The pandemic shook the foundations of higher education systems in terms of exacerbating the inequality in epistemological access. As universities turned to online teaching and learning, many students, especially those from low-income households fell behind because of

issues related to technological access and unstable or no Wi-Fi or internet connection. One effective strategy for universities to prepare for future crises is to embrace resilience theory. The resilience theory aims to enhance the adaptive, predictive, and transformative abilities of both institutions and individuals, ultimately creating value.[28,29]

Towards a framework for reimagining the future of higher education in Africa

We offer nine tentative propositions we believe could be used to frame an agenda for transforming the future of higher education in Africa. The propositions emerge from work we have performed on decolonising the curriculum at the Faculty of Humanities at the University of the Witwatersrand where the second author was Assistant Dean for Internationalisation and Partnerships. They also include insights from the research of others especially Cross and Ndofirepi[35] Mbembe[36] and Ndlovu-Gatsheni[37] in South Africa; Mignolo[38] and Grosfoguel[30] among others. The propositions are shaped by our understanding that transformation comprises three critical dimensions: the symbolic, the epistemological and the ideological. Elsewhere, we have argued that in South Africa, as in many parts of Africa, the bulk of transformation in higher education has been in the symbolic dimension while the epistemological and ideological have barely shifted.[39] The propositions are also informed by an understanding, as developed in this article, that a decolonised transdisciplinarity framework has much potential to substantially shift the terrain of knowledge creation in post-colonial higher education systems.

1. A more holistic transformational impetus has the potential to shift the knowledge creation agenda in post-colonial higher education systems in Africa.

As argued in this article, transformation has been and remains an important pillar in the development of post-colonial systems of higher education. However, while a great deal of effort has been placed on the symbolic dimension, the epistemological and ideological dimensions have lagged behind. Symbolic transformation is largely about developing new policy frameworks, renaming buildings, campus roads and lecture rooms, appointing black vice-chancellors, recruiting more black students and staff, and designing fees models which do not discriminate against poor students, all of which are very important, yet inadequate to drive the ultimate transformation required in the sectors. Universities in South Africa, for example, have made substantial roads into this dimension, yet, the curricula, the pedagogies and the assessment of teaching and learning have largely remained unchanged. This has resulted in high failure, non-completion and attrition rates reported among students from disadvantaged socio-economic backgrounds across many universities in the country. Attempts to develop decolonised curricula have generated little momentum in higher education sectors for a number of reasons, including conceptual fuzziness about what it means to decolonise

education, fear of becoming deskilled and the cost of reskilling for individuals and the institutions, a lack of structural support and inadequate thought leadership among university senior management teams to lead transformational agendas and the hegemonic influence of the Western canon in the sector, among others.[39] Ideologically, there seems an insufficient momentum towards embracing decolonisation as the overarching framework for transitioning universities from the stranglehold of colonial influence. The use of the idea of decolonisation remains invisible in the mission and vision statements of our universities while the notion of transformation predominates. In addition, decolonisation is not represented as a specific portfolio in senior management appointments in universities across the continent. Staff and students can go on as much as they want about decolonisation. If no one has responsibility for it at the highest levels, nothing is ever likely to change. Symbolism, the epistemological question and ideological focusing are important dimensions of transformation and when attended to simultaneously, they become mutually reinforcing and yield better dividends in the work of transformation.

2. Transdisciplinarity can be an effective vehicle for creating global knowledge ecosystems.

The notion of knowledge ecosystems provides a vision of university systems that are self-knowing, interdependent and mutually reinforcing. Self-knowing arises from a deep and intimate understanding of one's past, the present and why people are where they are currently, and the future that includes where one wants to be in both the short and long term and how to get there. Interdependence connotes an outward gaze and continuous search for value adding opportunities to improve both the local and external conditions that affect our lives and experiences. It entails an understanding of the multiplicity of views and knowledge about improving the conditions and lives of people around us and how these can be integrated into new knowledge with greater relevance and potency for interrogating and resolving some of the world's knottiest problems. Mutually reinforcing organisations are those that seek improvement not just for themselves, but for others around them. Some of the best farmers know that they will have better yields when other people's fields around them are disease free. Good universities grow on the shoulders of equally good institutions. The runaway competitive streak that has gripped the higher education sectors has left nations with a few pockets of excellence around a sea of mediocrity. The so-called good universities tend to emasculate themselves from their context, seeking overseas partners and becoming good for the world, but irrelevant for their local contexts.

3. The many convergences in the assumptions behind decoloniality and transdisciplinarity can be used to steamroll transformation in higher education.

As discussed in this article, there is so much common ground between the two ideas at the four philosophical levels of epistemology, ontology, axiology and methodology. The two ideas can be used to underpin curricula, teaching

and learning, pedagogical assessment and research decisions. The focus on multiple actors emphasised under transdisciplinarity who work in an environment of trust and fairness resonates with decolonial ambitions for collective and consultative decision making at multiple levels of the university. These two approaches can also complement each other by compensating for any shortcomings associated with the individual concepts. For instance on the one hand decolonial perspective can redirect a community of researchers towards addressing power hierarchies and ensuring that various knowledge systems receive equal attention for meaningful contributions in shaping research inquiries, method selection, analysis, and the distribution of leadership responsibilities. In doing so, the decolonial perspective acts as a safeguard against the potential domination of intellectual thought, a common issue in interdisciplinary work. Transdisciplinarity, on the other hand, expands its scope beyond specific academic fields and delves into the foundational knowledge systems of nations, particularly in the context of specific ideas, which remains a central focus within the broader concept of decolonisation.

4. Deliberate restructuring of knowledge creation spaces to embrace the ideals of decolonised transdisciplinarity in universities that has the potential to innovate and invigorate research productivity.

The research performance of African universities is relatively weak compared with institutions in other parts of the world. Only two universities in Africa, the University of Cape Town and the University of the Witwatersrand appear in the top 250 for published research in global rankings. Between 30% and 35% of both institutions' scholarly outputs are published in the top 10 global academic journals.[29] Some universities in Nigeria and Egypt are also performing in the top 500 in global performance rankings. The top-performing universities in Africa share a few things in common. They have deliberate structures and policies to support research performance. For example, rather than leaving researchers to work in isolation, as is prevalent in many universities, they have set up research thrusts and/or communities, which do their work under a broad theme. For example, it is common to see a diverse range of disciplinary experts working under the theme of, say for example, poverty, including social scientists, economists, educationists, engineers and environmentalists, among others. The opportunities for transdisciplinarity are thus created both within the bounded space of the universities and externally with other scholars and institutions in the region and internationally. At the University of the Witwatersrand, for example, research outputs have risen by nearly 40% over the last 5 to 6 years. The creation of structures, research support frameworks, the development of research-led teaching approaches to diminish the imaginary boundaries between research and teaching, attracting star researchers and forging strong international partnerships tend to be some of the common strategies that enhance research performance and excellence in the top-performing African universities.

5. Developing thought leadership spaces supported by senior management appointments to promote the development of decolonial transdisciplinarity.

Thought leaders are key nodal points in the creation of decolonial transdisciplinarity in universities as indeed in other progressively successful organisations. They influence the development of narratives of development in organisations. They act as part of the boundary spanners[7] that facilitate boundary crossing, engagement and sharing of knowledge. There is a general conceptual paralysis in the academies of the African continent about the meanings of key developmental ideas such as decolonisation and transdisciplinarity. Universities that invest in developing and supporting thought leaders in these areas tend to promote the effective nurturing of these ideas while helping others to navigate the treacherous terrains of transforming knowledge-creation spaces. Attracting star research performers is only a starting point that needs to be augmented by lucrative contracts and financial incentives to achieve the research and knowledge creation roles of our universities.

6. Supporting Early Career Researchers (ECRs) is a positive investment for the future of the African university.

Many universities in South Africa have special programmes for supporting ECRs. They are first and foremost encouraged to join existing research thrusts and/or communities at the university. They are partnered with a research mentor from the start. They receive financial support to attend local and international conferences in the first 1 or 2 years of their career; they are supported with funds to pay for page fees in their initial publications and are allowed to apply for a semester-long leave with buyouts paid by the institution so they can write their first research outputs or gather fresh data for their publications. They are also required and mentored to write winning grant proposals to support their research objectives. Later on, when their outputs begin to receive financial subsidy, they can become more self-sufficient researchers in the academy. Research shows that of all the support they get, the most valued is the opportunity to work in communities of scholarship.[23] The financial modelling on supporting ECRs clearly shows that the return on investment in an ECR is far more than 70% over a 5-year period.[40]

7. Reconfiguring senior management positions to reflect the focus on decolonial transdisciplinarity will promote the growth of transformation.

Senior management positions in many African universities are replicas of the inherited structural organisation of universities. The vice-chancellor is traditionally the CEO of the university while two deputies take responsibility for the academic and research programmes. Underneath these are directors for human resources, finance and student affairs, among others. Our search on university websites clearly shows that the responsibilities for university transformation are not generally prioritised in the senior management portfolios but tend to be assumed by staff lower down the ranks. Change happens effectively when five things are in

place: the structures, the leadership, the financial support, an organisational willingness to change and the change plans. Weaknesses in one of these tend to stifle the momentum to change. Of these, leadership is probably the most important.[41] In many universities across the continent, the responsibilities for transformation are not vested in senior management portfolios. This suggests a low prioritisation of the task of transformation in the higher sectors. If this aspect is not led from the top, the likelihood of maintenance of the status quo remains very high in the African academies.

8. Adopting resilience strategies offers opportunities to create organisational capacities for facing current and future disruptions.

Focused on developing integrated sets of capacities across the institutions, including adoptive, adaptive, predictive and transformative capabilities, universities become prepared to work across their boundaries with others and become more inclined towards setting priorities for the more vulnerable people within them and in society. Both these focuses underpin in a real sense the decolonial transdisciplinarity we are proposing here.

9. Adopting and developing strategies and implementation plans for embracing a pro-poor approach is the foundation for social, epistemic and pedagogical justice in post-colonial higher education systems.

Post-colonial universities, along with other universities across the world, are middle-class inventions, which by design and purpose serve middle-class values as a part of the modernity and post-modernism project. But as we know, the pursuit of modernism is closely linked to the colonial and capitalistic projects, which are the direct antithesis of the decolonial agenda. Poverty and inequality in post-colonial societies trace the contours of race and privilege. If universities do not vigorously interrogate the sources and causes of poverty and try to eliminate student poverty, most of its students will not maximise the benefits of a university education. The construction of new university curricula, which brings into the conversation middle-class and working-class values, concepts and theories can derive impetus from the proposed decolonial transdisciplinarity approach that we are proposing here.

Conclusion

In this article, we have tried to argue that decolonial transdisciplinarity can be a creative space for transforming higher education institutions in post-colonial African universities. We suggest that the prospects of doing so are enhanced because the two ideas share many similarities epistemologically, ontologically, axiologically and methodologically. Their strongest rallying points include the need to embrace multiple perspectives in new knowledge construction, the democratisation of decision making, values of inclusivity, trust and fairness, and the determination to embrace cross-boundary knowledge thinking, planning, organisation and management in new knowledge creation roles.

The article has provided some analysis on the notions of multidisciplinarity and decoloniality through discussion of related concepts, which have the potential to contribute clarity to the current state of conceptual paralysis in African higher education sectors. It also explored the notion of boundary knowledge systems indicating the multiple ways in which this idea has been theorised.

A key contribution of the article has been in its analysis of the convergences and divergences underlying the conceptualisation of the ideas of transdisciplinarity and decoloniality, which we used as a basis for proposing what we termed 'decolonial transdisciplinarity' suited to underpin the urgent transformation of post-colonial higher education sectors on the continent. Most importantly, the article has suggested nine critical propositions, which can be used as frameworks for reimagining new futures in Africa's higher education sectors. We propose these as tentative hypotheses upon which further research may be conducted to enhance the quality of evidence that informs the need to create more robust, research-competitive African universities, instead of the universities in Africa currently.

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