South African
Journal *of* Science

volume 118

Special issue:
Radical Reason

ASSAf
ACADEMY OF SCIENCE OF SOUTH AFRICA

Volume 118
Special issue:
Radical Reason

South African Journal of Science

eISSN: 1996-7489

Radical Reason

Guest Leader

Book Reviews

Structured Conversations

Commentary

Research Article

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Published by
the Academy of Science of South Africa (www.assaf.org.za) with financial assistance from the Department of Science & Innovation.

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Submissions should be made at www.sajs.co.za

This special issue on Radical Reason brings together a selection of critical contributions from thinkers from around the world, who all offer provocations for thinking anew what it means to be human now and here.

Although the format of this special issue is a departure from our usual format, this special issue is an opportunity for the South African Journal of Science *to support scholarship that offers new ways of thinking about the challenges humanity faces and to promote the critical roles of the humanities and social sciences as well as African thought and knowledge in responding to the questions facing all of humanity globally. The methods and approaches reflected in this special issue differ from most reflected in our Journal. Given our commitment to interdisciplinarity and our concern with addressing complex problems, including existential threats to our species and our planet, we believe that it may be helpful to our readership to be aware of how complex issues are being addressed from a wide range of perspectives.*

These contributions either capture or extend presentations and conversations that were part of the HSRC Radical Reason 'Conversations with Global Thinkers' series that took place at the 2020 Science Forum South Africa.

We thank Rachel Adams (Principal Researcher, Research ICT Africa, Cape Town, South Africa) and Crain Soudien (Adjunct Professor, Cape Peninsula University of Technology, Cape Town, South Africa) for convening and guest editing this special issue and the Human Sciences Research Council (HSRC) for sponsoring the publication of this special issue.

Leslie Swartz, Editor-in-Chief

About the issue
The aim of this special issue on 'Radical Reason' is to show how African thought has and could contribute to the development of new logics and new forms of reason and to reflect on the full complexity of the lived experiences and conditions of being in the world now – on the horizon of the emergence of a not yet fully determinable world when radical thought, science, ethics, institutional arrangements, and other shared systems of valuation and understanding, are required to give depth and meaning to the full articulation of the questions that we need to be asking now to engender the arrival of a just and equal world to come. No one discipline or system of thought can answer the questions the world is facing today. This is the time for 'radical reason'.

GUEST LEADER

Introduction: Radical Reason

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HOW TO CITE:
Adams R, Soudien C. Introduction: Radical Reason. S Afr J Sci. 2022;118(Special issue: Radical Reason), Art. #15000. https://doi.org/10.17159/sajs.2022/15000

The state of the social sciences and humanities

This special issue of the *South African Journal of Science* arises out of a selection of key contributions made in Pretoria at the Science Forum South Africa held in December 2020. The Science Forum is a platform developed by the Department of Science and Innovation (DSI) for the purpose of convening the country's leading scientists, scholars and intellectuals around the questions of economic, social, cultural and technological development. Driving the initiative is the desire to bring the knowledge-producing community into a simultaneously open yet rigorous intellectual space. It is about critically exploring the best of what is known in the sciences, through and with the advantage of multidisciplinary perspectives, to understand how the issues which trouble the world – chiefly those of social inequality and planetary sustainability – can be approached through insightful enquiry, and how solutions may be proposed which offer pathways to new futures which are just, equitable and sustainable.

While the issues of social justice and equity have framed all seven previous iterations of the Science Forum, the 2020 occasion foregrounded the work of the humanities and the social sciences in South Africa, formalised through a partnership between DSI and a consortium of institutions of the social sciences and humanities led by the Human Sciences Research Council (HSRC). Prompting this focus were two important issues. The first was the 50th anniversary of the HSRC and the 90th anniversary of its predecessor, the National Bureau for Educational and Social Research. The anniversary, conceptualised and given form by a consortium of leading figures and institutions in the science and humanities fields inside and outside of the country – including the heads of the Academy of Science of South Africa (ASSAf), Universities South Africa, and the International Science Council, and the heads of several Humanities Faculties throughout the country (the Consortium) – was marked by a year-long series of public events, colloquia and exhibitions. The shared understanding of the Consortium was that the occasion of the HSRC's anniversary provided South Africa with an important opportunity to interrogate the role of the social sciences and the humanities in working with the multiple developmental challenges of South Africa and the world. Also recognised was that the occasion offered opportunities to understand a range of important questions about the state of scholarship and research in South Africa, and the relationship of the social sciences and the humanities with what are oftentimes called the 'hard sciences'. This includes the contention, in the context of the decolonisation movement around the world, that the dominant scientific project, shaped by the Global North, was in crisis and was not – in particular – able to deal with the compounding challenges of global inequality and climate change; that scientific discourse had become over-determined by technology, the hubris of the Fourth Industrial Revolution and its accompanying artificial intelligence conceit; and, not least of all, the concern that precisely at the moment in which the social sciences and humanities should be playing a key role in generating understandings of the critical changes affecting the world – with critical reference here to the COVID-19 pandemic, still looming large in December 2020 – they were largely absent and unresponsive.

The crisis of COVID-19 was the second reason for foregrounding the social sciences and humanities at the 2020 Science Forum. Indeed, the pandemic was not simply a scientific and biomedical question, but had deep implications for how people lived as both individuals and communities, how they managed their livelihoods and how they could begin the process of cultivating social imaginations of compassion, care and solidarity in the face of worldwide retreats into self-serving nationalisms, and ethnically and racially defined self-preservational forms of isolationism. The importance of addressing COVID-19 as an interdisciplinary issue with substantial social science input has been stressed in another recent special issue of this Journal (https://sajs.co.za/issue/view/1024), and in part this latest special issue takes that work forward. Following the events of the onset of COVID-19 – which are yet to fully unfold – the acute conditions of inequality that the pandemic exacerbated in societies across the world demanded that the social sciences and the humanities were taken more seriously. There was, it was understood, much to be done to better understand the production of inequality, and how inequality continued to arise in new ways and with new effects. This is the critical role of the social sciences and of the humanities.

This special issue, it is important to clarify, keeps in mind both the prompts which informed the shaping of the Science Forum. It is, however, the state of the social sciences and the humanities which figures most prominently here. While the special issue brings the questions of the place of the 'hard sciences' into play, it is the concern with the responsibilities of the social sciences and the humanities which this special issue explores most fully.

This concern arises out of the need to understand, historically, the point and place at which the social sciences and humanities find themselves. The occasion of the HSRC's anniversary is, as a consequence, more than simply fortuitous. It is timely. It is timely because it is in the substance and character of a key state institution of the social sciences such as the HSRC that the country might come to understand what role its social scientists and humanities scholars might play in the development of the country.

To begin with, it is important to acknowledge that the birth and history of the HSRC in 1969 are deeply entwined with the project of apartheid. A central figure in the establishment of the HSRC was Geoffrey Cronjé, a prominent University of Pretoria academic and a leading spirit in Afrikaner cultural circles. He had lobbied for several years in the 1960s for the establishment of a science council for the humanities which would equal the Council for Scientific and Industrial Research. He was unhappy that the universities were not paying sufficient attention to what he called the 'human sciences'. Needed, he explained, was the development of a 'social science' which would be 'in the national interest'.[1] What he meant by 'national' was, it needs to be emphasised, informed by his fierce defence of 'white' interest. He had been instrumental in writing an important manifesto for apartheid, 'Voogdyskap en apartheid'[2]. This work was an attempt to situate white supremacy in South Africa as a critical site in the world for the elaboration and development of modernity. In the project of apartheid, he believed, was to be found the apotheosis of what the European Enlightenment and its civilising intent, in substance, aimed at. In coming to its

50th anniversary, the HSRC was keen to demonstrate how much it had moved on from the thinking which animated Cronjé and his colleagues, and, importantly, to take position as a leader in South Africa and in the world in rethinking the responsibilities and tasks of imagining the humanities and the social sciences in their aspiration of the creation of an inclusive modernity. Towards this responsibility, with the support of the Consortium, it decided to masthead the Science Forum with the theme of 'Radical Reason'.

Radical Reason

The theme of Radical Reason was conceptualised as a deliberate attempt to engage with the history of the humanities and social sciences in South Africa and to invite discussion and debate about the future of the planet. It affirmed a commitment to the ideal of *reason* but looked, deliberately, to radically enlarge its logics. It engaged – and still seeks – to work critically with a double concern of primacy in subaltern thought. First, to drive the project of undoing structures of knowledge and ways of understanding the world and all of life within it that privilege representations of a European imaginary. And second, to critically shape the positionality of Southern worlds, in our case Africa in particular, in a new planetary-scape that is intellectually and morally hospitable. To put this differently, radical reason anticipates the supplementation of the global archive with its absent and diminished African narrative, so as to enable it to imagine for itself a new and inclusive future.

In so doing, the aim of the radical reason initiative in this special issue and at the Science Forum was to consider – and show – how African thought had and could contribute to the development of new logics and new forms of reason. To that reason which proceeded from the assumption that the world was naturally ordered around white supremacy, the project of *radical reason* sought to excavate and put to work logics of unconditional human equality – logics which did not seek to divide and order human beings hierarchically, but which would, instead, recognise and affirm the diverse contributions of people everywhere. Prompted by the global events of 2020 which saw life, science and race raised to new profiles with the spread of the novel coronavirus and the protests around Black Lives Matter, this special issue, building off the contributions of the HSRC Radical Reason Consortium, seeks to stimulate and engage critical knowledges that reflect the full complexity of the lived experiences and conditions of the world. In such times – on the horizon of the emergence of a not yet fully determinable world – radical thought, science, ethics, institutional arrangements, and other shared systems of valuation and understanding, are required to give depth and meaning to the full articulation of the questions that need to be asked *now* to engender the arrival of a just and equal world *to come*. No one discipline or system of thought can answer, or fully account for, the questions the world is facing today.

In this provocation, a point of departure is that the methodologies and truths of dominant forms of knowledge require constant interrogation, supplementation and renewal. It is recognised, too, that excluded forms of knowledge do not by themselves, and, in and of themselves, resolve the difficulties of dominance or the problems which dominance has precipitated; they hold in themselves, simply by virtue of their human-constructedness, contradiction. Critical, in this juncture, however, is the need to confront the ways in which dominance can function to exclude certain groups and people, how science can rationalise unethical practices in the name of objectivity, and, against this, to recover subordinated epistemes and to explore their fundaments and their elaborations to see how they may elucidate alternative lines of thinking about the predicaments in which the world finds itself. Yet these alternative lines of thinking cannot escape critical scrutiny, too, and must themselves be subject to processes of reflective regeneration.

And so, as the events of the last few years have confirmed, no one discipline or a single episteme can answer the questions, or fully account for the conditions, facing us today. This crucial moment the world is in together, demands – as is argued here – radical reason. What is meant by this is dynamic and is unfolding in conversations such as those that took place at the 2020 Science Forum. To speak of 'reason' alerts all to the various forms of thought and scientific thinking at their disposal with which to understand the world. To speak of 'radicality' at this juncture is to ask of the world's faculties of 'reason' to rethink themselves, to turn inwards in reflection and take stock of where they are at, and their value and capacity for truly understanding this moment in which the world finds itself.

In particular, we seek with this idea of Radical Reason, to affirm the place of African thought and knowledge, not just in helping us understand what we are facing here in South Africa, but also in responding to and helping to articulate the questions facing all of humanity, the world over. Such thought can help us to create new forms of reason and ways of understanding ourselves and each other, that do not divide or order human beings in any sort of hierarchy, but instead, recognise and affirm the diverse contributions of people everywhere.

This special issue

This special issue brings together a selection of critical contributions from thinkers from around the world, who all offer provocations for thinking anew what it means to be human now and here. These contributions either capture or extend presentations and conversations that took place at the 2020 Science Forum. Included here are four structured conversations, a response to one of these conversations, an original article, and two book reviews of books that were launched at the 2020 Science Forum.

Indeed, a major offering in this special issue is a series of conversations with leading thinkers from around the world. In these conversations, structured differently as interviews, conversations and dialogues, a series of intense engagements was undertaken with some of the foremost intellectuals in the world to reflect on the future of knowledge, critique and thought. It was particularly important for the Radical Reason Consortium to think with these leading figures from here in South Africa, and to stage conversations about the state of the world that were rooted in the Global South. Crain Soudien led a conversation with Sabelo Ndlovu-Gatsheni and Boaventura de Sousa Santos, two world-leading thinkers on epistemic justice and knowledge from the South; Premesh Lalu was in dialogue with Homi Bhabha, broadly recognised as the most important cultural theorist in the world today; and Rachel Adams interviewed Shaj Mohan, a prominent and radical philosopher of the sub-continent. Further summaries of these conversations are presented below, together with an outline of the contributions you will find in this special issue.

Mamphela Ramphele's plenary address – the first plenary address of the 2020 Science Forum – has been transcribed and extended into a structured conversation with Daya Reddy, who moderated the occasion, and Coleen Vogel, the respondent, in a piece entitled 'The future of transdisciplinarity: How do we relearn to be human in new ways?'. Ramphele writes of the future of transdisciplinarity and how the world relearns ways of being human together as it emerges from crises, including that of COVID-19, and the role of the community of scientists and thinkers therein. In this emergence, African thought – traditional and new – offers rich ways for recognising the cosmological breadth of where we find ourselves. In this intractable connection between humanity and life forms of all kinds, transdisciplinarity is the critical tool of knowledge to fully grasp our planetary potentiality.

In a commentary written as a response to the piece by Ramphele, Vogel and Reddy, Martin Visbeck – an oceanographer – offers some personal reflections on the international and interdisciplinary cooperation required in the study of the ocean and climate variability and change, heralding the inability of any one discipline, university or country to make significant progress on this global topic. Critically, too, Visbeck speaks of the 'academic contract between universities and societies' and the need for centres of knowledge to respond with urgency to the crises we face.

In her original article, Lesley Green deepens our understanding of transdisciplinary by exploring the relationality of the natural and social sciences, and the emerging scholarship therein, in pursuit of a new research paradigm she calls 'anthropocenography', which is built upon a recognition of the material flows which shape our present anthropocentric condition. The piece, entitled 'Paradigm shifts for a planetary emergency: Towards an anthropocenography for urban coastal research at False

Bay, Cape Town, South Africa', pursues a set of inquiries around transdisciplinarity in response to emerging scholarship in the South Africa socio-ecological sciences. These include a critique of the utility of the conceptual categories of 'nature' and 'science', and a plea for the vitality of humanities scholarship in historicising and problematising the scholarship and empiricism of the natural sciences.

Green's article is part of her broader oeuvre that engages multiple ways of seeing and understanding the interconnectedness of our social and environmental condition; a scholarship deeply rooted in observation of the natural world of the Cape coastline out of which it arises. Her book, *Rock | Water | Life*: *Ecology and humanities for a decolonial South Africa* published in 2020 by Wits and Duke University Press, offers a rich exploration of the relationship between environmentalism and racial justice in South Africa. In a review of this book included in this special issue, the theologian Graham Ward teases out the grounding power of context – as a disruptor of the normative dimensions of static forms of knowledge, and as a radical form of empiricism – that underlies the originality of Green's work.

The notion and task of the university takes centre stage in the structured conversation between Boaventura de Sousa Santos and Sabelo Ndlovu-Gatsheni, managed by Crain Soudien. The context for the discussion was the deepening hold of managerialism on the modern university and the limiting forms of accountability generated by it. In the conversation Santos recovers the critical role of the university in extending the bounds of the imaginary while Ndlovu-Gatsheni describes in detail the mechanisms that have led to the particular kind of 'enclosures' that are evident in the modern university. An important element in the conversation, prompted by Soudien's question on where hope for the university is to be found, is the recovery of examples around the world where institutions and disciplines have been able to innovate their way through the strictures of neo-liberal accountability.

The discussion between Homi Bhabha and Premesh Lalu, moderated by Jean Baxen, takes forward the earlier engagement in important ways. Framing the conversation was the question posed by Baxen of how an intellectual project in this time of uncertainty could rise to the demand of facilitating the development of a more just and fairer world. Strikingly, picking up an observation by Bhabha about the impact South Africa had on him, Lalu draws attention to the country's critical intellectual traditions. The discussion pivots on the generative possibilities inherent in the critique of apartheid for explaining what Lalu describes as the broader global condition. Of specific concern in the discussion is the infiltration of apartheid's discursive modalities into everyday life and the difficulty, as Bhabha implies, of moving away from this condition.

The final structured conversation takes place between Shaj Mohan and Rachel Adams. Mohan is a philosopher of the Indian sub-continent, whose thought is increasingly becoming one of the most radical and important contributions to the philosophy of the world, today.[3] In this conversation, Adams invites Mohan to return to the question of what philosophy is, and what the task of the philosopher is at crises points, like that in which we find ourselves. Mohan's response subverts the question to declare – as the piece is entitled – 'I take, and I am taken, by what belongs to philosophy', and urges philosophy to uncover, make light of, and arrive us out of the ruins of our world. In this reckoning, Mohan insists on philosophy's faculty to redeem democracy, that is, a true democracy of the world.

In South Africa, public intellectuals like Mohan, have played a critical role in the country's history. A new book that brings together an extraordinary collection of vignettes capturing the contributions of a series of anti-apartheid public intellectuals or dissidents, entitled *The Fabric of Dissent: Public Intellectuals in South Africa* and edited by Vasu Reddy, Narnia Bohler-Muller, Gregory Houston, Maxi Schoeman and Heather Thuynsma, was published by HSRC Press in 2020, and reviewed in this special issue by Keyan Tomaselli. Tomaselli describes the genealogical approach of the book in offering a historical inquiry attuned to the workings of power, and bringing renewed visibility to the contributions to public critical thought made by a series of 77 figures.

The efforts that went into putting together the programme of events at the 2020 Science Forum, and subsequently in contributing to and assembling this special issue, were extraordinary. As Guest Editors of this special issue, we are especially grateful to our Consortium partners and colleagues at the DSI who gave so much in order to be able to offer the world-leading collection that is presented here. We also thank Mark Gaffley for his work in transcribing the interviews included in this special issue. Lastly, our special thanks goes to the SAJS – to the Editor-in-Chief, the editorial team and to the Board – for supporting a different kind of special issue that itself moved beyond the boundaries of the traditional forms and structure of published scholarship, offering not just new ways of thinking about the problems we face, but new ways of presenting and sharing such thinking.

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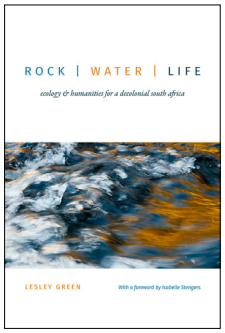
BOOK TITLE:
Rock | Water | Life



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ISBN:
9781776146147 (paperback, 328 pp)

PUBLISHER:
Wits University Press, Johannesburg, South Africa; ZAR385

PUBLISHED:
2020

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HOW TO CITE:
Ward G. Rock Water Life: Ecology and humanities for a decolonial South Africa. S Afr J Sci. 2022;118(Special issue: Radical Reason), Art. #11990. https://doi.org/10.17159/sajs.2022/11990

ARTICLE INCLUDES:
☐ Peer review
☐ Supplementary material

PUBLISHED:
31 October 2022

Rock Water Life: Ecology and humanities for a decolonial South Africa

Context matters. It is not only material – culturally, socially and naturally – it engenders materiality: the organics composing and continually recomposing our bodies. And 'bodies' is not a discreet, individuating term here. We live in and across many different bodies – communal, corporate, political, civic and environmental. Context is, then, complex: to be examined critically. But without tackling that complexity there may be modification but there can be no transformation. It is then something of a breakthrough when an ecological study wishing to leap beyond currents of critique to spawn new possibilities, heads straight into this complexity. And this is what Lesley Green's book does with stylistic verve, sharp-edged eloquence and gusto in volumes. That is what strikes first: the sheer quality of the writing, its energy and its penetration; its desire to do something new with words so they can connect to the situation we are in. And say something to all of us.

Locating global concerns in the study of complex particularities, the book offers six rich investigations into different fields of environmental management, each with its fractured pasts and militarised futures. These are: water and Table Mountain, fracking in the Karoo, the authority of science in university teaching and research, urban baboons and ocean fishing. The case studies are rooted in decolonial South Africa, but what emerges from them is internationally relevant.

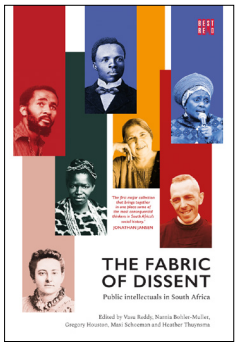
The problems of poverty, systemic injustice, racism, the old empires and the new empires of corporate capitalism emerging from these investigations and inseparably bound to issues of climate crisis and ecological caring, are as much problems in the Western Cape as the Western Hebrides, and in Cape Town as in Quebec. There is a major difference, of course, between Western imperialism, its colonial practices, and neo-colonial corporate mentalities, and decolonising countries in the southern hemisphere: the histories of who was oppressed and who was the oppressor. Racism in the UK or the USA is different from that in South Africa, most starkly, whiteness is read differently and with different (but just as damaging) consequences. We are all inheritors of social, cultural and ecological legacies, and we are all trying to find ways of dealing with history, land, its ownership and its use. It is how we are all dealing with these legacies that foregrounds methodology in teaching, research and writing. And this is where, to my mind, Green's book makes a breakthrough: it stays with the complexity.

Methodology cannot be imposed; it has to emerge. There is some appeal to social theory (Fanon, Latour and Mbembe, for example) and philosophers of science like Stengers and Haraway, but these references do not structure any method of examination. Rather, they extend the transdisciplinary nature of the project, opening an invitation for other voices across the academy and way beyond it to be heard. What emerges as method finds its voice *through* the complexity of the connections between science, economics, history, empirical sociological study, politics and poetry (with Aimé Césaire striking decolonial notes). There is some reflection on this approach, and it is rooted in the language of the text itself: 'the need to remake language' (p. 79) in the wake of colonial mentalities and the 'web of apartheid-style language practices' that remain 'the dominant means of characterising the 'other' (p. 167). The polyphonic nature of situations requires polyphonic composition that reaches beyond the specific to the structures sustaining its warped and dominating perspectives – like the tintinnabulations of a large bell struck boldly. What this approach delivers is a way of capturing the complexity, not resolving it. The issues with access to clean water, the ecological and sociological dangers of fracking in the Karoo, the problem of urban baboons to middle-class property owners, and the rights to fish for traditional subsistence living are not resolved. But they are 'democratised'. And by that, I mean opened for the inclusions of other voices and other perspectives. The studies become 'conversation-openers' (p. 202). So, the analysis 'declines the rhetoric of *authorial* authority, offering instead a dilemma tale. In such a tale, the art of authorship is not, as in the essay form, to persuade your listeners that you are right, but to stage a discussion of what is ethical' (p. 176). This decline of academy authority and adoption of an epistemic humility (before the labour of unweaving the complexity), does not entail a collapse into the befuddlements of relativism. People, communities and their well-being are at stake here; the ethical has to be fully outed. Green's book does not duck punches. Its expositions of corruption and cronyism among elites (including the compromises and collusions of science in university departments and research units), will make this uncomfortable reading for some. The writing style, analyses, research and conclusions all have teeth here.

In a final coda, Green brings the case studies and the methodology into sharp focus with five recommendations for a better and more democratic flourishing in a time of the Anthropocene: (1) allow a critical repositioning of scientific authority; (2) move beyond the nature/society dualism towards more holistic social and ecological systems that will not privilege human beings (particularly *some* human beings) above non-human species; (3) depose the neoliberal gods of reason which control the knowledge economy; (4) restore a decolonial presence to the world that recognises relationality (and complexity) over white essentialism; and, finally, these changes will foster an understanding of living as flow and movement. The poet, Denise Levertov, has the last word: 'Vision sets out / journeying somewhere / walking the dreamwaters.'

Like Levertov, Green sets out a vision and a journeying through her six studies of water, land, ocean, soil, desert, plant life, and species habitats (among them human). The transformation called for is radical, but she knows that. Her book makes utterly clear the crises we face (and already experience), if we do not undertake to step out of the mental prisons and all too real *gulags* bequeathed to us by modernity and colonialism. It is a compelling read, but the compulsion is not simply rhetorical just as the location is not simply South Africa – it is profoundly ethical wherever we are settled.

BOOK TITLE:
The fabric of dissent: Public intellectuals in South Africa



EDITORS:
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ISBN:
9781928246404 (paperback, 478 pp)

PUBLISHER:
Best Red, Cape Town, South Africa; ZAR387

PUBLISHED:
2020

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HOW TO CITE:
Tomaselli KG. Public intellectuals. Thoughts into action. S Afr J Sci. 2022;118(Special issue: Radical Reason), Art. #14896. https://doi.org/10.17159/sajs.2022/14896

ARTICLE INCLUDES:
☐ Peer review
☐ Supplementary material

PUBLISHED:
31 October 2022

Public intellectuals. Thoughts into action

The euphoria of the liberation moment heralded by the 1994 transition from apartheid to democracy had almost completely dissipated by 2020. The 'liberators' had become the new largely unaccountable consumptive political new class and had all but drained the economy and undermined democracy. The many thousands of public intellectuals who had put their lives on the line to effect positive change until then had been either absorbed by the new elite, or largely forgotten, marginalised, or lost from the public mind.

This inaugural book attempts to recover the respective contributions of 77 prominent anti-apartheid dissidents – the more dominant voices (p. 7) – and to bring them back into public focus. Prior books doing this in a different way include those by Ntongela Masilela[1] and Chris Broodryk[2]. Masilela studied the 350+ African writers who from the late 1800s until 1960 helped South Africa to negotiate an African entrance into modernity. The Broodryk volume is much more modest, but highly analytical, and develops conceptual frameworks within which the descriptive entries of the Reddy volume might be read.

The Fabric of Dissent is a massive compendium with short, highly informative essays on the personalities selected. They are sourced from across the racial, ethnic, language and class spectrum. Following the rather densely written introduction, Part I covers 25 Political Public Intellectuals. Part 2 examines 21 Cultural Public Intellectuals. Part 3 works with 14 Academics, and Part 4 charts 17 Organic Public Intellectuals.

Defining intellectuals as 'free-roving pursuers of knowledge' within the university and without, such individuals are identified as working for the 'public good', and how they translate thought into liberation is discussed (p. 3–4). The editors frame their choices of public intellectuals in terms of their 'influence, impact and contributions to a range of domains' (p. 5). As 'power knows the truth', and often conceals it, how do intellectuals respond as 'insiders' to particular political trajectories?

The method applied is that of 'genealogy', which draws attention to the apparatus of power that generates different historical discourses (p. 9). The book invites dipping in and out, while introductions to the four parts frame the categories more easily for 'non-specialist' readers (p. 10). The editors anticipate that readers may not 'be comfortable' with the ways in which some individuals are characterised. Certainly, there are a few curious inclusions whose controversial behaviour is not always discussed. Nor are their critics fully listed in the 49-page bibliography.

As the first edition of a proposed series of reference works, this volume includes the many intellectuals who participated in social movements that guided South Africa from the distorted modernity of apartheid through the challenging post-apartheid era. Not only were most of those profiled social agents of their times, but they were towering moral leaders also, as well as intellectual giants and innovators beyond their time. A few had chequered moments, unfortunate personal lapses, while others survived and graduated as the organic intellectuals of the new era, still demanding accountability, still speaking truth to power, and still influencing debate.

The 77 persons listed in this volume, of whom 16 are women, are just some of the many hundreds who brought about change. Given such extraordinary contributions, how could South Africa have gone off the rails in light of these intellects and their massive analytical power, insights and mobilising actions?

This question is perhaps implicit in some of the discussion offered by the editors. It could be brought to the surface in the next volume.

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HOW TO CITE:
De Sousa Santos B, Ndlovu-Gatsheni S, Soudien C. Critical reflections on the place of the university in the 21st century. S Afr J Sci. 2022;118(Special issue: Radical Reason), Art. #14835. https://doi.org/10.17159/sajs.2022/14835

ARTICLE INCLUDES:
☐ Peer review
☐ Supplementary material

KEYWORDS:
decolonisation, crisis in the university, globalisation, southern theory, cognitive justice

PUBLISHED:
31 October 2022

Critical reflections on the place of the university in the 21st century

This Structured Conversation on the relevance and role of the contemporary university took place between Boaventura de Sousa Santos and Sabelo Ndlovu-Gatsheni – two of the world's most prominent thinkers on decolonisation. The discussion was moderated by Crain Soudien.

The context of the question of the role and relevance of the university is important to foreground. It concerns, firstly, what Philip Altbach[1] described as 'the perfect storm of external pressures and internal responses' confronting the modern university. External pressures, he argued, were transforming it 'from a public good to a private good'.[1] Behind these pressures were forms of economic and social thinking, essentially those of neoliberal free market thinking, which were shifting the university away from values, commitments and practices informed by public good ideals – ideals which understood and approached the university and its major function of knowledge production as a site for the development of society. In its ideal form, say scholars such as Altbach, the university should seek to produce people whose principal interest is that of working in and for the good of society. That they argue about the meaning and content of the public good is in itself an important stimulus of the social imagination. Bill Readings[2(p.5)] in his now well-known book, *The University in Ruins,* argued that the modern university no longer saw itself as needing to participate in 'the historical project for humanity'. Instead, there is occurring what he and others have described as 'the closing of the mind', with the object of the university becoming that of serving the 'private good' – the interests of the individual whose primary interest is that of self-enrichment and self-aggrandisement. What these pressures have done is stimulate responses in the university towards instrumentality – teaching, in almost all of the disciplines, which has in mind the production of self-sufficient competitive human subjects and research, which is focused on the promotion of narrow competitive advantage.

The second concern prompting the discussion is the decolonial turn. Important in understanding the significance of the decolonial turn is its critique of the politics of knowledge of the modern university. This critique comes in a variety of accents, emphases and registers. Holding it together is a rejection of the centring of Eurocentric forms of knowledge for understanding and explaining the world and the place of human beings in it. It seeks what Walter Mignolo[3], a prominent theorist of decoloniality, calls a plurality of ways of understanding the world. The modern university, he argues, has the task of engendering a multiplicity of knowledge frameworks. If the world is to solve the problems it is currently facing it has to draw on the whole treasure trove of its knowledge affordances and not simply those of the Global North. In its African rendering it seeks the recuperation of the African voice and African epistemologies and the restoration of Africa as a place not of objectification but a place from which to learn. Achille Mbembe[4], speaking in the wake of the student uprising at the University of Cape Town, said that the task of decolonisation going forward was

> *the demythologization of whiteness because democracy in South Africa will either be built on the ruins of those versions of whiteness that produced Rhodes or it will fail.... For these reasons, the emerging consensus is that our institutions must undergo a process of decolonization both of knowledge and of the university as an institution.*

It is against the backcloth of these two globally prominent critiques of the modern university, that of neoliberalism and of decolonisation, that this discussion is set.

Crain Soudien: Tell us, colleagues, where we are with respect to the knowledge project in terms of our universities globally? We're at this extraordinary juncture where we have almost 35 000 institutions around the world which claim the title of 'university'. It's a long way from where universities came from in the late 800s, with the University of Bologna and with also universities in places like Morocco and other parts of the Arab world. But these institutions now, in our present conjuncture, occupy a really particular kind of role – what is that role?

Boaventura de Sousa Santos: It'll take me, all of us, a long, long time with such a history of this thing that we call 'university', because the corporation of communities of scholars and students that we know very well – were flourishing in Baghdad, in Timbuktu, in Egypt. Later on, they moved to Europe and Europe, in fact, inherited most of their methodologies. For example, since the 19th century, the scholastic method has been considered a specificity of medieval Europe directly inspired by Greek philosophy. It understood itself as being exclusively European and, in the process, stripped itself of its Egyptian and Persian roots. In fact, one of the basic features of the scholastic method, *disputatio*, that is to say, the dialectical confrontation of two opposite positions and the argumentation against and in favour of each of them, whether reaching a synthesis or not, has clear roots in teaching methods prevailing in Baghdad from the 11th century onwards. And so these universities from the 11th, 12th century, particularly in Europe, have developed immensely since then and still kept their name. This is the institution with the longest duration in the world. It's even older than the state or many other concepts that we use in our world. Are they performing the same functions that they were performing then? I don't think so. I think that major change occurred from the 17th century in this part of the world, particularly with colonial expansion. Then, universities became part of the state. The economic strategy of expansion, capitalism and colonialism and, with it, the expansion of the state, take place in association with the university. Universities as sources of knowledge were instrumental for that very large historical process of expansion. So much so that they were then developed and emerged in the colonies early on – 1536 already in Latin America, in Lima. Thirty-five universities were created throughout the subcontinent. In the late 18th century and 19th century, we have several universities developed in

colonial India, and then Wits itself, in 1897. That is to say, there was a model that was developed then, for what?

Basically, the university was really a project of the state, a national project which was the colonial project in the metropolitan societies, and in the colonial states. Most European colonies became independent in the early 19th century.

In Latin America, with the exception of Haiti, independence was granted to the descendants of the European settlers. The universities, originally created by the colonisers from the 16th century onward, were from the outset little academic Europes, to paraphrase Edward Said. Capitalism, Eurocentrism, and colonialism were intimately connected. For a long time, the dominant conceptions of academic prestige and performance led Latin American universities to develop cooperative ties with metropolitan universities, rather than to cooperate among themselves. The most notable attempt at endogenising the Latin American university was the revolt of the students at the University of Córdoba in Argentina in 1917/1918. Driven by a nationalist ideology, its main demand focused on the social responsibility of the university, its relevance vis-à-vis the needs and aspirations of Argentinian society, particularly of the emergent middle classes. This quest for an education connected with the people – a popular education – led to the creation of 'popular universities' throughout Europe and Latin America. The original drive for the creation of these universities came from anarchist currents, which considered the education of the working class as the preeminent means of raising revolutionary consciousness. In order to do so, in 1898, the first popular university was created. Its major objective was to spread the social sciences among the elites of the workers' movement. These elites, like the working class as a whole, were excluded from university learning, as indeed from all formal schooling. The communist party was initially sceptical, for they believed that the education of workers might end up being a distraction from the most urgent task – class struggle – but, from the 1920s onwards, they began to get actively involved in the creation of popular universities and actually became their most enthusiastic and consistent promoters. In Latin America, the first popular university was created in Lima, Peru, in 1921: the Universidad Popular Gonzáles Prada.

For many years, universities kept the idea, even after the independence of the colonies, of the national project, which of course was racist and capitalist: it excluded the black and indigenous people in America. Women were also excluded. This very exclusionary national project was a national project because capitalism, at the time, needed a kind of national coherence and universities provided this coherence, therefore reproducing colonialism and patriarchy. Everything changed in the late 1980s. All of a sudden capitalism was no longer interested in national projects because neoliberalism had seized hold and moved economic relations onto a global platform. A national economy in South Africa, what is the sense of that? Or a Portuguese economy, it made no sense! Therefore, we have to globalise. In the midst of globalisation, universities – particularly of the Global South – started to undergo a very deep crisis. First of all, a financial crisis, because the state had to give less priority to funding the universities because, in fact, the elites of those states were not trained by their public universities. They were trained in the global universities of the Global North. Even today, most of them, particularly the people who take care of the business – the leaders of the economic activities in most of the Global South – were trained in a few global universities, all of them located in the USA, or in Europe. So I think that from the 1980s, we found ourselves in a very deep crisis because the universities don't know what to do. And also, all of a sudden, they were being contested from below, from the student body. South Africa knows very well what that is with Rhodes Must Fall and we have that all over the place today, even the USA, also in Latin America. This is all about the decolonisation of the university.

Now the university is at a crossroads where top-down pressure is coming from global capitalism. This is being combined with conservative religious pressure in many countries – with the rise of the extreme right in many countries. Many professors are threatened with respect to what they might or might not teach. Academic freedom is under threat. Therefore, the liberal model is, in a sense, collapsing. But, on the other side, there is pressure from below, which comes from the students, because the idea is that it is not enough to decolonise the student body and to have affirmative action, but also to decolonise the curriculum, the faculty, which is not in any way, decolonised, so to say diversified. Therefore, I think that universities are at this very problematic turning point, and they don't know how their mission could continue. Is there a future for the university? There are many forces at work today for whom the university of the future has nothing to do with the university that we know. In my work I call this 'university capitalism'. By university capitalism I mean the phenomenon that has turned the university into a capitalist enterprise, one that functions according to criteria proper to capitalism. The university is capitalist not because it is at the service of the reproduction of a capitalist society. This has always been the case, at least in the non-communist world. Rather, it is capitalist because it has become a business corporation producing a commodity whose market value derives from its capacity to create other market values (e.g. diplomas that give access to highly paid jobs). There is pressure from capitalism to transform the university into an enterprise which is hierarchically ranked in terms of 'excellence', and we know that most universities in the Global South are considered second or third tier, with consequences that are difficult to imagine, such as the ranking and proletarianisation of professors where their prioritisation has become those of publishing or perishing. Many are doomed. In many countries in which English is not the native language they are being forced to write and publish in English, in order to advance in their careers. So this university capitalism pressure on the universities will be telling. If this kind of university is to prevail in the future, it will be another business and business as usual, and therefore I doubt whether the name will coincide with the thing which was there originally.

Sabelo Ndlovu-Gatsheni: There are some nuances which we need to bring in as we try to understand why the university is in crisis. I'm thinking here about Africa and dealing with the fact that, actually, there are about three or four traditions of the university. Of course, the ones which we all know, the pre-colonial universities in Egypt, in Morocco, in Timbuktu, in terms of cultures, drew from Islamic and African traditions. It is from there, then, that we have what I would call a 'discontinuity' in those universities. This discontinuity arises because of slavery and colonialism. If you check with the early colonial period, it looked like the colonialists were not really in a position to offer higher education for Africans. The colonialists were actually content with leaving the education of Africans with the missionaries. You will find the early African elites, such as Edward Blyden, Casely Hayford, really agitating for the university in Africa, or African – let me not say university in Africa, let me say an African university – as early as the 1860s, 1870s and 1880s. If we go here, we will begin to understand that the whole issue of decolonising universities is not actually a new issue on the continent because by then Blyden was in fact saying: 'we don't want transplanted institutions from somewhere else and introduced in Africa – we will want institutions which actually grow from the African'. These figures also posited that African universities must actually be in tandem with African culture and African languages. However, the colonial state was not forthcoming in this. That is something we always miss, as though the colonialists were generous with the introduction of universities in Africa while in fact, they were reluctant to begin with, and then do exactly the opposite of what the early elites were agitating for. The colonialists introduce metropolitan universities, such as Fourah Bay College in Sierra Leone and Achimota in Ghana which are the first institutions to acquire university status as colleges of the University of London. The universities in Africa, interestingly enough, really begin to emerge in greater numbers after 1945.

But again, we need to be careful to distinguish between North Africa, Middle Africa and South Africa because there's a variation in terms of the emergence of universities. They don't emerge in a similar way, and in a similar period. But what is interesting – and this is the question – what is the mission of the university? We can begin to talk about the mission of the universities that were transferred to Africa. In this way, we can grasp the whole problem of what we are talking about today in terms of universities actually coming into Africa to commit to a distant science, trying to introduce another knowledge and displacing what used to be the knowledges of the continent. In that early period, universities came with

colonial languages of instruction of research and tuition, and – over time – colonialist university cultures too. With this context, the problem of an alienated African educated elite arises – people who are alienated from their history, their cultures, their languages – who speak these other modern languages from the six colonial powers. What's important too is that most of the universities in Africa are the gift of African nationalism, more than a gift of colonialism. The idea that the attainment of sovereign status came with one state, and also one nation, one university. The issue is African nationalism comes, of course, with the whole issue of Africanisation in the 1960s. You will see this issue of Africanisation become very topical: attempts to indigenise 'universities in Africa' into 'African universities'. This has a long history. The major problem about that period, was that the definition of Africanisation, rather than decolonisation, was very narrow. The issue was you changed the profiles of the Vice Chancellors. They became black. You change the profiles of the professoriate to black, and you increase access of black students to the university. But you don't change the pivot, that is the curriculum on which the epistemology is standing. If you come to this question simply in terms of numbers, there is a problem. If you conclude that by changing the staff or even bringing in literature as written by African people we have been decolonised, you're actually bringing in a pre-existing Eurocentric epistemological structure and that is where the problem is.

In terms of the mission of the university, the early nationalists were actively involved, even more than the intellectuals themselves, in calling for change. You will see Kwame Nkrumah at Legon in Ghana engaging with the intellectuals at the University of Ghana, and the intellectuals were saying 'no, we want to maintain the standards, we want to maintain the standards from London'. Instead, Nkrumah tried to say, 'but Africanise, you need to Africanise, you need to bring in African cultures, African languages'. It is in this way that we come to the complaint about African studies being a township within a university. It is a misnomer in the sense that the whole university needs to be driving the African cultural agenda. But, if we have Africanisation only in African Studies – what is the rest of the university doing? This is the question we are facing today. Prof. de Sousa Santos has already spoken about the issue of the neoliberal intervention from the late 1970s onwards. This led to the collapse of the decolonised public institutions. They were starved of funding, leading to the development of new tensions and new problems. This opens the gateway for reimagining the university in corporatist terms and the emergence of private universities where knowledge then becomes really commodified and students become customers. Thus, when we speak of decolonising the university, de-corporatisation is essential too.

Crain Soudien: The story of this trajectory is an enormously challenging one. Where in the world might we begin to look for and see examples, either in the institutions themselves or in faculties or in directions that are being pursued, in particular segments, corners of a university, where the ideal of the critical and open cultural agenda is being cultivated? Where do we see institutions or faculty holding on to practices that represent an alternative to that which has become dominant, for the possibility that the university can be anything other than the site for the reproduction of a particular kind of hegemon?

Sabelo Ndlovu-Gatsheni: One of the major problems is that the structures of power of universities have a tendency to speak in two languages every time: in the language of transformation and the language of the status quo and, also, the language of incorporation of the anti-systemic forces as they try to come in and change the university to accommodate and perpetuate itself. And I'm speaking here, practically, with an example of a university which I worked for whereby the whole rhetoric was really about transformation. They were not even comfortable about the word decolonisation. It was really transformation. But at the end of the day, at the top, it was not really the issue of transformation which mattered: it was the pacification of those people on the ground who were rising up against the university. So, the imperative of pacification and the current transformation were always in tension.

The other issue is that universities, by their very nature, are problematic institutions in the sense that they are not like political parties, and they are not like religious institutions. The major problem with universities is that they always take pride in the issue of dissensus rather than consensus. In that process, some people take advantage to try to maintain the status quo instead of changing. How then do we get buy-in to actually agree that we must change the institutional culture of the university? We must change the curriculum of the university. We must change the particular cultures of the university.

In Uganda there was an attempt to establish the Marcus Garvey University. It was a novel idea of trying to establish a university with another curriculum, to really reimagine everything. However, the first problem they encountered was accreditation by the state itself. Second, the funding became a problem, and I understand the project collapsed. We were perhaps naïve to think that we could follow the linear approach of transforming one university within a country of 26 universities. I think we need to mobilise across universities if the state is to listen to us. And the question which arises is: Can you really have a transformed, decolonised university within a still-colonised state? This becomes a major problem because even on minor things like rupturing the disciplinary nature of knowledge, you will find that we always hit a wall because the certification of courses and syllabi is always disciplinary. The certification bodies, unless you change them, will always discipline you back to the discipline, even if you taught in a non-disciplinary way. The state must then be engaged in multiple ways.

Boaventura de Sousa Santos: Thank you very much for the question, Crain, because sometimes I think that we are very eloquent in our criticism, but we lack alternatives. And this is a disease, a malaise, of critical thinking both in the North and the South. First of all, I think it would be important to make a plea for complexity. I remember very well beautiful things that were happening in African universities, particularly, my times in Senegal, Dar-es-Salaam and Nairobi. There was a sense of excitement. I remember there were some European scholars and a lot of American scholars. They were there for learning, not just teaching, with this awareness that something new was coming. For instance, Prof. Ndlovu-Gatsheni mentioned Ghana where, at that point, many of the black leaders of the United States came to Ghana, people such as Maya Angelou, Malcolm X and Martin Luther King. Why? Because at the time, Ghana was the place to be because there was a sense of renaissance, of something that could happen. There were moments that were more luminous, more hopeful, than others. In fact, the disaster, in my view, for Africa (and agreeing with everything that Prof. Ndlovu-Gatsheni said) came when a UNESCO report about the majority of African universities drew a dramatic picture of all sorts of shortages: the collapse of infrastructures; almost total lack of equipment; poorly remunerated, unmotivated, and easily corruptible teaching personnel; and little or no research investment. The World Bank diagnosed the situation in a similar way and, characteristically, declared it irreparable. Unable to include in its calculations the importance of the university in the building of national projects and the creation of long-term critical thinking, the World Bank concluded that African universities do not generate sufficient 'return' on their investment. As a consequence, African countries were asked to stop investing in universities and to concentrate their few resources on primary and secondary education and to allow the global market of higher education to resolve the problem of the university for them. That was the beginning of university capitalism and that was really a destruction, an utter destruction of the university scene in Africa. The case of Mozambique is remarkable in this regard, as in the period immediately after independence there was much research and teaching innovation in which the value of endogenous non-Western ways of knowing was paramount. In other words, epistemic decolonisation was viewed as a central dimension of political decolonisation. The Eduardo Mondlane University in Maputo was a flagship university with so much innovation, a weapon to stand against apartheid South Africa. During that time Ruth First was based in Maputo and she created a centre of African Studies with a very high profile. Really path-breaking studies took place there. As you know she was assassinated by the secret police of South Africa, together with a dear friend of mine, Aquino de Bragança, and many other people.

But the disciplinarian aspect of neoliberalism really destroyed much of what was beginning at that point in time. When I wrote *Decolonising the University: The Challenge of Deep Cognitive Justice*[5], I was paying

very close attention to the case of South Africa. I thought there was something moving that would be important not just for South Africa, but for the world and for the perspective of the epistemologies of the South. When I look now, I have to say that I see some interesting signs of hope. I was familiar with Catherine Odora-Hoppers, in fact, I visited twice the Unisa executive to work on the curriculum when she was there. The model that we had was very North-centric and the Eurocentric way is to have grand-scale type of transformations and large curriculum transformation. At that point, there was a university professor who was creating the revolution, but nobody really recognised him as such. I'm talking about Mogobe Ramose, a great philosopher – I had the pleasure of having several conversations with him and Prof. Ndlovu-Gatsheni, at my Centre. It was really a completely different conception of philosophy that didn't rely on the Western philosophers that were in South Africa. A true ubuntu philosophy. The book by Mogobe Ramose[6] had been published in Zimbabwe by an obscure and very small publisher, and it was very difficult to have access to the book. I am one of the fortunate people to have a copy.

But today I don't think these large-scale type of transformations are taking place. I see a kind of interstitial transformation that is occurring, and I'd like to give you some examples of my own teaching and my own experience. I see today, for instance, some indigenous professors, indigenous people who are coming to the university from throughout the continent and since I have a long interaction with this, the colonial, post-colonial epistemologies of the South, I have been present in hundreds of live transmissions like this, about them. And the question is, I'm now a professor at university and I have a study plan to teach at my university, but what I'm teaching is against my people, is against my own being, it's against my own instinct. What shall I do with the university? Shall I refuse? But if I refuse, I'll be expelled from the university. What shall I do? Well, what they have been doing – what I've been advising them – is to build the counter-university inside the university. They have to teach in ways that contextualise everything that they teach, telling the other story because we always have two stories in the world, the story of the winners and the story of the losers (which are not victims of course). They are the people who have been resisting; they are speaking for those who have been resisting and have been vanquished by colonialism and capitalism. And it's their duty because the worst thing that could happen to them would be that they would internalise their official history and become white masks, black faces (and vice versa). That is the danger that I see. But I see that they are changing the curriculum in this interesting interstitial way – it's almost like contextualising status – they don't destroy the status, but they contextualise in such a way that you can clearly see that this so-called hero is also the slave trafficker and so forth.

The second thing is that what you see in several universities in many different continents (I discuss this in my proposal in *Epistemologies of the South*[7]), and often in decolonial studies, is a kind of an anti-science type of stance. I don't share this attitude, as I've learned with Amilcar Cabral, that you should really discard all the science that the coloniser has produced. It could be very helpful to us, but we have to select, and therefore, in the epistemologies of the South, I try to see to what extent science is valid. What I'm saying is that science is not the only valuable knowledge, there are other ways of knowing, there are other knowledges, and therefore I claim, and I struggle for an ecology of knowledges. And now I see, in Brazil, in Colombia, in Argentina, several departments and now groups of professors and students are developing what I call the 'ecology of knowledges'. For instance, Porto Seguro is a city in Brazil, where they practise ecologies of medical knowledges; their students not only take the lessons from Eurocentric medicine, but also from the traditional medical people. They have developed what they call an ecology of medical knowledges. The university in Manaus (also in Brazil) has done the same in the forest with an impact on the curriculum, with professors who are not, in fact, physicians, but they are medical people in their ancient medicine. Similar things are occurring in India with schools of indigenous law. But I have not seen this in South Africa: I'm now a visiting professor at Wits, and I hope to explore this possibility at Wits – what we call ecology of legal knowledge. Not just the official Western centric knowledge but other knowledges – what traditionally was conceived of as legal pluralism. However, it is only legal pluralism because there was a legal mono-elitism with only the official law recognised as a law. South Africa has a rich experience of these pluralities, but they are not taught as such at the university. And therefore, I see people who are more advanced outside university. This is not surprising; we know that the most innovative knowledge never came from the university.

Indeed, if a student is going to do research – doctoral research with a community such as a popular marginal community or a community of any popular classes – and for a year they interact with those people and write the PhD, who is the author of that? Is it just the student? Well, in fact most of the information came from the wise, the people of the community. There are already universities that are considering this kind of thing and that was a proposal that I've been putting forward in many places, the co-authorship. Because they are co-authors. The problem is just accepting that there are different knowledges involved.

And finally, another example of how things are moving, never on a large scale, always here and there, because as things fall apart, as Chinua Achebe said, they come into place not at large scale which is a very Eurocentric way of things. Instead, we could look at developing knowledge from the bottom up. In fact, we now have, in some PhD committees, people without PhDs. They are what we call the informants, but they are knowers, they have their own knowledge, they are the leaders of the community that know much better probably about their dissertation than the other colleagues at the university. There are also what are called popular committees, in which we have a majority of PhD professors, of course, but also already two, three members who bring other ways of knowing, and sometimes, these dissertations are not defended and discussed on campus, but they are discussed in the communities where the students belong. So that you can see the contradictions and paradoxes. One of the universities in this case was in Brazil and was brought to court by a professor when he saw that the university was holding their PhD committee meeting in the village of the indigenous people and not on campus. The argument there is that the university is autonomous as a campus so all evaluations should take place inside the campus. The court, luckily in my view, in a very intercultural way argued the following: 'yes, the universities are autonomous, yet because it is autonomous it can decide to hold the committee meeting in the village'. This may seem meaningless, but it is not. By these several examples we see that the system's system has no legitimacy anymore. But the inertia is enormous.

Crain Soudien: It's crucial for us to be holding on to and showcasing these examples where they arise. I'd like to say though that I am demoralised, often, by the speed with which those outstanding innovations are undone, and the extraordinary mimetic desire, instead, for looking to the standards, as you put it Prof. Ndlovu-Gatsheni, we see in play in what we think are the globally leading universities. The way in which that particular criterion of standards kicks in, in ways which completely undo all of these possibilities is a major problem. But where is all of this going Prof. de Sousa Santos? Shouldn't we now come to a kind of acknowledgement that these 35 000 institutions that we have got around the world which go by the name of the university, are now, actually, manifestations of a plurality of particular forms of the university. And I include these corporate universities where institutions like Coca Cola and Colgate will set up their own universities, Toshiba, and so on, in their own backyards. They will train people to high levels of expertise in those institutions. But, alongside of this, you also have this university that you're talking about, which is beginning to explore the form of legitimacy and the legitimacy of knowledge in completely different kinds of ways. And by democratising, if you like, in the fullest sense, the idea that there is a plurality of understandings of a particular problem in a particular setting, is it not the case that we need to be finding ways of putting these forms of knowledge in a space of recognition and acknowledgement? But, I would argue, we would need to give appropriate names to these different forms. If popular knowledge, the knowledge of the masses, is uncritical, it is not a university in my view. We may allow an institution like that but we shouldn't be in this, as this proliferation of different types of institutions is arising; we should not be encouraging universities of populism – universities where we lose the capacity to be able to be reflexive and to think critically, on ourselves, to

be able to deconstruct our own histories and come to the point where we can see our histories, in as full a way as we can. So, I'm making the argument here that we're destined now for a landscape of total plurality. And this idea now of the singular, the ideal university, is one which has gone. Your response, please.

Sabelo Ndlovu-Gatsheni: Well, may I start by going back to your question about what the hope is. I think Prof. de Sousa Santos is actually going there to give some instances where the hope is, such as the work of Mogobe Ramose here at Unisa. It doesn't mean that in all these years the universities never produced academics who are actually doing interesting transformations of curriculum and teaching. They are there. There's a lot happening. The problem is that we're not documenting from below, we're always looking at the bigger politics above. But I'm certain at Unisa that there were a lot of people who passed through the hands of Catherine Odora Hoppers; through the hands of the philosophers, through the hands of Ramose. You can tell by the way they are thinking, the way they are teaching, the way they do their curriculum. That is important. It takes me to a third point that perhaps the hope really lies not with the older professors and the administration. It lies with the younger generation and those people who are actually on the ground, who are making a lot of changes to the curriculum and in the universities, which are often not noticed and not acknowledged. And I wanted also to posit this rather provocatively, but I think for the South African universities, I don't think it would be right to say they will be the same after Rhodes Must Fall and Fees Must Fall. They won't be the same. They can maintain some of their old characteristics; but they were actually pushed into a ferment, which is still going on, even if there is silence from the students themselves. So, I thought that would be important to actually think about because Unisa, particularly, as it has been a home, not only for Catherine or Ramose, but also for the decolonial projects with the decolonial summer schools. It produced a variety of thinkers, some of whom we can say are populist, but others who are very thorough in what they are doing and they are spread through the faculties, and into the department centres. They are making a lot of changes from there: they are putting a lot of pressure on the older professors and also on the administration.

Boaventura de Sousa Santos: It's a very relevant point, this idea of populism. And it's dangerous, in my view, because I want to make a plea against relativism. I'm for diversity and decolonisation, but against relativism, the idea that anything goes. I think it would be the end of critical thinking. So, I'm trying to develop a kind of non-Eurocentric – as far as I can – critical way of thinking and from the critical point of view it is very important that you never seek to reduce reality to what exists. That is to say, reality is much more than that. It is, too, the possibilities of a different reality: the possibility of an alternative of developing more than that which is currently there. It is the possibility of a different reality: the possibility of an alternative of a more just society: the possibility of an anti-capitalist, anti-colonialist, and an anti-patriarchal society. Therefore, there is no place for relativism. That's why the capitalist and the reactionaries now, the Christian-right reaction particularly in Africa and the Indo reactionaries in India at this point, are really against the university. Why? Because it's still the location for critical, free, independent thinking in the struggle for plural knowledge. And they don't want that; in India, Narendra Modi wants universities to teach that Hinduism is the only religion and the only philosophy of the country. Well, Nehru University never did that.

So, the university – this place, this marvellous place in my view – must think about two things. On the one side, to create or maintain conditions for the production of free and critical and plural and independent knowledge. Not ideally but to the best of the ability of the people at the university. And here again I could give you a good African example. It is of Odera Oruka, a professor from Nairobi who influenced me a lot. Odera Oruka wrote a book called *Sage Philosophy* in which he expresses a position against this idea that we could acritically accept all traditional knowledge.[8] In the villages, he discusses, you distinguish between two types of sages: the sages that were acritical of traditional ways and traditional philosophy, *vis-a-vis* those who knew traditional values well but kept a critical distance from them. And these were the ones that Oruka decided to interview. With the transcriptions of these interviews he published this marvellous book about the sages of philosophy. That's why I think that reflexivity and critical thinking are absolutely fundamental.

In this post-pandemic period, I have just written a book, now in Portuguese, Spanish and Italian editions, and the English edition is being prepared, called *The Future Begins Now*: *From Pandemic to Utopia*. I see three scenarios after the pandemic. And the third scenario is that the pandemic, the way I'm reading it, is the opportunity to show that this civilisatory process that started in the 17th century, came to an end, is coming to an end, and is collapsing. The virus is a pedagogue, a cruel pedagogue because it teaches killing people, but it is telling us that we cannot go on destroying Mother Earth, nature, because we are 0.01% of the life on the planet, and yet we are arrogant enough to destroy the life of the planet. So the life of the planet will take revenge and resist against what is happening. It is resisting, so much so that we are not going to be in a world free of pandemics. We are entering a world, which I call, of 'intermittent pandemics' where we are going to confine, deconfine, another virus, another mutation, for a long, long time. So, this third scenario calls for a civilisatory process for civilisatory change, for the idea that this model of development, these conceptions of nature, conceptions of the state, conceptions of the distinction between the rural and the city, all of them, collapse. I myself am now in a village to protect myself. So the villages are good, or are they just the past, and the retrogressive aspects of our society? No, in fact, Shakespeare, as you know, wrote most of his plays in a village in order to flee from the plague. So, I think that we are at a time in which we have to question this civilisatory process. This fossil economy, this mass consumption, why can't our laptops or our cellphones last for ten years instead of two? It is because we have a planned obsolescence in our system. We have to change this. Which is the institution that can still go on thinking about these things, about this future? It's the university. the university is still the place where we can do that, without the boss telling us that idea will not be profitable, there are no customers for that. No, we can really still discuss these things here for now. That's my sense of hope for the mission of the university.

Crain Soudien: Prof. Ndlovu-Gatsheni, you made the comment that you cannot have institutions that are going to, if you like, turn themselves inside out in a society as it remains in the form of dominance which continues to be the normative order in that society. What prospect have we got in this economic environment of neoliberalism for sustaining the possibility of alternatives? How do we do it? We may think of scholars and intellectuals from our own mix foregoing the comforts of our current lifestyles, for example. They lead exemplary lives in the ways in which they live. They live according to what they profess in their classrooms. But it is difficult. For all of us. How do we 'be', how do we comport ourselves in an economy which is so based on a reproductive model which is about economic growth? I mean, what's the possibility here of operating in an order which is so normatively loaded?

Sabelo Ndlovu-Gatsheni: Our concern with the university is because we love it, not because we want to destroy it. A situation in which I was involved is relevant here. There was a very good young person who came from the World Bank, who had actually studied at the University of Pretoria. And when she came back to the University of Pretoria, she was very critical about the university. One of the panellists in a discussion there asked her, 'how did you know that the university is such a problem, isn't it because of the knowledge which you gained from that very problematic university?' This idea that the university, despite the fact that it is a cog in a westernised world, also produces very critical thinkers who actually then question it, is very important. This gives us some hope one way or the other. And then I want also to comment on the issue which is cascading from all the discussions which we're having – this issue of turning knowledge into populist slogans or something like that. I think one of the issues which is emerging, which we need to underscore, is that when we are recovering other archives, the epistemologies of the Global South, the indigenous knowledges, the work done by African scholars, we need to do so with care. We need to avoid this issue of then turning them into a shrine of worship. We need to then subject to them to the same critical view we adopt for other knowledges. Indeed, by doing that we're actually taking them seriously.

Boaventura de Sousa Santos: I think that you're right. On the short range of the sustainability of the economy. On the long range, what is now sustainable means unsustainability: the model itself isn't sustainable. All the knowledge that comes from the United Nations' scientists tells us that global warming is probably the greatest threat of our time, the largest one to life on the planet. This together with refugees: we already have 80 million refugees in the world, and, probably, most of them in the future will become ecological environmental refugees because we have allowed ourselves to live in a very short range of temperatures and this range is diminishing and shrinking. The time to have this discussion is not the political time. Political time is four years, and pandemic time is months: the first wave and the second wave and the third wave. And now we live under the time constraint of the vaccine. It's the time before the vaccine and after the vaccine. So under these conditions, it is impossible, as a matter of fact, to distinguish. I'm a tragic optimist. I'm not romantic because I work with social movements and see all the problems and the corruption that goes on with our movements. But I refuse not to see the possibilities of change and I see the changes that are coming. Because, for instance, you're familiar with the future of the concept of development. In spite of everything South Africa is protecting the lives of South Africans better than the United States is protecting the lives of the Americans. Who is more developed? Who is the fragile state today? You know the concept of failed state was created by the United States, but now the rooster returns home to roost. There are many ways in which our concepts are being really questioned and I see that now in your news. Not only are economists on the front page, but also scientists, virologists and epidemiologists and so on. While it's not an ecology of medical knowledges example which is proliferating in the world today, we are moving in a different direction and at least we have seen the possibility of difference and change, even in such a tragic situation. If we struggle, probably, we can see, not the light at the end of the tunnel, but that there are many tunnels. Some lights are there, and others are illusions, and sometimes we'll be lucky and sometimes we won't. Thank you.

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HOW TO CITE:
Lalu P, Bhabha H. Temporalities of race and translational memory. S Afr J Sci. 2022;118(Special issue: Radical Reason), Art. #14937. https://doi.org/10.17159/sajs.2022/14937

ARTICLE INCLUDES:
☐ Peer review
☐ Supplementary material

KEYWORDS:
humanities, race, apartheid, polarisation, translational

PUBLISHED:
31 October 2022

Temporalities of race and translational memory

This Structured Conversation between Professor Premesh Lalu and Professor Homi Bhabha – one of the most important figures in contemporary post-colonial studies – is on the future of subaltern thought and humanities. This conversation, moderated by Professor Jean Baxen, was included in the Conversations with Global Thinkers series of Science Forum South Africa 2020.

Jean Baxen: What will it take to reimagine the arrival of a just and equal society? Responses to deep disparities and injustices require radical thought, science, ethics, institutional arrangements, and other shared systems of valuation and understanding. How do we collectively seek ways to anticipate and actively create a more just world? What is the intellectual project at this time of uncertainty, and how do we intervene in an increasingly polarised world?

Homi Bhabha: It's always a great pleasure to be in South Africa, virtually or physically. I know very little about South Africa. I want to learn more. But from my very first trip to South Africa, I felt that South Africa knew something about me. South Africa spoke to me in a way that few other countries in my travels have really done. This is a country of complex histories, a country which for me, for much of my life, I saw in very polarised and binary terms.

I was entirely, of course, on the anti-apartheid side, I was on the side of Mandela, I was on the side of all those who actually wanted to deconstruct and reconstruct the state. I also realised when I met South Africans and was involved in the complexity of the arguments that are never shied away from in this great country (which of course makes it deeply attractive to me), that South Africa has very complex histories, and the way in which I first related to the country, in a very polarised way, did not allow me to see the complexities of those with whom I felt in solidarity, and the scope of the difficult task of freedom that lay ahead.

And so it is with great respect to those of you here who have been involved in this struggle, that I come to you humbly and modestly to learn, as I have done in my several visits to South Africa.

Jean Baxen: I'd like to start by probing this ever-changing complexity in the polarised world in which we find ourselves. How do we position ourselves in relation to this planetary crisis that we appear to be living through, and how might we respond as a global intellectual community?

Premesh Lalu: I would begin by referencing the series of workshops that Homi Bhabha drew many of us into over the past several years, through the support of the Andrew W. Mellon Foundation, and at a time when humanists in South Africa spoke obsessively about the crisis of the humanities, or the bleak future that awaited humanities scholarship. In contrast to a vibrant public sphere, it seemed odd that the narrative of decline and a tendency towards defensiveness appeared to be the only options available to us. Homi invited us into a conversation to focus on those affirmative qualities of the post-colonial and the post-apartheid that might help us to shape a global humanities curriculum. It was refreshing to be invited into a conversation where talk about 'crisis' was briefly suspended, and where the humanities were considered at the crossroads of the global and the planetary. The energy generated by the conversation among scholars drawn from across the African continent and higher education institutions in South Africa was profound. At stake was the question of how humanistic thought might help to prepare the ground for a university oriented to a renewed idea of futurity.

At the very beginning of the workshop in Cape Town, Homi asked us to think about what we might affirm in the critical intellectual traditions of South Africa and the African continent that would enable a vision for the humanities oriented to the future. And he added to that basic exploration a more nuanced supplement related to South Africa as the latest instalment of racial governmentality: to ask whether the critique of apartheid might serve to explain a broader global condition specific to our times. In other words, was there something about the critique of apartheid that might help to explain a predicament that had enveloped the world in a very dangerous and profound way? After all, apartheid was anything but exceptional, with its idea of race formed out of persistent traces of slavery, colonialism, and late capitalism.

It is the latter qualification that proved the most demanding to unpack over the course of the workshops, partly because the humanities has been found wanting in anticipating the problem of global apartheid; the critique of its South African iteration had largely failed to cohere in the study of the humanities.

Apartheid was a dispersed racial formation, one that was experienced not once, but twice: both as grand apartheid and petty apartheid. Grand apartheid reverberated, as we know, throughout much of southern Africa. Its ravages led to deaths, torture, and maiming across the region – in Namibia, Mozambique, Angola, and beyond. Beneath the veneer of grand apartheid, the so-called minor discourse of apartheid, called petty apartheid, posed a different problem, fostering civil war that in turn justified a form of governmentality that enforced a condition of *stasis*. In many ways, when the Truth and Reconciliation Commission was convened to oversee the transition to the post-apartheid, what was often neglected was this virulent everyday experience of race orchestrated through petty apartheid.

I want to draw Homi into a discussion on what I am beginning to understand as the Trojan Horse of apartheid: that form of apartheid which left behind a devastating legacy in the midst of the unfolding narrative of the post-apartheid. Allow me to briefly sketch three aspects of the discourse on race in apartheid to invite Homi into a conversation. The first relates to the notion of race as it was experienced at the level of infiltration of everyday life. How are we to think about race as the persistent product of the psychopathologies of everyday life long after apartheid was ostensibly laid to rest? The second area I'd like to probe is that form of petty apartheid that resulted in

an assault of the senses: to the extent that Hendrik Verwoerd's ambitions – which he first described in his dissertation in the 1920s on the blunting of emotions – left an indelible trace on any effort to constitute a post-apartheid future (Verwoerd being the South African Prime Minister known as the architect of apartheid). I want to suggest that there's something about the affective traces of apartheid that we have not dealt with, and with which we are only belatedly beginning to contend. And finally, I want to suggest that perhaps what apartheid in its petty guise did, was to orient race towards technology. There was an element in which apartheid had already anticipated the rise of new communication technologies. Since Homi is partly responsible for directing our attention to these areas of apartheid that bear on discussion of a curriculum in the humanities, I'm interested in how he places this distribution of race on the scales of the global and the planetary. I want to propose somewhat provisionally that petty apartheid is a place to set to work on changing relations of the human and technology, a shift in the co-evolution of the human and the technological that is proving to be catastrophic and unliveable in our contemporary world.

Homi Bhabha: Well, Premesh, as always, entirely on point, and utterly convincing and articulate. But in your great generosity to me, I don't want you to forget and, as an ageing man you are bound to lose some aspects of your memory, that you were my partner. We set up this project – covering and convening thinkers from all parts of Africa – together. So I owe you a great debt of gratitude and respect. And although dementia may be creeping, and you may forget this great offering and great gift to me, I have to remind you of it again. So, thank you. Thank you, South Africa for your remarkable contribution to my Global Humanities project.

Now let me say that I think we are travelling very much on the same highway. Whether it is a highway to somewhere or a hiding to nothing, I cannot say at the moment, but we're thinking in very parallel terms. Let me first start by referring to what you've laid out for us. And then I want to say a few things that emerged out of the Global Humanities project and which speak to our current condition today. Premesh, I cannot both affirm and agree more resoundingly with you that in many parts of the world, as we witness it today, there is the narrative of the grand long-term, long durée of oppression's systemic racism and of the apartheid model – what you've called the grand model. And then there is what you call the petty apartheid model, and how it affects everyday life, how it takes hold of the senses, and its attention to and reproduction of technology. In redefining not only the human, but what citizenship is, what dignity and indignity are, what humiliation is, what survival is, what kind of indignity people have to normalise in their lives as subjects of petty everyday racism or everyday apartheid, to the point that they do not even realise their dignity is being compromised, and their intellectual wealth is being destroyed and redistributed for the benefit of those who oppress them.

So let me, on these grounds, give you a sense of what I'm working on in a long introduction to my book called *In Our Time*. I'm working on this issue, which emerged for me in a very graphic way at the crossroads or liminal space or the transition between the pandemic and the slow release of lockdown, the slow emergence into public life. And then there was the murder of George Floyd, where we didn't emerge into public life, but emerged, suddenly, into a moment of public death. At that point, I put everything else aside to think and write about this moment. What struck me was a kind of anomaly. On the one hand, there was systemic racism, which was continually invoked. It was invoked in history – that long systemic racism of history. It was invoked in statistics – the long history. And then on the other hand, came the suddenness, the intrusion of 8.56 minutes that captured George Floyd's death, his brutal curbside murder by a policeman confidently performing it while looking around: death, death, death! To those who said death awaited this man. This public performance of criminal injustice. And those 8.56 minutes compelled me.

What do we learn from short moments in time when we are so trained in the social sciences and in the humanities to look for the long example, to look for the long durée, to look for the long institutionalised history of inequality and injustice? And I have placed myself at the crossroads, in the chiasmas, somewhere uncomfortably in between the long durée and the short moment, to emphasise that the moment is something that suddenly turned us from not thinking solely about the pandemic, but to thinking about police violence and those 8.56 minutes on a street corner, on a curbside in Minnesota. It created a global phenomenon: not simply of creating a form of martyrdom for George Floyd, but of taking that moment and trying to hold it. That moment was reproduced not only in videos, but in murals across the world, where Minnesota may not have been known, where George Floyd may not have been known; but that moment was used as a way of translating the local, regional, global conditions of criminal injustice.

What absolutely compels me is the great difficulty of holding on to a moment. Movements often have moments; they move from moment to moment – the Arab Spring, Occupy Wall Street, #MeToo – and every time there is such a moment, people say, but how can it last? Where will it last? Maybe our form of understanding time and politics needs to be dramatically rethought in a time of social media, in a moment of the rapid circulation of images and messages? So, to me, this is what you have called petty apartheid, and what I'm calling erratic racism as opposed to systemic racism.

This notion of the moment absolutely captured me in W. E. B. Du Bois' work, which I had never really deeply understood before. There is a moment in which he creates a (perhaps, historical, perhaps imagined) dialogue between himself and a white friend. Please note, a white *friend*, not a white enemy. And that friend says to him: 'What are you saying to me? You were taught by William James at Harvard, you went to the Humboldt University. And are you telling me that you feel the victim of Jim Crow and racism all the time that you're continually seen in this lens?' And Du Bois replied, 'Not always, but sometimes, anywhere, not today in Atlanta, but tomorrow in New York. Not in the American South, but in the American North.' Surprisingly, paradoxically, it is that anxiety of the everyday that is worth then recognising – not experiencing, but rather recognising – and thinking about in terms of an elaborating systemic racism.

If you read *The Fire Next Time* by James Baldwin[1], it also turns on a moment, on a moment of such time. Likewise with Ta-Nehisi Coates' *Between the World and Me*[2]. This book turns on that moment when he says that he was either entering or leaving a theatre and a white woman brushed against his son. This might have been a microaggression. This might have been a mistake. This might have been unconscious. Yet, for him, it registered this moment of what I'm calling erratic everyday racism, and it became the germ of his book. Like the moment of Frantz Fanon's work, where a child on a bus looks at him and says to their mother: 'Look, Mother, look at this black man, I'm frightened, I'm frightened.' And it was at that moment that Fanon began to think about the psychopathology of black and colonial peoples.

This notion of the erratic temporality, which can be a moment of trauma, or a moment of protest, but these small moments of everyday time – in my book I call it the 'diurnal moment' (which doesn't mean it's not nocturnal, but just a short unit of time) – these have profound historical implications. But we, whether on the left or the right, don't know how to give them their proper value. And I believe the proper value of the moment is articulated most clearly in works of art, especially the realm of performance and theatre, which has to deal with the moment as a moment.

Jean, I want to address you now about the polarised world. This society – the United States – like many others, and I would include India, Turkey, the Philippines, Brazil, and I would probably include South Africa – these are bipolar societies.[i] These are societies where you do not have a clear distinction, as performed for us, by the concept of political parties. There are the conservatives and labour (as the major parties in the UK, for example), or there are the Republicans and the Democrats.

The USA is a bipolar country. Let me give you two examples: this country has, on the one hand, been founded on the genocide of Native Americans and the slavery of Africans, who were forced to become

[i] *I use this term as a resonant metaphor for what can be read as publicly performed madness rather than in any way to stigmatise a medical diagnosis/condition.*

the modern workforce of the USA. On the other hand, there is the great American Dream, which is founded on migration and the notion of the earliest people to travel here across the ocean (usurping the land of the Native Americans in the process). And indeed, the African descendants of the slaves who were part of a tragic migration are the dark side of this – of the American nightmare which we see more and more, especially now with the discrimination taking place as a result of COVID and in the criminal justice system. But the dream is that you arrive here, and you can succeed – if you belong to a certain kind of group. To generalise, South Asians have succeeded, and East Asians too. Unfortunately, Mexicans are, however, often undocumented, and thus restricted to ploughing the fields, working in agriculture, and curating the gardens of the wealthy.

Again, I'm reminded of Du Bois, where he said, 'there are the beautiful beaches and the mountains – and then there is Jim Crow – and they both exist in the same world.' So, I'm arguing today that many of our countries, particularly in the ethno-nationalist mode, and the ethno-nationalist pincer in which they are caught, are countries fighting against themselves. They are fighting against the best of themselves. It is not the refugee, the migrant, who is being blamed for this, who is the intruder; the deep ambivalence, that deep splitting, is within itself. I believe that when the American people have spoken, they've spoken in a completely bipolar way. They will put in, most likely, a Senate which is Republican, which has the most diehard Republicans. Republicans in the House of the Senate were lobbied by the *Washington Post* to speak up and say that Joe Biden had won. Out of two or three hundred Republicans, only twenty-seven acknowledged that Biden had won the election. There is literally a bipolarity here; as John Locke once said, 'Will America become ungovernable?' We wait to see.

One final point – in many of the major issues in which we are invested – as progressives and as radicals – we have to think now, or we have been forced to think now about death before justice, about death before freedom. Likewise we cannot think about the death and destruction of the planet, and only then articulate an ethics of climate change. If we are thinking about political ethics and criminal justice, we are confronted with death first, and life after. We have to – now, urgently – find a philosophical commitment to think about a politics of life after death. This is not simply about survival. This is about reimagining life after thinking about our death. Not only specifically; thinking about death metaphorically, philosophically. We are in this weird position with climate change, with public health, with public life and public justice, of placing ourselves in the future and looking back at this current moment, thinking, putting ourselves after our own extinction, after our lives, thinking: what should I do now? One of the motifs of the book I am writing is the following phrase: 'The past refuses to die and the future does not wait to be born. In between these places are the crossroads on which we stand and try and understand where we are.'

Premesh Lalu: I would like to pick up on the reference to Du Bois. In the early 1900s, a young medical student by the name of Modiri Molema, a South African who had gone to Scotland to study medicine, was in conversation with Du Bois about the problem of race in the embryonic intellectual traditions that we have come to know as the Black Atlantic, thanks to the work of Paul Gilroy. He was writing at the end of the First World War, and in the wake of the Spanish 'flu epidemic, a world defined by an apocalyptic futurity – much like the one we now face as a result of the COVID pandemic. Molema produced a substantial study about the futures of race, one that is extremely critical for how we think about the university in South Africa, especially for its humanistic and scientific commitments to tracing the changing meaning of race, from the end of slavery and the emergence of the Industrial Revolution, to the first quarter of the 20th century (for an elaboration, see Lalu[3]). Molema places us at a crossroads; much like the crossroads posited in our discussion on the global humanities curriculum.

Let me paraphrase Molema's concerns briefly. His abiding concern seemed to be that the mythic content of the early precursors of race were reappearing as the foundation of a new scientific rationality. These mythic precursors of race that proliferated with the abolition of slavery had reappeared in the world he was occupying as a medical student, with frightening vehemence. He wrote about how the sciences had become complicit in upholding the myth of race in order to secure the support of a nascent public sphere in Europe. Race fuelled the speculative ambitions of science and aligned its interests with a public sphere. He was especially interested in astronomy and the way in which astronomy became the queen of the scientific disciplines at the end of slavery – quoting the Scottish poet Thomas Campbell: 'Oh starry-eyed science, has thou wafted there, to bring us home a message of despair?' Molema had clearly lost faith in the belief that the scientific promise of progress would free the world from the myth of race.

There were significant disparities in the way that intellectuals of the Black Atlantic approached the problem of the eternal returns of race in the 1900s. One anecdotal example suggests that Molema's reading of South Africa was at odds with Du Bois' reading of race in the post-reconstruction period in the USA. Molema invited Du Bois to take up the position of vice president of the African Races Association in Scotland in 1919, perhaps believing that their differences could be worked out beyond the national frames of South Africa and the USA. Du Bois unfortunately declined the offer.

I feel it would be a worthwhile exercise to imagine the shape of that disagreement. Reading Molema's text, he seemed to have been concerned about the recurrence of race, and the accretion of its mythic content in science and philosophy. I wonder if Molema saw something in the problem of race in South Africa that eluded Du Bois? Was he perhaps hinting at a shift in the notion of race being rationalised, not on the grounds of biology, but as a condition of technology?

The sentiment is encapsulated in his reference to Campbell's poem. It certainly is a theme that gained currency as fascism reared its head in the early decades of the 20th century. So, if we extend your reading of Du Bois, what are we to do with this problem of the mythic content of race as it is folded into the spheres of technological reproduction?

Homi Bhabha: The very notion of the mythical is profoundly involved in recurrence, as you said, and recurrence is profoundly about iteration. It's very difficult to sustain a myth if you don't keep repeating it. This is the traditional way of thinking about it, often because the content of myth is represented as some archaic knowledge or some mythologicals (in India we call them mythologicals – the *Ramayana*, for example). What we don't see is that every iteration, every recurrence is in fact a revision. And this revisionary form of myth must be seen as different from its content. We are persuaded by myth because we know the content of the mythology. But when it happens, and why it happens at a particular time, is the temporal moment of its eruption or its emergence: it is the place where we need to put power *and* where we need to put pressure.

If you take the *Ramayana*, a mythological play produced every year at different times of the year as a theatrical experience, and then you put it on television – that technological translation has an effect, an affective and a political effect, which an actual gathering of people, rather than the Greek sense of watching a theatrical performance, does not have.

Whatever mythological material at the level of content is fed into me, its re-presentation, its iterative re-presentation, and the technologies of that re-presentation, constitute something dramatically different. The conservative positions on this will want to assert the content; the radical positions on this must actually talk about the re-signification in present time. The ideas themselves are not archaic – it's only the content base that is archaic. Their actual form is being restructured. Now it's being restructured to support Hindu fundamentalism, for example.

And likewise, the content of the abortion debate may seem the same – there may be a similar division between people who are anti-abortion for either Catholic or evangelical reasons, and those who are not. But when this issue is restaged by appointing an anti-abortion Justice in the Supreme Court, the status of the question changes. It is now about the myth – or, more precisely, the mythic element. And I completely understand that there are people who feel that abortion is death, and there are people who feel abortion turns on each woman's right to choose: that debate exists in the world, whatever you may think about it. But when the technology of the Supreme Court becomes the stage,

when the technology of justice in that institution becomes the way in which the myth of abortion comes to be restaged, this is not an old problem: this is a new problem.[ii]

Now, in terms of the question of race, it seems to me that a very important aspect which links mythology to technology is the question of memory. What are the kinds of memories that are being reproduced through new technologies, and what are the kinds of memories that may be produced through other kinds of technologies – such as the technology of the epic, the technology of orality, the technology of published scientific journals? These are all technologies of communication and representation. But how is memory constituted in these ways? Memory is then not simply an individual rethinking of the past. Memory is caught at the crossroads of the past that refuses to die, the mythic content that will be reproduced, and the future that keeps pointing its finger at us from elsewhere and saying, 'you are our memory'. It's called the memory of the future. You emphasise technological forms as they deal with affective issues, and here let me give two concrete examples. One we just talked about – 8.56 minutes caught on a video that circulated around the world and does not simply remain static for what is its content; instead it becomes translated into people's own understanding of their own conditions. That little bit of video continually re-seeds the story of Floyd and American policing, and produces different plants. That of course is Walter Benjamin's metaphor, from his essay on translation. So, the translational nature of the conjunction between the mythic and the technological produces this translational memory.

And I have to thank you because I had never had this thought before this moment. And the most useful thing about education – and I'm being educated today – is to be able to think on your feet because somebody provokes you to do that.

Premesh Lalu: I too have my uses, Homi.

Homi Bhabha: I have said that right from the start! This notion of affective memory which is technological: the state has an affective memory, it's part of its documents, its archives, and its practices. The legal discourse and legal institutions have their memories, which they call precedent, casuistic precedent. For us in the humanities, we think about the technologies of memory through texts, films, science, signification, performance, and theatre. This notion of translational memory, then, is – I think – at the heart of what you call petty apartheid and what I'm calling erratic racism, because it brings together the technological and the body: the body of the state, the body of the people, along with technology. It brings all that together. It brings together the rebellious moment, the moment of radical shifting in the midst of the discourse of the long histories of apartheid, or the long histories of institutional racism, or the long histories of casteism in India. It takes the moment as a new lens for looking at the long past, and bringing it into the present. This concept of translational memory in relation to myth and technology, in relation to the past and the present, is seen elliptically from the future. That's how we take an ethical position in the present – we say, how would I be able to live if I didn't do this now, if I didn't align with this now? That *now* is not simply the now that is present in the moment. It is a proleptic now, it is a now that we project into the present by placing ourselves virtually in the future.

Something very similar happened with the photograph of Alan Kurdi, the Syrian boy who washed up dead on a Turkish beach, after drowning as their family was trying to migrate from Syria, via Turkey, to Canada. And suddenly, the evocation – the affective political evocation of that moment, that photograph – made the EU ministers hasten their meeting on migration. These might be just gestural steps; I have no faith in the kind of world where big institutions sit quiet about crises and then suddenly move to embrace their guilt. I don't give a damn about your guilt. I want to know what you're going to do. I don't care whether you're guilty or not, or whether you have a crisis. So I begin to consider that thinking about myth has to be taught iteratively. When we are taught iteratively, then we begin to grasp this concept of translational memory, and when we get the concept of translational memory, we are better equipped to deal with the everyday nature of discrimination and indignity and inequality. And I want to stress indignity here: indignity is absolutely important because it's about the humiliation of people. People will forget more easily that they didn't have a piece of bread when they were very hungry than they will an act of humiliation.

So I believe that our argument and our discussion, and what I'm proposing to you today, speak to this notion of the everyday and the erratic. And the way in which the mythic and technological science and history are put together in a kind of strange montage.

Premesh Lalu: I too have returned to the scene of a massacre in an area where I was a student activist in the 1980s, and which was enigmatically named the Trojan Horse Massacre. I've wondered about the mythic name – Trojan Horse – given to this massacre. Incidentally, Seamus Heaney's gift to Nelson Mandela at the time of his release from prison was an adaptation of the Sophoclean tragedy *Philoctetes*: *The Cure at Troy*. In Heaney's play, a wounded and banished soldier provides us with a model of education that defies the sophistry of Odysseus. That's a long story for another time. But it bears upon your reflections of myth, and more crucially, on how the humanities are poised on that knife-edge (or what you might call 'liminal space') of indecision: between education and freedom.

We have lived through a form of apartheid that has amounted to a catastrophe of the senses. It resonates with what you are describing concerning the current afflictions of the globe and the planet. There's something about our experience of the minor discourse of petty apartheid that is absolutely fundamental to put in relation to the world. It certainly is a theme resonant with a return to the senses, which our mutual friend Jim Chandler has referred to in his reflections on the contemporary turn to aesthetic education.[4]

In South Africa, Hendrick Verwoerd understood that the purpose of the assault on the senses was to break up the relation between sense and perception. That was a prevailing orthodoxy in Gestalt psychology developed in Leipzig where Verwoerd studied in the 1920s, in the laboratories of Wilhelm Wundt. This is where the relation between the myth of race and technology was substantially revised and reworked into a form of governmentality we came to know as apartheid. The commodity form is absolutely necessary for shaping how we set to work on the critique of race.

In the final analysis, there's something about the problem of apartheid that was unforeseen and that we need to return to, to open up as a global condition that is reflecting its inheritance in modernity. This reckoning will help us in unlearning petty apartheid – not only on the left, but as a species – to think about what catastrophes lie in wait if we fail to relink sense and perception. What comes to mind is the improvisational form and temporalities of jazz – this may be the accompaniment we need as we remake a global curriculum in the humanities.

Acknowledgement

We thank Helen Moffett for editing this article.

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[ii] *Consider the unthinkable overturning, by the Supreme Court, of 50 years of legal precedent guaranteeing the right to safe non-criminalised abortion; this is testament to the malignant power of re-inscribing such mythos.*

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HOW TO CITE:
Mohan S, Adams R. 'I take, and I am taken, by what belongs to philosophy': Philosophy and the redemption of democracy. S Afr J Sci. 2022;118(Special issue: Radical Reason), Art. #14926. https://doi.org/10.17159/sajs.2022/14926

ARTICLE INCLUDES:
☐ Peer review
☐ Supplementary material

KEYWORDS:
metaphysics, democracy, philosophy, de-postcolonialism, criticalisation, anastasis

PUBLISHED:
31 October 2022

'I take, and I am taken, by what belongs to philosophy': Philosophy and the redemption of democracy

This Structured Conversation is between Dr Shaj Mohan and Dr Rachel Adams. Dr Adams interviewed Dr Mohan – a leading and radical philosopher of the subaltern continent – on his work on anastasis and a world after critique, as part of the Conversations with Global Thinkers series of Science Forum South Africa 2020.

Rachel Adams: For Gilles Deleuze and Félix Guattari, the philosopher is the inventor of concepts.[1] The concepts of the philosopher do not just name and describe the conditions of the world, but give them coherence such that they are available to others to be worked with and explored. You, together with Divya Dwivedi, have formulated new conceptual apparatus by which to give shape to the world and its futures. Beyond analytic or continental philosophy, new materialism or metaphysics, the vocabulary of concepts you offer is remarkably original, certainly in the history of modern philosophical thought.

Part of what I find so compelling about your work is the vast breadth of knowledge from which you build your thought. You draw from, amongst many others, mathematics, physics, computer science, systems theory, zoology and music. You speak of the regularities of systems, their tempos, ratios and scales. You name from mathematics the possibilities inherent in all things to be other than what they are: polynomia. You align with biology in crafting the notion of 'homology' as the presence of one thing in another. And you call the perception of a coterminal relation between nature and morality, which Gandhi markedly followed, hypophysics.

In doing so, you reformulate the traditionally terse relationship between science, which seeks to discover and know the conditions and forms of what you might call the regularities of the world, and philosophy, which soars these regularities[2] to their ends to reveal their limits.

Can you speak about your relationship to these other domains of knowledge in your philosophical thought?

Shaj Mohan: You ask the essential and a complex question. In a way you already answered it when you noted the difference between philosophy and everything else. You spoke about philosophy as soaring over the regularities. The sciences, arts, and all other domains of activities have specificities, and the regularities of their activities can be given in a specific field. I say 'field' analogously here. Let me give an example. The mathematical concept, and even the physical concept, of field involves at least three things: laws which identify objects as the members of the field; laws which specify the operations possible among the members of the field, including identity relations; and the assumption that these objects after their transformations through relations always remain within the field. These disciplines have boundaries which were erected out of their respective histories and the determination of what is essential to each of these specific fields. The explosive productivity of these speciations of philosophy makes up most of our civilisation, unquestionably.

But philosophy has no specificity, no outside, because philosophy is the concern with everything, something, and nothing because it is the relation to the obscure. In the same text you cited Deleuze and Guattari, who stressed that philosophy must create the very sense of each term of the expression 'philosophy creates X' for this same reason. Their example of Plato – philosophy is the contemplation of Ideas – shows that a philosopher had to create Ideas and a domain for them such that there could be the invention of the activity called contemplation. Philosophy cannot ever receive something from the given, whether they come from the sciences or the arts.

The classical way to show this difference between philosophy and the other disciplines is to speak about special metaphysics, which indicates physics, for example, rather than what is called philosophy of physics. That is, physics is the 'metaphysics' of the region marked out as nature and biology is the metaphysics of the region determined as life. Philosophy is concerned with general metaphysics, that is, that genera of which the regional metaphysics are speciations. Analogously, the sciences are regional ontologies and philosophy takes care of the fundamental ontology. The classical division follows from the historical experience that the regionalisation of thought and activities was the active contribution of philosophy itself. That is, philosophy sacrificed itself to regions or specialties and it created the sciences.

This classical model itself is implicated in the mass-produced delusion that the sciences are free of the 'sickness' of philosophy. That is, they have become free of metaphysics. Instead, what we find is that, beyond the historicised empiricisms – there is no one true model of empiricism – and the technological contributions of the sciences, they remain rooted in metaphysics. Often, though not always, this metaphysics is naïve while it pretends that it is something else. The sciences with a naïve metaphysics, by arrogantly declaring their departure from philosophy and pretending to gaze at it from a great distance, were often standing on the grounds that philosophy had left behind a long time ago. This arrogance and shabby metaphysics are steadily surrendering the sciences to data businesses and AI.

There is another kind of practice of metaphysics that is prominent today which is equally naïve. We have the universalised American phenomenon of people following a popular film series or book series and then creating communities around it. They imitate the characters of these works of fiction by dressing up in unusual costumes, and sometimes playing the social roles of these works. People are also imitating the works of fiction by writing fan fictions, which are imitations of these popular works. Metaphysics, which has come to an end due to reasons that

are rigorous, is today practised as naïve fan fiction. Sometimes, what is called fan fiction can emerge as an experimental space from which interesting ideas may arise, as it did with interaction between *Lord of the Rings* and computer programming culture. But it can equally be a ground for reactionary developments. At the moment, metaphysics as fan fiction is neither.

My relation to these other disciplines is not of borrowing or hollowing out something from the sciences for philosophical deployment, as opposed to what Deleuze would say; nor is it of receiving as axioms or fundamental principles the achievements of the sciences, which was once common in what is called analytic philosophy. Instead, I find another principle: What is proper to philosophy in the sciences is always awaiting the seizure of philosophy, like the old lovers of a prohibited love awaiting their tryst in the middle of the night. I take, and I am taken, by what belongs to philosophy when I engage with the sciences, while knowing that philosophy exceeds this exchange through the relation to the inexchangeable, the obscure.

Rachel Adams: Science and philosophy hold a differential relationship to the unknown. Where science seeks to capture and subject it to scientific reason and experiment, philosophy (and your philosophy particularly here) will cooperate in the game of the obscure.[3] There is something in the function of the philosopher to stand (maybe you would say here to take or hold a stance) at the edge of now and of time and, through their concepts, bear witness to the immeasurably beauty of all that is not yet known. What is the task, as you see it, of the philosopher today, and particularly in relation to that peculiar realm of the obscure which seems just outside our grasp and holds the promise of all we need to know?

Shaj Mohan: The most apparent difference between the sciences and philosophy is in the way in which something is said to be known. As you say the sciences need to bring their ideas – such as singularity in physics which appeared at first as a mathematical limit – to a formally specified material system where the scientific idea is now the content of something repeatable, and repeatable in principle by anyone. Scientific regularity follows from it and so does the technicity of the sciences. This is the key to the socio-political success of the sciences. It is another matter that now the technological domain is absorbing the sciences while interesting challenges to this idea of science, which existed for a long time, are gaining importance.[4,5]

Philosophy too has its games, as you said, with the regular, the irregular, and the confused, and the obscure. But they concern, not a region, but everything. Since you mentioned Deleuze at the beginning who was referring to Plato in that section of his text, let's look at a Platonic question of regularity.

If we set aside the myths of Plato, in the ambiguity of the genitive, his early questions were about the ability we have in order to recognise a thing as that which exists and varies within a series of things while retaining its essence as that thing; that is, the invariant which allows a thing to be recognised in a series in which it belongs and also as a thing apart from another series. In other words, all trees are trees, and not clouds. In order to answer this question Plato constructed his theory of Ideas. Idea is not the concept of the thing, but Idea is the Thing without ever being one of those things you recognise; the Idea is that of which all the other things are variations and deviations. Now, if the Idea itself were another thing in the series, which you could recognise, that would complicate the whole series, which would now require yet another Idea to ground it. So, the Idea has another domain which is not the world. Once Plato took this step nearly all the questions of metaphysics appeared—space, time, difference, Being, One.

That is, philosophy can begin with the distinct and the clear and then still inevitably arrive at the obscure, which for Plato was the One, if we take the dialogue Parmenides, which complicated the entire doctrine of Ideas. One way or another, the philosopher ends up thinking about everything and then falls in the seizure of the obscure, that which is at the limit of thought which is still a thought, and an experience of what must be thought for thought to be. As we know Heraclitus was the first thinker who explicitly thought of the obscure and he received the sobriquet 'The Obscure'. Philosophy thinks the everything by *keeping* everything *in the attention of* the obscuree, which doesn't mean it is gloom metal! One of the stories about Heraclitus was that he was often found playing games with children and that he abused those adults who found it comical.

Philosophy's task then is to be philosophy first. Then to see in its present crisis a ruin, and in the world a ruin, in such a way that a world can be raised again with faculties appropriate for it, while remaining *in the attention of the obscure*.

But the more intriguing game is to know which is the mask of the philosopher for this hour. Nietzsche was the one who realised that the philosopher needed masks appropriate to epochs in order to exist safely – the madman, the prophet, the seer, the priest, the scientist.

Rachel Adams: We are concerned here in South Africa, as elsewhere, with the notion of decolonisation and how we live with and undo the legacies of colonialism and the logics of race, instituted by colonialism and later apartheid, that continue to hold immense structural and symbolic weight in society, delimiting much of what is possible for our shared freedom. There is a sense, which may be little admitted, that despite its political potency, decolonisation is 'philosophically poor': it too easily and instrumentally imagines its own realisation and the arrival of a truly postcolonial society. What the society after decolonisation-proper looks like, what its form is, and what we take with us into the next world, is not fully canvassed or imagined by the concept of decoloniality.

In your work, you give sense to the imagination of a future world wherein the tyrannies and sicknesses of our present have been overcome through a process of criticalisation. You call the birth of this new world anastasis.

You have shown that critique as the system which determines the possibilities of a region or domain is an anticipatory system. For this reason, that critique holds all the possibilities of the future – you called it 'memories of the future'. If critique exorcises *memories of the future* and decolonisation seeks to reckon with the still-present histories and future conditions of coloniality – and it does so with some sense of finality, that this should be the final reckoning of the colonial past, could decolonisation be the last critique of this epoch that engenders the criticalisation of imperial and racialised forms of power-over, and which allows for the arrival of new forms of humanity unconstrained by Western humanism?

Shaj Mohan: This question is too complicated and too risky. As a gesture of caution we should note that not all colonialisms are the same, due to the external and internal conditions, and more importantly all that is now being called 'colonial' is not colonial. It is both the necessity of a geo-political and lazy theorising that makes one see 'colonies' everywhere. Here we should remember Derrida who said that all cultures are colonising. We should try to understand it. A culture is a system of regularities which seek greater integration with other kinds of regularities in order to ensure endurance and range. To ensure its dominance, a particular culture – say the culture of *de-postcolonialism_–* will eliminate other cultures. The co-existence of many cultures depends on the comprehending law of cultures. For example, the museum-art-finance-capital complex is invested in capturing as many distinct cultures as inert artefacts. The supermarket is interested in capturing as many brands as possible on display. But cultures are not inert, they jostle, struggle and battle for more room. A kind of liberalism misunderstood 'multiculturalism' on the basis of an analogy of the shelves of the supermarkets. De-postcolonialism is now a culture with geo-political ambitions.

I had touched on this question about the postcolonial, colonial, decolonial previously; for me, the text 'Hindu Hoax' is sufficient to understand what is wrong with de-postcolonial.[6] The de-postcolonial theory is constructed out of the resources and the political intention of the auto-critique which appeared in philosophy in the 20th century which examined the fundamental concepts of metaphysics, politics, and history critically. Heidegger, Adorno, Derrida, Foucault and many others participated in this critical praxis.

The lesson taken from it by postcolonial theory, especially the Indian kind, suppressed the auto-critique and used the concepts and insights as instruments to construct what is properly a geo-political discourse of

which the Nazi style organisation RSS and its prime minister Modi are beneficiaries. That is, postcolonial theory of the Indian kind masks the fact of auto-critique to create an accusatory discourse which prohibits the critique of upper caste theories. Therefore, it is not a 'theory', whatever it means, and certainly not an adequate theory of the epoch of colonialism.

You mentioned there that 'logic of race' was instituted through colonialism. It is certainly not true in the case of India, of which I can speak about freely. India was divided into 10% upper castes who ruled over and enslaved the 90% lower caste people and the tribal people for millennia. I will repeat what many lower caste intellectuals from the 19th century have said: colonialism was great for the lower caste people, because it allowed, up to varying degrees, freedom, education, rights, dignity, and power to the lower caste people. Most importantly, the very theoretical conditions, educational conditions for emancipatory politics became available to the lower caste people through colonialism. Colonialism was also not terrible for the upper caste people in India because they quickly integrated into the colonial economy and a new kind of upper caste elite was created who would later receive the transferred power from Britain.

But it was also the time the upper castes were forced to share courtrooms and trains with the lower caste people, and accept the fact that some people, the colonialists, thought that the lower caste majority deserved equal rights and political power. It destroyed the illusion that racialised oppression of millennia was God's will. It was the threat of a reversal of power through colonial electoral reforms that forced India's upper caste leaders to intensify their agitation to remove the British from India.

In the Indian context, de-postcolonial academics are upper caste people trying to recover their lost pride, create obfuscations which can dominate the universities, and prevent a lower caste uprising. By directing attention to a past which has no influence on its present, de-postcolonial intellectuals allowed India to avoid any scrutiny of its own society and of international society. India was racialised for millennia, long before colonial powers arrived, and in fact colonialism was the interruption of the caste order. That is, the caste system is religiously sanctioned oppression and enslavement of the majority population of India, the lower caste people, on the basis of their birth.

Let me say this, India is being colonised by a de-postcolonial project which goes by the name 'Hindu'. India is in need of more attention from the world than that which was given to apartheid in South Africa. This attention is being prevented by the de-postcolonial. This is why Divya Dwivedi, I assume with some humour, called for thinking that is 'sans-colonial', without colonial.

For the other regions of the world where the de-postcolonial is perhaps colonising, of which I should not speak except in general terms, there are a few enquiries one can make. For example, when we were watching the football World Cup in Brazil, where I was rooting for Argentina and then Brazil, one couldn't avoid observing that there was a colour difference between the seats closer to the field and those furthest from the field. Who speaks de-post-colonial in Brazil? Are they sitting near field or in the great beyond of the galleries? Each society should first examine who benefitted from colonialism and who speaks de-postcolonial today. This is a moral necessity. Of political necessities another time…

What should be done instead? Once we recognise that de-postcolonial has the potential to become as dangerous a geo-political doctrine as the Aryan doctrine or 'War on Terror' and then set it aside to consider the realities of the world, a different reality appears. The world cannot afford to be isolated in any sense anymore. It requires a political thinking and construction of institutions which can take care of the challenges we face as the world. Some of these challenges are obvious, such as the climatic. But not so obvious are the technological and the transformation of capitalism through technology.

Rachel Adams: Carl Schmitt famously wrote of the liberal democratic state as the 'machine that runs itself'. In *Gandhi and Philosophy* and in reference to the work of Irvin J. Good, you speak of man's last legislation: the last instantiation of a man-made regulatory before the take-over of intelligent machines. What new course in the direction of history does the advancement of computer technologies pose? Is it a threat to the finality decoloniality imagines itself producing? With the state as a machine that runs itself, and a networked technological apparatus that keeps to its own self-imposed regularity, is anastasis still possible?

Shaj Mohan: The Schmitt business itself is a machine, an even simpler machine than the so-called 'liberal democratic state', and that is its continuing appeal. So is fascism appealing, because it is so simple. In fact, Schmitt's Nazi theories do not work in the zones which extend beyond its theoretical field. Power is never held by one man through charisma nor through the pitting of one community against another. As Hannah Arendt showed, it is through the cooperation and collaborations of many people and institutions, which form components of a power-system, that power appears. In order to draw attention from the realities of these arrangements, power always conducts theatres, which we are forced to watch, even if we don't believe it. It is the hoax of power.

In the Indian example, the de-postcolonials, the 'Hindu' nationalists, and their 'liberal' friends are trying to sell the hoax that politics is the contestation between a 'Hindu' majority and religious minorities who are Muslim, Christian, and Sikh. They never speak about the real division and the oldest division in the subcontinent which is the racial partition of caste. The price religious minorities pay from decade to decade in order to sustain this hoax is horrific. Whenever caste contestations arise, religious pogroms are created. This draws the national and international attention into the hoax. So, Nazi theory is the abstract form of the hoax which is only a component of power.

Now to come to Irwin J. Good's idea, which became the more popular version called 'technological singularity', there are two essential directions suggested in it. First, is that man was conceived as the made, an automata made of some kind of matter, clay for example, into which breath or spirit was given by a supernatural being. Then, due to the presence of this breath man would also make machines, but man will have to remain a less proficient machine maker than the supernatural being who made man, as Descartes would note. The final step in this process is to arrive at a scenario where the machine which was made by man begins to make better machines, which are beyond the capability of man to understand. From there on machines will begin to govern man. In this direction, there are several metaphysical questions including the meaning of creation. But what is amusing is something else: Did the supernatural being get displaced by what it created and is it in that analogy that humans will be displaced by what they have created?

The second direction should open the meaning of 'creation' to a new sense; we are yet to fully understand it. We know that the stories and fantasies about automata were common in the ancient Greek milieu, and so were complex mechanisms. The awareness that man could create something, anything, which could overwhelm man or overcome man is an old theme in philosophy. One has to look at Plato. This threatening man-made thing was not a machine for him but a political order founded on erroneous principles which would from there on persist like a stubborn automaton. The realisation that machines invented by man could not be discarded because they were in a determining relation within the comprehending law of societies was known by the 17th century. In the 19th century we find the proliferation of literature which expresses this terror that something man made could turn on man or take control of the domain of man. So, we had been alert to this possibility for a long time, and not just that, we knew that we were already the functions and components of the systems of our creation. In fact, if that is the case, the phrase 'our creation' lacks sufficient sense, doesn't it? Marx was the first thinker of this new sense of creation, who also observed that man was serving the machines which were not strictly of his 'creation'. If we read Grundrisse properly, the proletariat is a component at best of the machine system, to whom the latter appears confusing and imposing. At worst the proletariat on the peripheries of the machine system, say those who wipe and clean the machines, are denied access to the component systems.

Now, behind the 'novelty' of these questions generated by the Nietzschean 'active forgetting' through which we get new wisdoms, new pop songs, and cinema, there is a different order of a problem. What is reason? What is knowledge? What is philosophy? As you know, in the epoch of

the prophets, soothsayers, holy men, oracles, magicians, omens, and auguries we had an unquestioning relation to the essential knowledge, we were supplicants of the pronouncements. This is the danger today with AI; we are beginning to assume that if the machine says it, then it must be true. The black box problem in machine learning – we don't know how it comes up with the answers it comes up with, much like the old oracle – shows that this danger is real. In relation to it all the other dangers present themselves. As all systems, including kitchens and kindergartens, are being integrated into massive computational architectures we come to be the components of something we cannot understand in principle. This will of course be stasis! In this scenario, as we will see, philosophy will appear as the enemy, the final possibility of error in the system to be cast out.

But let me say this quickly: anastasis is inevitable as it is the essential feature of all complex systems. Systems leak their polynomial powers and secrete homologies to what develops as their exteriority. Instead of awaiting it to happen somehow, miraculously, it is our responsibility and the responsibility of reason to approach it, anastasis, together. What is a liveable life? What is evil? What is the responsibility of the being that is forsaken of transcendent ends? What does it mean to bear our relation to the obscure in the act of politics? As long as we don't discard the faculties of classical metaphysics, which includes nearly all forms of logic, we will not be able to ask these questions except as empty gestures. Therefore, for anastasis to have the character implied by the double genitive of the phrase, 'the redemption of man', or better, 'the redemption of democracy', we must approach a revolution in our faculties.

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HOW TO CITE:
Ramphele M, Vogel C, Reddy D. Special SFSA Plenary Debate: 'The future of transdisciplinarity: How do we relearn to be human in new ways?' S Afr J Sci. 2022;118(Special issue: Radical Reason), Art. #14787. https://doi.org/10.17159/sajs.2022/14787

ARTICLE INCLUDES:
☐ Peer review
☐ Supplementary material

KEYWORDS:
transdisciplinarity, climate crisis, complex systems, African cultural heritage, African wisdom, indigenous knowledge systems, integrated learning

PUBLISHED:
31 October 2022

Special SFSA Plenary Debate: 'The future of transdisciplinarity: How do we relearn to be human in new ways?'

This Structured Conversation took place among Dr Mamphela Ramphele, Prof. Coleen Vogel and Prof. Daya Reddy. Dr Ramphele was invited to deliver a Plenary address at the Science Forum South Africa 2020. Her address was followed by a response from Prof. Vogel, and the discussion was moderated by Prof. Reddy.

Mamphela Ramphele: The coronavirus pandemic has changed the world irreversibly. Evidence from those working across the globe suggests that this coronavirus pandemic may just be a dress rehearsal. Major disruptions are likely to continue due to the cumulative impact of our relentless behaviour that is breaching planetary boundaries. We would do well to harvest the lessons of this pandemic to learn to find new ways of being human.

I would like to explore three things here. First, how to emerge from the planetary emergencies that are upon us? Second, what tools can we use to reimagine a new reality? And third, how might we benefit from Africa's wisdom of a holistic understanding of our place on this living earth?

To the first. The beginning of wisdom is acknowledgement. Humanity has yet to fully acknowledge the dire situation we are in. Global warming is accelerating – the critical marker of 1.5 °C is more likely to be reached in 2030 than in 2050.[1,2] The upper Paris Agreement boundary of 2 °C is likely to be reached before 2050, despite whatever actions we take, unless such actions are drastic.[1] Humanity is all but committed to climate change becoming more dangerous, and in some respects, irreversible. For example, the irreversible melting of the Greenland Ice Sheet may be triggered somewhere between 1.5 °C and 2 °C of global warming. Short-term action is crucial. What we do now, before 2030, matters. What is needed to curb global warming, is the drastic reduction of CO_2 emissions by 45% by 2030, with net zero emissions to be achieved by 2050.[2] This challenge is immense, but if achieved, the chances are excellent for restricting global warming below 2 °C, thereby avoiding many (but not all) of the most dangerous impacts of climate change.

These effects on our climate are consequences of our way of life as a human race. We have tended to be extractive and degenerative in our use of earth's resources, and our relationships with other forms of life. Biodiversity and ecosystems have been compromised, leading to the unleashing of previously unknown viruses, such as we have seen recently. There are multiple and interlinked tipping points that are challenging us to embrace the interconnectedness and interdependence of the earth as a living system. Our role in earth's living system – as the newest arrivals – needs to be tempered by humility and openness to learn from millions of years of nature's intelligence. Dee Hock who is the founder and Emeritus CEO of VISA observed that there is an ingrained, unconscious way of thinking that forms the deepest barrier to the urgently needed transformation of our world. Deep in most of us, below our awareness, indelibly implanted there by three centuries of the Industrial Age is the mechanistic separatist cause-and-effect command-and-control machine model of reality. It is remarkable that even as we speak of the 21st-century innovations, we speak of them as part of the Fourth Industrial Revolution. This industrial model of thinking persists, despite abundant evidence of non-industrial, non-mechanistic reality around us that speaks to the interconnectedness that we have referred. It is this deep unconscious mindset that exists also in academia, perpetuating the silences that undermine our scholarship. These silos make it difficult to work across boundaries of disciplines and fields of study. Multidisciplinarity, let alone transdisciplinarity, requires us to let down the high mental walls behind which we continue to work wholly in isolation from one another. Human social nature, and all its disciplines, are inextricably linked. Adherence to disciplinary silos robs us of the opportunity to innovate at the margins, at the threshold of every aspect of life, where the greatest innovation impetus lies.

To the second point. What tools can we use to reimagine a new reality in academia? Emergence from these emergencies that we have described requires us to bid goodbye to linear thinking. Mother earth's life-giving processes and the complexity of the web of life needs to inform our thinking. This requires a willingness to explore being human in a different way.

Donella Meadows, who, as lead author of the 1972 Club of Rome's report entitled *The Limits to Growth*[3], encourages us to dance with systems. Her life's work taught her that we cannot control, or even completely figure out, the complex systems of the world: but we can dance with them. Dance is an important tool because it is an invitation to cross thresholds, and then greet and engage all parties. Dance is a tool that teaches us to first learn the beat and watch how the system behaves, before you jump in. As Africans, we have musical rhythm ingrained into our genetic makeup. Just watch a little toddler barely able to stand; as soon as there is music, they dance – automatically – to the beat, without any coach. This is inbuilt in us: the capacity to dance with a system. Meadows calls for us to see beyond the disciplines, to apprehend the wholeness of systems and learn from them. Transdisciplinary work requires expanding one's thought horizons beyond being academically correct. It requires a commitment to working with others across the boundary, getting into collaborative learning modes, admitting ignorance and being willing to be taught by others, and by the system being explored. The question is whether you, as practitioners of academia, are prepared to take the risk of defying disciplinary boundaries. Are you willing to engage the excitement of working at the margins? You need to explore and acknowledge where your fears about the risks of transdisciplinarity lie. Leen Gorissen, another scientist, points the way in her latest book, *Natural Intelligence*[4], that the whole is greater than the sum of its parts. In science we call this phenomenon 'emergent

properties', which are entirely unexpected and can only arise from collaborative functioning of the system, but do not belong to any one part or individual of that system.

So, climate change and other planetary emergencies upon us, cannot be tackled within disciplinary boundaries. It is only by being willing to work across the threshold that possibilities open. Are we ready to cross? It is clear that climate change is one of the wicked problems we have created by disrespecting planetary boundaries. Climate change cannot be fixed by technological means – it requires a new way of thinking about who we are, what we do and what we value most in life, and how we relate to one another and to all of life in the living earth system. A fundamental change that is required is acknowledging that we are part of nature and inextricably linked to all living beings in an existential interdependence. What is remarkable is how scientists the world over are now turning to African wisdom for answers to the complexities of life. African wisdom has been carried to many parts of the world by the ancients of indigenous people who migrated to Asia, the Americas, Australia, and the island states. Indigenous wisdom about the interconnectedness and interdependence of all living beings is being drawn upon by biologists, evolutionary scientists, and more, to shed light on the relational dimensions of living. Ironically, this turning to African wisdom is often done without conscious acknowledgement that Africa is not only the cradle of humanity, but also the cradle of human civilization. For example, the same progressive Gorissen talks about the native society which endured for centuries, with little increase in the capacity to receive, utilise, store, transform, or transmit information, and had little time to develop a very high ratio or had time to develop a very high ratio of understanding and wisdom of data and information. They may not have known a great deal by today's standards, but they understood a very great deal about what they did know. They were enormously wise in relation to the extent to which they were informed and their information was conditioned by a high ratio of social, economic, and spiritual.

It is extraordinary that such a great scholar does not know, nor acknowledge, that the capacity to receive, utilise, store, transform and transmit information was in existence in Africa thousands of years before any other part of the world. Extensive documented evidence of Africa's civilisation prior to colonisation has been captured by scholars, like the Senegalese polymath Cheikh Anta Diop. Another scholar, Elisabet Sahtouris, an evolutionary biologist, in her book *Earthdance*, falls into the same trap by saying that the best life insurance for any species in an ecosystem is to contribute usefully to sustaining the lives of other species – a lesson, she says, we are only now beginning to learn as humanity. No, the 'we' that she's using is very wrong because people like me, who have learned from our ancient ancestors, knew this all along. That's how we were brought up. So the universal 'we' needs to be transformed into a pluriversal 'we', which consists of an understanding that context matters, that there are other ways in which we, as a people, should be looking at the world and understanding that we need to learn what we don't know, rather than pursue.

The tools we require to emerge from the multiple planetary emergencies we are facing are at hand. We need to shift our gaze from the narrow focus of disciplinary boundaries, to see the immense possibilities at the margins of time and space. We also need to draw on our rich African cultural heritage and wisdom and start actively dancing with systems. So, I want to invite you to leverage Africa's wisdom to learn anew how to be human. And those lessons would mean that we, as African scholars, who do intentional work and answer the question of why, are the strongest African Studies Centres, not in Africa, but elsewhere. Second, why are we not using the opportunity of linking with the diaspora, the African diaspora, to be able to leverage their exposure to other worlds so that we can create this incredible, strong African scholarship that is pluralist. Third, we need to actively challenge the Euro-American dominance and the so-called 'universality' and link with Asia, with Latin America, with other parts of the world, to surface a new scholarship that pays homage to interdependence and interconnectedness. Finally, we need to commit to stop teaching orthodoxy in the humanities and social science disciplines, particularly with reference to history, economics and religion. Orthodoxy in our education system is undermining the future of young people in a world that calls for the ability to ask difficult questions. We need to relearn how to be more effective facilitators of self-liberating learning and stimulation of young minds to enable them to engage in the dance with complex systems. Young people need to develop a more acute consciousness of the heritage of the wisdom of their ancestors as a rock on which to build the reimagined futures they desire.

Daya Reddy: I might have at the beginning of our conversation reminded us all of a textbook definition of transdisciplinarity. I'm pleased I didn't do so: we've just heard from you a refreshing and insightful set of views. Firstly, on the stark realities that are facing us, what might be our knee-jerk response, namely, narrow disciplinary approaches to addressing these problems, whether COVID or whatever else it might be. Secondly, compelling arguments for going beyond disciplines, and not just within the context of scholarship. Also, connecting with people, connecting with societies, which is really what transdisciplinarity is all about. And thirdly, you have offered us some beautiful perspectives on what we as experts can learn from what might define a society, and the notion of wisdom residing within. We will come back to many of these points later on.

Coleen Vogel: Dr Ramphele noted in her opening comments a key issue for those engaged in sustainability and in fact for all those interested in enhancing sustainability. She noted:

> *So, climate change and other planetary emergencies upon us, cannot be tackled within disciplinary boundaries. It is only by being willing to work across the threshold that possibilities open. Are we ready to cross? It is clear that climate change is one of the wicked problems we have created by disrespecting planetary boundaries. Climate change cannot be fixed by technological means – it requires a new way of thinking about who we are, what we do and what we value most in life, and how we relate to one another and to all of life in the living earth system. A fundamental change that is required is acknowledging that we are part of nature and inextricably linked to all living beings in an existential interdependence. What is remarkable is how scientists the world over are now turning to African wisdom for answers to the complexities of life.*

As a respondent to this input and given that the idea here is to trigger further debates and not to write a full paper, I therefore couch my comments within a brief overview of transdisciplinarity and some of the issues that are beginning to surface in South Africa. I limit my inputs to some of the pressing issues raised here but urge readers to read more widely and deeply and indeed promote a deeper interrogation of how transdisciplinary approaches can best be used in designing sustainable pathways moving forward. Clearly the context in which we are working in South Africa requires a much more nuanced and deeper introspection, focusing on the collective trauma[5] that we have all been through, not least with apartheid but more recently with State Capture and COVID.

There is a need for deeper engagements into what has brought us to these situations[5], e.g. *relearning how to be and become will require much more social or psychological understanding of learning and re-learning to which the brief intervention here cannot do full justice*. Such interrogation and reflection cannot be fully addressed here and in fact may require several entire journal series dedicated to such an activity.

One approach, that I can briefly raise here, that is being increasingly focused on and is mentioned by Dr Ramphele, is the need to cross boundaries and indeed ways of thinking.[6,7] In describing transdisciplinarity as an educative process, the process required is about imagining and creating, as Dr Ramphele mentioned, new integrative knowledges to address the complex problems of the world.[8-10] These approaches and processes, however, require detailed attention to methods, constructs and framings[11,12] and indeed careful assessment of local contexts and contradictions, and careful and reflexive considerations of where we have come from.[5]

Transdisciplinarity, however, is not for everything and everybody. Dr Ramphele asked us if we are brave enough as scholars to do transdisciplinarity meaningfully, to inspire new thinking and offer novel solutions to old and new challenges. I am not sure we have been brave enough. Nevertheless, transdisciplinarity can create the spaces to ask the questions, and often it is articulating the question that is more important than finding the right answer. We need to give attention to what is currently not visible, what seems impossible to talk about. In South Africa, we are struggling to talk to each other. What is absent in the various discussions? Often it is easy to put things out there and talk about the explicit problems facing us as society. But what lies underneath?

Finding out what lies underneath and indeed who should be contributing to various challenges is not an easy task. We need an inclusive 'middle ground' where we create a safe space to come together to speak, articulate, surface contradictions and work together on creating a useful process for deeper learning as well inclusive and in some cases 'transgressive' framings of what constitutes knowledge in the sustainability and other domains.[10,13] When knowledge is forever open it has the potential to move in a range of outcomes – such an inclusive knowledge approach is not a linear model that requires 'shoving' knowledge into a pipeline (journal articles, academic silos) or 'throwing it over the university wall' once we've done our science and hoping society comes desperately to collect it. Rather it requires a careful, co-engagement with society at the very outset on issues and challenges and learning together that may indeed be contested and challenged (see several more detailed articles on such approaches, e.g. Lotz-Sisitka et al.[10]).

Dr Ramphele also mentioned, and I concur, that emergence is *held*, and that's hard to do because as a scientist you are usually funded by a funding organisation that wants outputs, they want monitoring and evaluation, and transdisciplinarity sometimes doesn't get you there, immediately. But more importantly, we need approaches where an inclusive logic is respected, and where tolerance in contradiction is acknowledged[14] – if only we could have more of that in South Africa – where tolerance in contradiction can be explored.

I concur with the call to integrate African wisdom. Transdisciplinary approaches also engage with deeper perspectives on social change, including wisdom traditions, and not just indigenous knowledge. Amanda Lynch writes in her book with Siri Veland, *Urgency in the Anthropocene*[15(p.135)]: 'Relational approaches that take seriously the need to engage Indigenous people in responding to global environmental crises cannot rely on existing formulae if committed to the common interest. Hence, rather than seeking to "translate" Indigenous myths or prescribe Indigenous policy participation, we may begin to accommodate the coexistence of paradoxical spaces of governance.'

It is not only just indigenous knowledge. It is imperative, as Dr Ramphele said, to understand, appreciate and, as she says, 'acknowledge', other epistemic cultures, originating from various historical, social and cultural backgrounds. Positivism is not enough: we cannot address the challenges we face with only certain kinds of science and scientific approaches. Indeed, transdisciplinarity is more than a method or even a practice. It is an adaptive capacity and a way of being. It is not a formulaic, hard-core science, or technocratic concern.[7] These things are important, but when transdisciplinarity is taken as a way of being, the need for knowledge and know-how for integration and implementation extends far beyond the scope of research projects and appears constantly and ubiquitously in real life. We need not only the positivist scientists, but also the contemplative thinkers, literature artists, sculptors, design thinkers and many more.

There is a book called *Being Peace*, written by Thich Nhat Hanh, with a foreword – written in 2020 – from Jane Goodall.[16] Goodall writes: 'As I write these words, we are living in dark times. Fortunately, there are many brave people fighting for peace and justice and an end to discrimination. Fighting the arrogance and the lust for power and wealth that is destroying the biodiversity and the natural resources of Planet Earth, dispossessing millions of people from their homelands. ...' To change the hearts of others, says Thich Nhat Hanh, we have to first change our own hearts. 'To suffer is not enough.'

Daya Reddy: The prefix 'co' has occurred at various places in both the contributions of Dr Ramphele and Prof. Vogel, whether co-operation, co-design in the context of disciplinarity, co-existing forms of knowledge, and the like. One question that I have concerns the picture one has, as you both pointed out. It is not a case of putting side by side these different communities – scientists and scholars on the one hand, and civil society and government on the other – but rather working towards a truly integrated view, and a completely synthesised approach to the problems that we face. What is it that remains for the community of scholars and I'm thinking of scientists, in particular, and here, by 'science' I'm referring to everything from the natural to the social sciences – what remains to be done, and I believe there is much to be done, with regard to proper public engagement? In other words, if we are going to have a truly integrated approach of the kind that you've both presented, what is our responsibility to ensure that the community, broadly speaking, has a good grip on what the science is about, and is able to contribute in that integrative way? With COVID-19, these issues are highlighted in very stark terms because it affects people's health and survival right now, and it affects people's livelihoods. We have over 70 million more people in extreme poverty around the world as a result. The role of science is so very evident in this particular case, but it applies to issues that go way beyond COVID-19.

Mamphela Ramphele: In answer to the question of what needs to change is an openness to learning every day of our lives. When we stop learning as human beings we die: we may not be physically dead, but we are spiritually dead. I want to take you back to Egypt, where our ancient ancestors, the scientists of that time, the people who figured out geometry, trigonometry, the mathematics, and the cosmology that enabled them to build the pyramids that are still standing today. Who were they? They were priests! From the very beginning of the human evolutionary process, science has always been integrated as a spiritual expression of who we are. The pyramids are configured in relation to the stars. This is why I disagree with Leen Gorissen that these ancient people did not have a way of documenting. They did. They invented writing. The first library, the Library of Alexandria, was miraculously and very strangely destroyed by fire. But in Ancient Greece there were students of these Egyptian priests who learned at their feet. Miraculously, Plato was able to write a thousand manuscripts in one year. How's that possible? I mean, you and I know how you sweat to get to one paper going. Now, to have a thousand, is really miraculous. If we want to engage in this new way of being, we need to be open to learning.

Second, we need to acknowledge that, as human beings, we are part of the web of life – the heart, the mind, the body need to remain integrated for us to function as individuals. Human beings are wired to be in relation to other things, and our relationship to nature is not to look after nature. No, we are part of nature. And acknowledging that enables us, again, like those Egyptian priests, to learn from nature, then to use the knowledge to be able to evolve into better educated and learned people. We are being pushed by this coronavirus pandemic and all the other emergencies, to think and *be* different.

Coleen Vogel: Those of us who work in transdisciplinarity are saying 'science with society'. And I know there is a whole series of things that come up in the wash, because of that, such as maintaining objectivity. I have been working with the City of Johannesburg to develop a climate action plan, and the youth have been given a set of inputs that they crafted. It requires building trust.

But, unfortunately, the scientists are telling us that we have only a limited time left if we are going to save the planet. So how do we now ramp this up much, much faster? And I do really think we need to learn from COVID. The scientific community is only thinking about policy, which is very critical – we need to get into policy, but we need to be doing practice, and more importantly, praxis – learning how to engage. The social movements are on the streets, and we need to find those intersections where science is made real.

Mamphela Ramphele: Education lays the foundation for the work, the lifelong work of learning. Our education systems should be how to facilitate the enablement of young people to learn how to learn and to ask the difficult questions. And yet, we are so focused on teaching individuals

specific things. That is why, in my view, we have such an appalling performance of our students in maths and science because we do not connect maths and science to real life. I learned maths and science in my final 2 years of Grade 12 because of Bantu education. I was able to get distinctions in those subjects because my teachers, who were very experienced teachers, connected the teaching of the basic principles of maths and science, to everyday life, and to concrete things.

I believe we need to part with the grammar school colonial discipline and hierarchical education models that were used, particularly in the light of the multi-generation of humiliation of the majority people in this country. The undoing of that requires integrated learning. There is one school system, called the Leap School System, that is practising this self-liberating education. The schools get 90% pass rates, and all the children are doing maths and science. There is no such thing that they are too poor to do mathematics. And, where do they come from? Alex, Diepsloot, Langa, Philippi. There is nothing, including poverty, that can prevent young people's geniuses being stimulated if they approach it the right way.

So, what is this approach? They teach around tables. Africa learned a long time ago that the best way of keeping this interconnectedness going, is eyeball to eyeball. And so, when you teach kids in life orientation, around the table, they become their own liberators. It's incredible! I really would like to encourage all academics to visit one Leap School in your environment and see, for yourself, that non-orthodox education is not only possible but might be the only way we can move forward.

Coleen Vogel: We certainly need the maths and the sciences. But I fear that we may go astray if we do not also stress the importance of the social sciences and the humanities. I have colleagues who are doing interesting work on what is called, not transformative, but transgressive research. In some areas we have to cross the boundary, we have to shake the tree, we have to stand up now and shake the system. But in this space where it's complex, with wicked challenges, I do think we need hard conversations.

Daya Reddy: The whole business of education has been touched on in a broad way. And we all, I think, lament the inertia in the university system. Despite embracing, at least in formal policies, multi- and transdisciplinarity, universities have difficulty in transcending these boundaries, these silos, many of which are deeply embedded in the bureaucracy and also in our ways of working. Multidisciplinary thinking should start at school level, and serious work is needed to inculcate broader approaches to education that are not hobbled by disciplinary constraints.

There is a university in Japan, the Okinawa Institute of Science and Technology (OIST), which was established through the efforts of Koji Omi, a former minister and the founder of the Science and Technology for Society Forum that takes place every year in Japan. At OIST there are no departments, no disciplinary boundaries. Whatever your degree programme, you enter, and you do a rotation, through the various areas, and eventually you work towards your project, definition, proposal and so on. It is a very novel concept, which can serve as a model for such initiatives at university level.

We've spent quite a bit of time talking about the set of issues in the context of transdisciplinarity. Referring to education in particular, there is a need for a fundamental transformation in the way in which we educate and the way in which learning takes place. It was said of a colleague that he 'crossed disciplinary boundaries without looking for oncoming traffic' – an admirable example.

The second issue here has to do with the integrative nature of transdisciplinarity. For it to work, almost by definition, it has to be an integrated 'whole'. For example, people and nature, not people versus nature, and we haven't even touched on the problems of biodiversity, science with society rather than science for society, and the number of terms prefixed with 'co'. Furthermore, the scholarly community should take care not to adopt a patronising attitude in engaging with society. There is a great deal of work to be done. What has been indicated here is a sense that transdisciplinarity is a tough thing to get right. One can set out a good definition, but hearing from Dr Ramphele and Prof. Vogel, it's clear that it needs a really deep and fundamental change in the way of thinking about everything, about how we go about learning about the world, and how we go about solving our problems.

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HOW TO CITE:
Visbeck M. Comments on 'The future of transdisciplinarity: How do we relearn to be human in new ways?' S Afr J Sci. 2022;118(Special issue: Radical Reason), Art. #14822. https://doi.org/10.17159/sajs.2022/14822

ARTICLE INCLUDES:
☐ Peer review
☐ Supplementary material

KEYWORDS:
international cooperation, transdisciplinary, universities, multidisciplinary, sustainable development

PUBLISHED:
31 October 2022

Comments on 'The future of transdisciplinarity: How do we relearn to be human in new ways?'

The deep and insightful reflections on transdisciplinary science by Dr Ramphele, Professor Vogel and Professor Reddy motivated me to share a few thoughts from my somewhat outside-of-Africa perspective. I was trained in Physical Oceanography in Kiel Germany and spent more than a decade in the USA at MIT and Columbia University researching the ocean's role in the climate system and looking at climate variability and change more generically. Given the challenge of observing, modelling and understanding the vast ocean and climate system of our planet, it was quite obvious that no single university or even one country could claim to make significant progress by themselves. Thus, even as an early career scientist, international cooperation became the norm. International teams would take advantage of the World Climate Research Programme to plan and execute large-scale decade-long research missions. Knowledge was generated together and shared at international meetings. These programmes successfully managed to work across competing and sometimes hostile governments. On the other hand, as reflected on by Dr Ramphele, those with access to high-end technology had a stronger voice and many parts of the world simply could not engage. Unfortunately, Africa, South America and Central Asia were weakly represented. Today, there are more attempts to make international climate and ocean sciences more equitable, but there is still a long way to go. For example, Rodrigues argues correctly for:

> *… the need to integrate a multitude of different perspectives to achieve progress on the most difficult problems facing the planet. We need people with different backgrounds, training and experiences to help make progress; we need to integrate the knowledge in the Global South with that in the wealthiest countries; and we need to bring together our compassionate, creative, human side with scientific analysis.*[1]

Cultural diversity and the many different realities of scientists around the world are a challenging divide to bridge. Similar challenges exist when working in interdisciplinary or transdisciplinary teams. In my own experience leading an interdisciplinary network in Kiel focusing on the Future Ocean, we first had to agree on a common language, common communication culture and acceptable way to review proposals and ideas. Our programme encompassed seven out of eight faculties and covered natural and social sciences. During the more than 10-year period of the programme, we often contemplated the idea of founding a new faculty on (ocean) sustainability. Is it really so 'new' to work in inter- or transdisciplinary settings at our academic institutions?

A key might lie in the academic contract between universities and society. Often the advancement of fundamental knowledge is at the centre and academic freedom a core value. In such a setting there is little incentive to work in very diverse interdisciplinary settings. Scientists work with their (often also evolving) peer groups of like-minded people and manage to solve ever more complex problems. The sheer volume of expert knowledge needed to advance to the next level makes it less likely to remain an academic specialist. As a consequence, over the last two centuries the number of disciplines for which we have faculties has gradually increased. Most current university presidents would argue that faculties are organised around disciplines. In such a system, the competition for internal resources provides few incentives to work across faculty lines.

However, the situation can change if universities are asked to find solutions to address specific challenges facing their societies. Medical faculties are often combined with university hospitals where research on the fundamental understanding and provision of health services go hand in hand. An instructive historical example played out at the beginning of the 20th century when devastating famines and rapid population growth challenged societal cohesion and economic progress for most European nations. Their leading 'knowledge institutions' were called upon by the respective governments to use science and innovation to increase resilient food production. Many universities responded by establishing a new faculty of Agricultural Sciences, bringing existing expertise together. Even today these faculties are known for their interdisciplinary approach combining biology, ecology, animal medicine, chemistry, engineering and economic science. Collectively they helped to transition the ineffective and vulnerable small-scale farms to modern high-performance agriculture and food production industries. Very often progress was made by combining perspectives of practical knowledge with fundamental systems understanding and engineering – a stakeholder-driven transdisciplinary approach.

How to best address our current climate, biodiversity and sustainability crisis? Do we hear a call to arms for university systems to urgently provide solutions? And how many university presidents have established a transdisciplinary sustainability faculty? Most universities choose to compete in highly disciplinary rankings, need economic success and are seemingly less involved in global problem solving. In 2015, the world leaders, however, established the 2030 Agenda for Sustainable Development. Despite 17 Sustainable Development Goals, they provide a coherent, integrated and wholistic frame putting human dignity and prosperity at the centre. How are our knowledge systems responding? For example, *Times Higher Education* releases annual Impact Rankings[2] to assess universities against their pledges to implement SDGs. None of the richest universities leads the rankings, and unfortunately few African universities can be found in the top 100.

I will end with a reflection on the breathtaking advances in science over the last 100 years. The rapid growth in knowledge and technology has led to spectacular increases in energy and food availability, health services, mobility, urbanisation and global trade. However, many of those technologies have very significant side effects and often provide only short-term gains. For example, most of our energy production produces climate changing CO_2 emissions. Waste is produced at staggering levels and pollutes the environment, for example with long-lived plastics or toxic aerosols. The rapid development is fueled by an economic system that incentivises short-term

growth and benefits, while ignoring long-term negative side effects. This is in stark contrast to value systems of indigenous cultures, which have established rules and procedures that have allowed them to be successful over many generations. How can we relearn to put long-term human prosperity and equity in the centre? Do we critically review technological advances? And how can we best assemble the global, multifaceted knowledge needed to get humanity back on a sustainable development trajectory? Working across disciplines, cultures and societies might hold the key to co-design our future. This is particularly urgent for Africa, as it is projected to become the only continent with dramatic population growth in the next 50 years. It is my wish that transdisciplinary African solutions can be found once again to address the upcoming challenges.

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DATES:
Received: 07 Nov. 2021
Revised: 04 Oct. 2022
Accepted: 06 Oct. 2022
Published: 31 Oct. 2022

HOW TO CITE:
Green L. Paradigm shifts for a planetary emergency: Towards an anthropocenography for urban coastal research at False Bay, Cape Town, South Africa. S Afr J Sci. 2022;118(Special issue: Radical Reason), Art. #12552. https://doi.org/10.17159/sajs.2022/12552

ARTICLE INCLUDES:
☒ Peer review
☒ Supplementary material

DATA AVAILABILITY:
☐ Open data set
☒ All data included
☐ On request from author(s)
☐ Not available
☐ Not applicable

EDITOR:
Leslie Swartz

KEYWORDS:
transdisciplinarity, False Bay, contamination, environmental humanities, environmental social sciences, urban ocean, Anthropocene

FUNDING:
None

Paradigm shifts for a planetary emergency: Towards an anthropocenography for urban coastal research at False Bay, Cape Town, South Africa

Reflecting on a recent three-decade review of the social-ecological sciences of False Bay in Cape Town that was co-authored by 32 South African based scientists, this essay draws on current Anthropocene scholarship in the environmental humanities and social sciences to suggest four approaches to strengthening transdisciplinarity engagement between social and natural sciences. First, the material flows between the fields categorised as 'nature' and 'society' is suggested as an alternative empirical base for integrative transdisciplinary research, building on emergent transdisciplinary fields including industrial ecology, biogeochemical sciences, circular economics and critical zone scholarship. Second, a humanities-informed conversation in South African scholarship invites discussion as to whether and how the conceptual categories of nature and society remain empirically useful, given the evidence in Anthropocene stratigraphy that human living is terra-forming. Third, humanities scholarship is vital for the scholarly assessment of historical and contemporary data sets and scientific publications. Fourth, the theorisation of 'social systems', 'the human', 'society', and 'ecosystem services' in the social-ecological approaches represented in the review, create a barrier for social scientists to take up invitations to transdisciplinary research partnerships. The above concerns, taken together, frame an alternative approach to transdisciplinary research that is tentatively suggested as an 'anthropocenography': a research paradigm based on material flows in the Anthropocene.

Significance:

Innovations in transdisciplinary research that attend to material flows are evident in multiple emerging fields that address the Anthropocene, including biogeosciences, industrial ecology, urban metabolism, circular economies, and critical zone sciences. Responding to a 30-year review of the sciences of False Bay, I argue that these new research fields, which encompass earth sciences, biosciences and applied sciences, offer generative linkages to emerging scholarship in environmental social sciences and humanities that also attend to material flows. Linking social and natural sciences via material flows is therefore suggested as a generative approach to transdisciplinarity.

Introduction

'What you see, blocks your sight', veteran journalist Khaba Mkhize used to teach fellow journalists who were covering complex conflicts in South Africa in the 1990s.[1] In studying the scientific review paper titled 'A synthesis of three decades of socio-ecological change in False Bay, South Africa: Setting the scene for multidisciplinary research and management' by Pfaff et al.[2] (henceforth: *'Synthesis'*), Mkhize's caution comes to mind. A chain of questions arises: What is being seen? What is not being seen? Has all that counts, been counted?

The *Synthesis* is a landmark in South African transdisciplinary efforts to address multi-decadal harms that have accrued in False Bay, in its particular expression of the planetary emergency comprising global heating, extinction risks, contamination, and extractivism. As does any work of scientific review, the *Synthesis* represents one of the most important forms of scholarly endeavour as it reflects back on prior research to take stock and reset research and funding agendas.

Published in the *Elementa: Sciences of the Anthropocene* in July 2019, the *Synthesis* was co-authored by 32 South Africa focused marine biologists, oceanographers, conservationists, geographers and geologists in collaboration with provincial and city officials. It cites 310 papers as well as 17 unpublished studies of False Bay in the three decades since white supremacy began to be undone. At the time of writing, the *Synthesis* had achieved a credible 25 citations in the three years since its publication.

As a social scientist, however, the dearth of social sciences and humanities in the article evidences an uncomfortably familiar fault line in South African scholarship between the social and natural sciences on environmental concepts and governance. Not a single social science journal article about Cape Town, or the Cape Flats, or the environmental challenges thrown up by apartheid's urban planning, appears in the bibliography. Apartheid spatial planning set up the Cape Flats Wastewater Treatment Works on the sand dunes at the edge of False Bay, for example, and did not line its settlement ponds that are sited atop the major recharge zone of the Cape Flats Aquifer which in turn discharges vast quantities of water to the ocean.[3] The siting of the Treatment Works in the area designated for people of colour, on the dunes close to False Bay's northern edge, overlooks a crucial element of the urban-marine ecology under study. Thus, while institutionalised racism is congruent with many of the Anthropocene harms that the authors set out to describe, it receives no mention.

As for social theory, the sole social science theorist to be cited is Frances Fukuyama[4], author of the 'triumph of liberalism' theory that supposes the present era to be at the end of social historical struggle. His argument, and its iteration in neoliberal concepts that inform the key social analytics of the framing narrative, has been the focus of heavy criticism from the social sciences. In the context of struggles against neoliberal governance in South Africa

in general and the Western Cape in particular, the concepts invoked do not offer a neutral or natural account of society or history.

This article offers a 'review of a review', in the hope that the fault line between social and natural sciences in environmental governance may be mediated, and chasms bridged. In developing this essay, I have four purposes. First, I hope to offer the wider bioscience community an insight as to where, how and why an engagement with contemporary environmental social sciences and humanities methods could offer generative re-framings of the paradigms currently directing environmental governance research in False Bay, and by implication, other contexts in South Africa too. A 'material humanities', I will argue, offers a viable and empirical research approach to the material flows between the physical spaces that are perceived to be separate because they are categorised as 'nature' and 'society'. The methods of that material humanities are those of 'muddy boots': walking and talking to observe and listen; track and trace – and both triangulate these findings with data sets and use them to frame new research questions based on local insights.

Second, I invite a humanities-informed conversation in South African scholarship about whether and how the categories of nature and society remain useful, given the evidence in Anthropocene stratigraphy that human living is terra-forming. Again the proposed method is empirical: follow the matter, regardless of whether it is in a space characterised as 'natural' or 'social'.

Third, I draw the attention of colleagues in the natural sciences to the importance of contemporary social sciences and humanities of reading data archives in the context of their production. Science studies, and histories of science, offer vitally important approaches to the evaluation of data and research.

Fourth, I draw the above together to point to the limitations attending the conceptualisation of nature as an ecosystem service, and society as a system. Both ideas are prominent in the *Synthesis*, and in my view, while these approaches may have rhetorical value in seeking buy-in from governing officials whose paradigm is neoliberal, they are not empirically useful in comprehending flows and processes on the ground. Earth processes do not function in dollar values. A paradigm shift in environmental governance sciences is therefore warranted.

The purpose of attending to the above concerns is not to attack environmental allies in the struggle to address the planetary emergency, but to try to identify ways to improve scholarly dialogue so that we may together address the immense challenges of the Anthropocene. The argument begins with an overview of the history of disciplinary divides; then moves to respond to the *Synthesis* from the perspective of contemporary environmental social science and humanities. I conclude with a summary of the proposal to shift transdisciplinary environmental governance sciences to focus on the material flows and processes that characterise the Anthropocene, and suggest that an integration of multiple emergent transdisciplinarities of material flows and exchanges may take form in a field that, following Eduardo Viveiros de Castro, could be usefully indexed as an 'Anthropocenography'.[5]

The challenge for science of a planetary emergency: Tackling disciplinary divides

The idea that humanity is separate from nature is a foundational one in modernist thought, stemming from Europe in the 1600s when Rene Descartes offered the Church his *Discourse on Method*.[6] A peace treaty that attempted mitigation of the risks he and others faced to life and limb when accused by the Church of heresy, Descartes' *Discourse on Method* is a deeply theological text. It proposes a science of observable nature that would provide insight into the mind of God, while the Church should attend to the inobservables, that is, matters of theology and spirit. Long critiqued for separating body from mind, *Discourse on Method* did so to try to keep scientists' heads on their own shoulders. Its proposals were not enough to prevent Descartes from dying in exile, however, but it did provide the conceptual shift necessary to enable Descartes' successors to work in greater freedom as more and more researchers sought to persuade the powerful that what counts could be separated from what was counted. What could be valued therefore came to be the concern of the Church, separated from what was to be considered as facts known by observational science. Following from this, culture came to be considered separately from nature; subject from object. That this bifurcation of scholarly attention was a political struggle for survival, not a fact of nature, is mostly forgotten now, and the separation of natural and social sciences is hard-wired into universities globally.

Now, amid the conditions described by earth scientists as 'the Anthropocene' geological era[7,8], which was suggested by Eugene F. Stoermer and Paul Crutzen[9], universities and researchers alike are increasingly aware of the need to work across disciplinary divides, because clearly if human actions are affecting planetary processes, their separate study is neither intellectually tenable nor politically useful in the task of addressing the planetary crisis. While '**ecosystem services**' has come to be a dominant approach in environmental governance sciences in recent decades as an attempt to link political values to scientific fact, its account of what counts, and its theorisation of nature, person, system and society is deeply problematic for many in the social sciences. Happily, it is not the only approach to transdisciplinarity, and a number of vital fields have emerged in the past decade that, in their focus on material flows, are more amenable to social science and humanities research partnerships.

Among these, the **biogeosciences**[10] respond to the realisation that life processes themselves are terra-forming, and that the planetary conditions that support life are bolstered by life. A linkage of soils sciences, geohydrology and biogeosciences led to the supra-integrative field that has come to be known as **critical zone sciences**[11,12] that offer a means to study the relations that make for habitability in the approximately 10-km-wide life-supporting zone at any point on the earth's surface between aquifer and cloud. In geohydrology, **hydrosocial sciences**[13] emerged to rethink standard hydrological models in anthropogenic landscapes. The latter suggests the possibility for the biogeosciences to begin framing a biogeosocial science.

Anthrome studies[14] offer a typology of human-altered landscapes. At the interface of engineering, planning and social sciences, the fields of **industrial ecology**[15] and **urban metabolism**[16,17] offer ways to conceptualise interlinked effects of urban planning decisions on **urban ecology**[18].

In the social sciences and humanities, the notion of the '**technosphere**'[19] offers a provocation for the integration of material and infrastructural worlds with earth sciences, and where geologists have begun framing typologies of **anthropogenic landscape transformations**[7] (including the formation of anthropic rock), media scholars have begun to speak of **media geologies**[20] to account for the changing stratigraphy of rare earths and other heavy metals used in computers, cellphones, silicone chips, etc. That body of work integrates well with a social science approach to the Anthropocene that prefers the term **Capitalocene**[21], although industry in general offers a more comprehensive diagnostic for the planetary emergency. Historians who attend to the landscape transformations associated with slavery and early capitalism offer the term '**Plantationocene**'.[22]

Landscape histories have been taken forward in the environmental humanities and social sciences via a corpus of work that can broadly be characterised as 'the **new materialism**' in the humanities[23], spanning **environmental justice**[24] research on toxicity (see in particular Rob Nixon's *Slow Violence and the Environmentalism of the Poor*[25]) and alternatives to the **militarisation of conservation**[26]. In these bodies of work, Achille Mbembe's work on the concept of 'necropolitics'[27] – a politics of negation of the human subject – has been taken up by human geographers to describe '**necropolitical geologies**'[28]. That work in turn links to a rich body of work in the field of **forensic architecture**[29] that tracks and traces toxins in urban design and zones of warfare. In the related body of work on **decolonial ecology**[30], the environmental struggles of our time are rooted in the objectifications of the world that underlie racism, sexism, and alienation from the earth[31]. Without engaging the legacies of objectified nature, decolonial ecologists argue, environmental governance scholarship will fail to achieve the goal of unmaking the Anthropocene.

For philosopher Bernard Stiegler, the goal of unmaking the Anthropocene requires scholarship on knowledge that speaks to the larger global struggles over science, in the age of for-hire consultancies and market-driven science.[32] Stiegler calls for knowledge-producers to recognise that part of the crisis of the Anthropocene is in the production of anti-knowledge, such as climate denialism, or contaminant denialism. The negation of the Anthropocene, he argues, becomes possible when knowledge is fragmented and reduced to the enumerative, without a sense of purpose or goal. What counts, is not always what is counted. Stiegler's question is this: How can science be transformed to address what counts in the task of addressing the planetary emergency, amid the abuse of science and scientific authority to counter truths that discomfit the powerful?

In the spirit of a generative, urgent and transdisciplinary engagement that draws on these emergent transdisciplinarities, I offer a brief overview of the *Synthesis*, section by section, suggesting dialogues with the above literatures in ways that might foster the integrative approach needed to manage this vitally important Cape Town bay which is currently in crisis amid long-standing efforts by municipal coastal authorities to conceal the extent of its contamination. Knitted into this critique is an invitation to social sciences to engage with environmental governance scholarship in the spirit of generative disagreement between dissenting allies, and an invitation to colleagues in the applied and basic sciences, to take seriously the concerns of the social sciences and humanities, and the insights they bring to concepts, methods and approaches. My hope is that what follows offers the resources for transformative transdisciplinary research.

'A Synthesis of Three Decades of Socio-Ecological Change in False Bay': A critique

The goal of the *Synthesis* is set out in the opening lines of its abstract:

> *Over the past three decades, marine resource management has shifted conceptually from top-down sectoral approaches towards the more systems-oriented multi-stakeholder frameworks of integrated coastal management and ecosystem-based conservation. However, the successful implementation of such frameworks is commonly hindered by a lack of cross-disciplinary knowledge transfer, especially between natural and social sciences. This review represents a holistic synthesis of three decades of change in the oceanography, biology and human dimension of False Bay, South Africa.*[2]

Notwithstanding the goal of providing an 'holistic synthesis' that includes the 'human dimension' of False Bay, absent is published research on the social struggles on the Cape Flats that materially affect False Bay, including ongoing sanitation struggles[33]; the court battles to protect farmland and the aquifer on which food production depends[34]; or the use of legal instruments by provincial government against the City Council (and private wastewater treatment plant operators) to curtail river pollution[35]. Multiple unmentioned studies have been published on urban hunger in the Cape Flats[36] and the rise of corporate supermarkets that have displaced spazas and family-owned grocery stores in formerly black areas, aggravating plastic pollution and hunger and therefore also increasing pressure on marine protected areas[37]. Apartheid shacklands and dormitories of Khayelitsha, Vrygrond, Lavender Hill, Lotus River and Capricorn that abut False Bay[38] fostered the gangs that now aggravate abalone extinctions risks[39]. A slow violence of pollution[25] along these rivers from inadequate sewage treatment plants and failing sewer pump stations, affects the health of many, particularly when *E. coli* counts are artificially lowered by dosing sewage spills with chlorine, a volatile element that reacts with other compounds in polluted water, leading to complaints of chronic respiratory conditions for those who live along these rivers. Some of these struggles have received wide print, radio and television coverage including on a national investigative journalism television show that led to a subsequent battle at the Broadcasting Complaints Commission, which the City of Cape Town lodged, but lost.[40]

The keywords that anchor the paper's engagement with the 'social' include 'population'; 'tourism'; 'development'; 'economy'; 'social goals' and 'social systems'. The words 'race' and 'racism' do not appear. 'Apartheid' appears once, as does 'inequality'. 'Poverty' appears three times, while 'water sport' appears four times and 'tourism' receives 18 in-text mentions including a dedicated table as a supplemental file. A crucial omission is an engagement with social science conceptual literature that critiques the theorisation of nature as 'ecosystem services'.[41,42]

Where human population receives mention (nine times, in each case referring to 'over-population'), the argument invokes familiar *moralist* causal chains such as pollution, over-fishing and illegal fishing, or lack of care for the environment[2] without regard to the *structural* causal chains linked to extreme income inequalities, including extractive profit-taking in fisheries and the property sector, or the consequences of privatising services (such as the privatised management of the Zandvliet Wastewater Treatment Works on the Kuils River) in which profits to shareholders abroad increase the costs of basic services. So too, privatisation of treatment works upgrades have affected the environment: for over a decade, several major civil engineering companies fought court battles over who ought to have been awarded the tender for the upgrade of the sewage works at Zandvliet. This series of court battles affected the health and well-being of people, rivers and ocean, and, unchecked by authorities, it elevated companies' legal rights to contest a tender over citizens' constitutional rights to a clean environment.[40]

It is noteworthy that the integrative field of 'biogeochemistry' is foregrounded throughout the paper. As the study of the metabolic and mutually transformative interactions of biosphere, atmosphere, hydrosphere and lithosphere[43], biogeochemistry offers a paradigm-shifting analytical framework, and its presence in the paper gestures towards possibilities for unifying the natural and applied sciences with the social sciences in the management of False Bay via the emerging transdisciplinarities listed above.

The discussion below follows the structure of the paper, in which the first three sections report on findings in the natural sciences under these headings: 'Geology and physical oceanography of False Bay'; 'Biogeochemical oceanography of False Bay'; 'Ecosystems and biota of False Bay'; and 'The human dimension of False Bay'.

Geology and physical oceanography of False Bay

The 'Geology and physical oceanography' section tells of the fascinating history and structure of the bay in geological time, but surprisingly does not bring into view its contemporary geological transformation: perhaps reflecting the assumption that geology occurred in the past. Emerging global transdisciplinary literatures on **neogeomorphology**[44] would assist in attention to this in four ways.

First, transport and residential infrastructure that are characterised by hard-surfacing using anthropogenic rocks such as concrete and tar that specifically introduce impermeability into geological landscapes, changing biogeochemical processes at the interfaces of solids and liquids (colloids[45]) and airborne particles (dust, mist and smoke). These geological changes of the Bay are occurring in the present.

Second, extractivism such as the extensive sand dune mining on the Cape Flats at Macassar, on the northern edge of False Bay, is dramatically changing the geohydrology of the urban coastal edge. Dune mining is warned against by the authors of a report commissioned by the City[46] and is contrary to established international practice that seeks to work with natural landforms to protect cities against sea level rise[47].

Third, disposal in the coastal zone warrants scholarly attention and possible intervention. The wastewater treatment works near Strandfontein introduce biogeochemical changes to the False Bay coastal region, as does the two-decades-old waste dump known as Capricorn, both of which are situated one to two kilometres from the littoral zone on the primary recharge zone of the Cape Flats aquifer, which itself discharges water with dissolved chemicals and particulate matter to False Bay.[48] The municipal protocols at the Capricorn site do not compel the separation of e-waste

from any other waste, and the pollutants and heavy metals in technologies like millions of VHS tapes, NiCad batteries, CRT computer screens, low-energy CFL lightbulbs and various plastics, for example, degrade and leach into the wider environment along with many other toxins identified in the industrial ecology and environmental chemistry literature.[20]

Fourth, histories of infrastructure invite conversations on the use of the sea as a disposal site by both the municipality and the state.[49,50] The already-mentioned unlined sewage settlement ponds are a case in point, via which household, pharmaceutical and industrial toxins have leached into the aquifer since 1956. False Bay was used by the apartheid state for the disposal of military ordnance (notably at the site known by divers as 'Ammo Reef' near Boulders Beach), reflecting the Anthropocene-generating concept that the ocean constitutes an extra-terrestrial 'nowhere', outside of feedback loops to society. The knowledge that pollutants like toxins, microplastics and chemicals of emerging concern travel long-range with ocean evaporants, ocean circulation and migrating fish, is established consensus in the Stockholm Convention[51], and therefore compels problem-focused, planetary-facing research questions from Cape Town that exceed the limits of any single established discipline in the natural or social sciences.

Biogeochemical oceanography of False Bay

The section on 'Biogeochemical oceanography' is assessed in four parts. First in focus are nutrients (offshore, nearshore and terrestrial inputs, and atmospheric inputs); second, water quality and pollution; third, chlorophyll; and fourth, algal blooms.

Given the intensity of struggles over clean water and sanitation in many areas bordering False Bay, it is surprising that the authors do not note their existence in their framing narrative. Pollutants are both microbial and chemical, with the former contributing to algal blooms in inland *vleis* (lakes) on Cape Town's Cape Flats, and in some cases even teenagers in various communities report the disappearance of frogs, toads, flamingoes, otters, crabs and fish that they remember from their childhood years. The pollution has become so severe, and municipal responses so poor, that on three occasions the political party in charge of the province, the centre-right Democratic Alliance, served its own party's City Council with orders by the Green Scorpions, its environmental investigations directorate, to clean up or face arrests of senior executives responsible for pollution.[35]

The impression created, wilfully or otherwise, is that the authors are hesitant to criticise City officials who have been responsible for the quality of sea water for more than the past decade. In the section on water quality and pollution, a 2012 study is cited, which found that

> *approximately 30% of the City of Cape Town's 49 coastal sampling points ... did not comply with intestinal Enterococci-based human health criteria for intermediate-contact recreation...* [T]*he ... highest levels of contamination* [were] *along the northern shoreline between Muizenberg and Strand, with localized contamination hot spots, such as Kalk Bay Harbor. The main sources of contamination comprised leaking sewers and contaminated stormwater, often from poorly serviced areas.* (§3.2).

Struggles for municipal sanitation are not mentioned in the 'governance' section later in *Synthesis*. Attributing the problem to 'poorly serviced areas' displaces responsibility from the municipality to local areas.

Also not mentioned is that the City had kept seawater quality data secret from the public for several years, only releasing local results on demand to Ratepayer Associations subject to an individual's signature on a non-disclosure agreement. This has effectively impeded independent scientific verification of the results, and put civic-minded volunteers at risk of a lawsuit for doing their neighbourly duty. It was fallacious for the authors to claim in this 2019 article, as they do in the conclusion (§6.1.1), that 'Routine, *publicly available* in-situ measurements are currently recorded for wind, coastal temperature, rainfall, evaporation, river flow *and water quality indicators*' (emphasis added). Coastal pollution figures were released finally in 2021, but only in rolling 12-month averages that may be useful for the purpose of marketing Cape Town as a tourist destination, but have virtually zero scientific value.[52] Predictive modelling of coastal pollution is not available to the Cape Town public, contrary to international best practice on beach management.

It is difficult to understand why the authors do not note questions about the availability, usability or veracity of the seawater quality results provided by the City, given that both False Bay desalination plants were having difficulty functioning in the period during which this article was being developed (2018–2019), as per the data sourced from the City of Cape Town's website for the period May to November 2018 and provided as supplementary material. Further, in a widely publicised dispute announced in April 2019 and its subsequent mediation, one of the private desalination contractors (in Table Bay) indicated that its case against the City rested on incorrect seawater quality data that had been supplied, as their results indicated that seawater quality was up to 400% more polluted than the maximum indicated by the City's coastal management division. While that occurred in Table Bay and not False Bay, the questions about the veracity and unavailability of seawater quality data from the City are as relevant to the failure of the two desalination plants in False Bay whose records demonstrate lengthy 'downtime' in warmer months, and whose early closures, before contract end dates, were also subject to non-disclosure agreements. Given the unavailability to scientists of coastal water quality data paid for by the public, it is problematic, if not unethical, for one of the co-authors who is employed by the City in its coastal management division and who therefore has access to both the undisclosed data and the discussions about keeping them secret, to not have declared a conflict of interest in the publication. Additional data that were available to the City coastal management scientists on this team would have been available from the desalination plants at Monwabisi and Strandfontein during the period of the research, which would have provided unprecedented access to seawater quality on a daily basis: the quality of which was responsible for inoperability of the plants for substantial periods of time, particularly when waters had warmed. It is difficult to understand why data accessible to City scientists on this team that was focused on critical questions regarding False Bay seawater quality was not disclosed to this scientific community, nor to the public, and that its secrecy was not discussed. The South African Constitution guarantees freedom of information and freedom of scientific research, yet these guarantees were being actively undermined by officials within City Coastal Management at the time of writing the *Synthesis*, who later elected to make data available only in meaningless annual rolling averages.

Disconcerting questions also arise in §3.1.2, titled 'Nearshore nutrient distributions and terrestrial inputs'. The *Synthesis* omits research in False Bay by environmental chemists Cecilia Ojemaye and Leslie Petrik whose studies of chemicals of emerging concern in fish caught in False Bay were heavily contested by City officials on the grounds that the findings would "damage fishers' livelihoods"[53]. The Ojemaye-Petrik paper was published in May 2019, with extensive media coverage, two months before the date given by the journal on which the final version of *Synthesis* was accepted. As *Synthesis* includes reports from 17 unpublished studies, and two of the co-researchers on Petrik's funded research team are co-authors on this paper, the exclusion of this research is difficult to attribute to oversight rather than choice.

Another surprising omission is the presence of the Capricorn Waste Dump and the Cape Flats Wastewater Treatment Works, neither of which receive focused mention although they abut the False Bay coast. *Synthesis* notes that metal concentrations are most pronounced between Muizenberg and Strand, precisely where these infrastructures are located. Research on contaminants in rivers flowing into Table Bay is excluded.[54]

'Metal concentrations in False Bay are influenced by the meteorology of the area, coastal topography, geomorphology, and hydrodynamics', the author of this section asserts, followed by a sentence that is at best obfuscatory: 'These environmental factors' – the language renders them natural, not culpable – 'also influence the extent' – the grammar occludes

governance responsibilities or policy problems – 'of metal contamination caused by anthropogenic activities' – the word choice evades municipal urban planning decisions.

Passive grammars are discouraged in the empirical social sciences precisely because they elide causality and slip into tautology – as in this circular argument which contends that anthropogenic contaminants are explained by their being anthropogenic. The section writer concludes: 'Recent research has confirmed that concentrations of metals such as cadmium, lead, and manganese in Western Cape marine ecosystems have increased since 1985 and are influenced by localized sources' and concedes, further, that there is also 'evidence of bioaccumulation of metals such as arsenic, molybdenum, cadmium, copper and zinc in mussels (*M. galloprovincialis*) in False Bay'[2(p.10)]. Yet, against this evidence, the writers simply note that 'Further research needs to focus on determining the source of contaminants to False Bay', making no mention of the waste dump that has not sorted e-waste from household waste; nor mentioning the sewage treatment works that sit directly on the primary recharge zone of the Cape Flats aquifer which the *Synthesis* notes contributes vast quantities of water into the Bay; nor mentioning the plumes of dust from the Capricorn Waste Dump that cover the Cape Flats in southerly summer winds, or the northerly winds that disperse waste dump dust directly into the Bay in winter, or the leachate from the aboveground waste dump into a river that flows into the ocean after travelling mere metres from the raised landfill site.

These omissions of on-the-ground relations speak to problems of concept, method and approach that would be remedied by engagement with a range of methodological and conceptual insights from the social sciences and humanities.

In regard to methods: qualitative social sciences conducted by walking, talking and observing, have the potential to frame research questions that are not available to studies of cartographies, policy documents and species. Second, work such as that conducted by Eyal Weizman and colleagues under the rubric of 'forensic architecture'[55], would surface ways in which movements of toxins affect publics; thus pollution studies warrant on-the-ground community engagement to identify gaps in official knowledge, and struggles over habitability[56].

In regard to concepts, the conceptualisation of space in terms of categories has evidently hindered the capacity to see material flows, because urban infrastructure ('society') is not conceptualised as part of the marine environment ('nature'). Second, in the absence of attention to flows of mud, dust, and mist, there is an evident confusion of states of matter – solids, liquid, and gas – with matters of state. Environmental governance is compromised when its research is overly focused on the categorisation of natural states of land and water (sea, river, land) without adequate regard to flows of the in-between states of matter, such as colloids, dust and mist that traverse boundaries established for the purpose of governance. The very ungovernability of mobile, in-between states of matter is the reason for environmental struggles over contaminants.[57] Property boundaries, legal categorisations, states of matter, and landform types have all hindered the researchers' ability to see linkages that are in plain sight – and evident to those who live in the area. Muddy boots are necessities for regional Anthropocene studies.

Ecosystems and biota of False Bay

This section of the *Synthesis* focuses on ecosystem types: estuaries; sandy beaches; rocky shores; and invasive species; birds; and megafauna (sharks, seals, and cetaceans). The fall in the numbers of breeding populations reported in the studies that are reviewed, is the canary-in-the-coalmine for the conditions of habitability in the Cape Town region, reflecting the wider experience of 'the sixth great extinction'[58] that characterises the Anthropocene as one of the most destructive to biodiversity in our planet's history. The overview is comprehensive and of vital importance. The question, implicitly, is how to build environmental citizenship in a country where the vast majority of citizens, for over a hundred years, have been cut off from land and ecology.

Research on fishers' care for the ocean and marine species, offers routes to fostering fishers' care for species. This is important given that the fisheries quota allocations reduce the relation of fishers and species to the extraction of biomass. The struggles of Cape Flats communities to protect wetlands, rivers and aquifers, in Princess Vlei, Sandvlei and the Phillippi Horticultural Area, offer insights into the kinds of environmentalism that is emerging in communities that were dispossessed of ecological lives by the apartheid state.

Contemporary social science extinctions literature[59] provides much discussion on relations of care for the material flows around circles of human activity, and their impact on water[60], and on soil[61]. Anna Tsing et al.'s *Arts of Living on a Damaged Planet*[62] yields a rich vein of enquiry in relationships with species, building on Tsing's earlier work on 'multi-species relations' as a sub-field of environmental anthropology[63]. Literatures on loss of species engage the affective dimensions of living in the age of extinctions, exploration of which opens up possibilities for building public cultures of empathy and fellow-feeling for animals.[64] Feminist ecopolitics offers strategies for care that differ from the implied requirement for relations of command-and-control between sciences and publics; this thinking informs, for example, the 'WaterStories' website that offers publics strategies for living with care for the seas, rivers and *vleis* of Cape Town.[65]

Shared by all these approaches is a refiguring of the theory of the human in which people constitute a class of beings that live *de facto* against nature. Building an ecological politics in Cape Town based on care for species, refigures the theory of the human and offers transformative and generative routes to reconnecting people with ecology – and planet.

The human dimension of False Bay

'Human dimensions of False Bay' is the focus of the fourth part of the *Synthesis*, and it reflects many years of work in the fisheries justice sector led by Merle Sowman[66] and, more recently, Serge Raemakers[67]. The section offers an overview of policies and laws and protocols for fisheries governance, and appropriately points out the difficulties of environmental governance when the Bay is not under a single authority. It then notes various initiatives for enforcement, and lists actors in civil society. Nonetheless, while the focus of work in fisheries management has been on the issue of governance, the paradigm that holds there to be a 'social system' that constitutes a 'human dimension' of a 'social-ecological system' presents significant difficulties for social scientists to come aboard as a partner in environmental governance science projects. Environmental social science and humanities approaches do not work with 'systems theory' because 'social systems' are ideals rather than practices that are empirically observable. For that reason, research on 'social systems' is rarely a focus in qualitative social science journals. Social-ecological systems theory, with its focus on idealised governance and organisational systems, makes it difficult to bring into view the politics of dissent that affect False Bay such as the ongoing struggle of ratepayers against sewage malfunctions in Zandvliet and Kuils River, for example. Social-ecological systems approaches also fail to bring into view the role of engineering, design and infrastructure, or encompass their material flows – as is evidenced in the *Synthesis* where discussion on infrastructure in False Bay is missing in action.

The section on 'Education and awareness' focuses exclusively on the education of tourists via ecotourism and elite sports in formerly white areas where higher property prices are 'generating income in the real estate and financial sectors'[2(p.28)]. Excluded are environmental advocacy groups that are active in the areas that the apartheid state designated for 'Blacks' and 'Coloureds' on the Cape Flats. Scholarship on the lack of sanitation in Khayelitsha in critical social sciences and urban studies literature[33], and the well-publicised struggles of communities along the Kuils River downstream of the Zandvliet Wastewater Treatment Works, are also absent although they directly affect water quality in False Bay[40].

The section on 'Human-wildlife conflicts' identifies the entanglement of cetaceans in fishing gear, antagonism between fishers and seals over catches, and shark attacks. The advice offered here, viz 'reducing the spatial overlap in time and space'[2(p.30)] between animals and people is surprising given that this is an urban bay, and that encouraging care for species implies greater awareness – and therefore more exposure to

different species. The absence of critique of the human-wildlife conflicts paradigm is inexplicable given the presumption that the human-wildlife conflicts approach constructs as 'normal' a conflictual relationship between animals and people, and it relies on maintaining the paradigm of 'war' that it claims to identify and mediate.[68] This anthropocentric account of wildlife conflicts would benefit from engagement with equivalent work in the environmental humanities, in several respects. Non-behaviourist approaches attend to animal experience of their bodily presence in the world. The award-winning work of ethological philosopher Vinciane Despret, for example, discusses the importance of reframing animal studies via attention to animals' experiences and responses.[69] With that approach, questions arise as to whether contamination in False Bay may have contributed to the disappearance of several hundred great white sharks, particularly given that these apex predators evidenced high levels of bioaccumulated pollutants in a 2016 study in a nearby bay.[70]

Finally: a theory of marine governance based on desire for habitability and safety undergirds the work led by *Synthesis* co-author Serge Raemakers in the Abalobi project.[67] The approach, co-developed with fishers, remains one of the most promising co-management initiatives in South Africa. An approach to environmental governance that is based on the work of Abalobi in respect of fishers' desire for habitability, is likely to be far more effective in building a people's environmentalism than a theory of environmental governance based on control that allies scientists with state violence, against the people, in the name of 'getting compliance with science' through one-way education and policing. That the latter approach to environmental sustainability is politically unsustainable, is amply demonstrated in the recent history of South African fisheries governance.

Conclusion: A paradigm refresh

What would a 'paradigm refresh' look like, that accounts for False Bay's Anthropocene? The aforementioned discussion has suggested a number of approaches that may yield a more generative discussion between the social and natural sciences on environmental governance research than the approaches represented in the *Synthesis.*

First, the material flows between the fields categorised as 'nature' and 'society' is suggested as an alternative empirical base for integrative transdisciplinary research, building on emergent transdisciplinary fields including industrial ecology, biogeochemical sciences, circular economics, urban ecology, and critical zone scholarship.

Second, a humanities-informed conversation in South African scholarship invites discussion as to where, whether and how the conceptual categories of nature and society remain empirically useful, given the evidence in Anthropocene stratigraphy that human living is terra-forming.

Third, humanities scholarship on reading evidence is necessary for scholarly reviews of data sets and published scientific literature, as it provides an approach that encompasses contexts of production of knowledge, and attends the question of how particular concerns – and lacunae – take form.

Fourth, the theorisation of the social via terms like 'social systems' and 'ecosystem services' in the social-ecological approaches represented in the review, constitutes a barrier for social scientists to take up invitations to research partnerships. So too, the theorisation of the human as inherently at war with nature, is a flawed diagnostic that derives from a specific ideological context, not from nature itself. To theorise South Africans' environmentalism or lack thereof, the place to begin is the history of land dispossession. Research and policy that is primarily oriented towards servicing elite sports and high-value tourism will never build the broad-based environmental public that will care for the waters, shorelines and species of False Bay. A research paradigm based on material flows at the marine urban edge, closely tied to environmental justice amid the ongoing harms of apartheid design and infrastructure, offers a viable basis for transdisciplinary research in the Anthropocene. Linking the multiple material-flows-based approaches to integrative scholarship that have emerged in the equivalent period that is under discussion in the 30-year *Synthesis,* would link current advances in biogeosciences to encompass material flows including those emanating from human activity. A 'bio-geo-social science' or 'material humanities' or 'critical zone social science' could be names for a new field that spans these multiple transdisciplinarities; as too might the term proposed by Viveiros de Castro: 'Anthropocenography' – in which the noun is neither science nor humanities. Whatever its name, research endeavours that link emerging transdisciplinary attention to flows in and through geologies, bodies, infrastructures, water and atmosphere, would offer a gathering space for natural and social sciences, engineering, public health, law and economics, in dialogue with the humanities and its specialist skills in the production of knowledge, concepts and narrative.[71]

An integrative biogeosocial science of Anthropocene harms will be keenly attentive to the risks attending knowledge production in the era of market-driven science, including the kind of science communication that obscures coastal contamination data in order to market a city as a destination for tourism. Fearless science brings with it the willingness to see beyond that which is already agreed and within view, and does not balk at causing offence to the powerful, or to 'the market'. For this reason it is as crucial for the environmental governance sciences of our time to extricate their structures from tourism marketing concerns, as it was for the founders of the sciences to extricate their practices from the Church in the 1600s. To unmake the Anthropocene we need courageous sciences that address the harms that damage our planet: whether these harms come via infrastructures protected by powerful interests, or via market forces, or Constitution-violating foreclosures of access to information about contamination.

Bio-geo-social environmental governance scholarship will recognise that the building of an environmental public across all sectors of South African society requires acknowledgement that black South Africans have suffered generations of trauma from apartheid and colonial policies that cut off their access to land and ecology. This historical reality requires engagement from environmental sciences across the board if a broad-based environmental public is to be built. From a close research engagement with community organisations and the challenges that they face, a scholarly grounding in lived ecologies will emerge.

Finally: while this critique has focused on the review of research on a single bay offered by a cohort of 32 natural scientists, the invitation to contemporary social scientists in South Africa is implicit, and urgent. Both 'calling in' and 'calling out' are transformational tools. Our work warrants more than a default to the exposé, if we are to build generative engagements with allies in the natural sciences with whom we dissent. Simultaneously, the invitation to natural scientists is to engage deeply with emerging environmental social sciences and humanities literatures in pursuit of habitability amid the planetary challenges that are already with us – and those to come.

Acknowledgements

I am grateful to the late Mike Heyns for his assistance in accessing the City of Cape Town's Strandfontein Desalination Plant water quality data and associated 'downtime' records that are included as supplementary material. I thank Carolyn Marx for explaining the non-disclosure agreements previously required by the City of Cape Town for water quality data released to Ratepayer Associations, and Lance van Sittert for alerting me to the history of munitions dumping in False Bay. I also thank Peter Vale, Crain Soudien and anonymous peer reviewers for valuable responses to earlier versions. Their responses have assisted the 'gear-change' from more traditional social science critique into what I hope now reads as a generative scholarly conversation. Errors, opinions and omissions remain mine.

Competing interests

I have no competing interests to declare.

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