UNISA: College of Law

Law – criminal justice and M-I-T disciplinary research conference.

13 – 15 August 2012

Mount Grace Hotel Conference venue,

Magaliesberg.

Title: Science communication and Transdisciplinarity within an African context

Presenter: Dr Hester du Plessis,

Senior Research Specialist, Head: Science Communication, Research use and Impact Assessment (RIA) unit, Human Sciences Research Council (HSRC).

Fellow: Mapungubwe Institute for Strategic Reflection (MISTRA).

> "We need to take an open and somewhat cruel look at ourselves and the manner
> in which we are shaped by effective-history and tradition – we are always in
> *medias res*: there are no absolute beginnings or endings. Experience is always
> anticipatory and open … We need to overcome our Cartesian Anxiety by learning
> to live without the idea of the 'infinite' intellect, finality and absolute knowledge"
> (Bernstein, 1983:166).

Abstract

There is growing interest amongst researchers and research institutions in the application of multiple disciplinary methods in topics that are of global interest such as climate change and human rights. While multi- and interdisciplinary research are more popularly applied, transdisciplinarity is perceived to be more problematic and less understood. Transdisciplinarity is considered to facilitate epistemological change and to promote the exchange of knowledge amongst academics, governments and society through the activities of science communicators. There are transdisciplinary disciplines of which Philosophy and Science Communication are examples. Philosophy requires an epistemological understanding of all knowledge systems and applies an open and transformative method through a transdisciplinary approach. Science communication, in its own right, follows a transdisciplinary approach within its current 'science in society' paradigm.

This presentation will argue for a transdisciplinary approach to assist researchers with a more comprehensive and nuanced understanding of the complex world we live in. The application of a transdisciplinary theoretical framework within an African context might provide new insights into global topics and open up scope for social transformation and sustainable development.

Background:

The Mapungubwe Institute for Strategic reflection (MISTRA) embarked upon a project with the title: *the concept and application of transdisciplinarity in intellectual discourse and research* in March 2011. As team member I participated in a number of interviews, seminars and workshops on these topics. In addition, I was responsible for writing a chapter as literature review and (so far) looked at two case studies of institutions applying transdisciplinarity; the one being the Sustainable energy Technology and Research (SeTAR) Centre of the Faculty of Science at the University of Johannesburg and the other being the Centre for Transdisciplinarity at the University of Fort Hare. As a third case study we are currently looking at the Centre for Human Rights, Faculty of Law at the University of Pretoria in their application of multi-disciplinary perspectives on human rights.

During this past year we have learnt a number of lessons and made some new discoveries that opened up new possibilities towards a better understanding of the application of a transdisciplinarity approach to research. This presentation will be in part a reflection on the original Transdisciplinary theoretical framework and part a reflection on new possibilities (both theoretical and practical) that opened up with the application of a Transdisciplinary theoretical framework within an African context. Perspectives from philosophy and science communication in application of a transdisciplinary approach will serve the purpose of contextualising the discussion.

Introduction

Reflecting on the original discussions of the *concept and application of transdisciplinarity in intellectual discourse and research* project at MISTRA it is clear that attention was originally focussed on the theories originating from philosophers, social scientists and science historians and philosophers who contributed to the development of a global Transdisciplinary theoretical framework. Within this area of global exploration a range of projections were conceptualised in an effort to normalise the transdisciplinary approach of 'going beyond the disciplines'. Ideas included, on the one hand, a proposed methodology, developed by Basarab Nicolescu (2003), that consists of three axioms – the 'ontological axiom' (level of reality), the 'logical axiom' (the included middle) and the 'epistemological axiom' (complexity).

On the other hand, Edgar Morin (2002) proposed that we need not look at the totality of knowledge in each sphere but rather focus on crucial knowledge, strategic points, knots of communication and the organizational articulation between disjointed spheres.

Manfred Max-Neef (2005) offered possibilities for a new understanding of the nature of disciplinarity and its positioning in transformative abilities. He proposed that we need to differentiate and identify 'hierarchical levels' of disciplines with 'integrative disciplines'; with philosophy, qualifying as a value level, being positioned at the top. This is followed by a normative level consisting of disciplines such as politics and again followed by a pragmatic level consisting of engineering, etc. Each level is qualified to ask its own specific questions. The top level asks questions such as: what exists, how

should we do it, how should we do what we want to do? The middle level addresses technological issues and asks the question: what are we capable of doing? The lower normative level ask: what is it we want to do and the lowest empirical level refers to empirical matters and answers to questions about what exists and is driven by the physical laws of nature and the principles that drive life and societies.

Central to these notions is the tacit understanding that knowledge is concerned with human values – values based on the implicit acceptance of the 'human right to life'. Prominent in the opinions of a number of authors is the opinion that there is no solution yet for a clear formulation of a 'transdisciplinary theory of values'. It is argued that such a set of values should include the interactive relation between facts and values. This relationship (between facts and values) should ideally be dynamic, reciprocal and mutually supportive. There is no doubt that both facts and values comprise of complex systems and as such could be highly subjective and relative. The acknowledgement by researchers that cultures construct their worlds differently and formulate highly intricate sets of values through diverse processes of selection (of reality) adds to the complexity of this debate. It follows that Transdisciplinarity within an African context will take on a different identity to that of Europe, Asia or Latin America.

To contextualise the presentation within a framework suitable for a discussion about the multi-application of Multi- Inter- and Transdisciplinarity from a law perspective, I would like to frame my discussion within the general theme of human rights. I will further argue that no change (epistemologically, empirically or socially) is possible without acknowledgement of the role and purpose of (science) communication as facilitator between, beyond and within academic disciplines, government and society. I identify a reciprocal relation here since the adoption of a transdisciplinary approach benefits science communication as a discipline while, at the same time, the application of a transdisciplinary theoretical framework within the science communication process facilitates appropriate scope for interaction with multi and interdisciplinary based research and enables a better understanding of inter- and cross cultural social complexities and needs.

From a purely philosophical angle I would like to propose that our effort of exploration of a transdisciplinary approach should be seen as a process of discovery. To do so I would like to reflect upon the validity of application of transdisciplinarity by following Slavoj Žižek's (2009) proposed casting of a 'sideways glance' to establish a dispassionate conceptual development of the typology of a specific topic in an effort to distinguish between 'truth' and 'truthfulness'. Where I aim to go with this approach is to get to an understanding of transdisciplinarity in its (praxis) application and its (hermeneutic) translation within an African context of values and facts. To do so requires a return to some (as yet unresolved) philosophical assumptions on 'the nature of human nature'. This will hopefully enable me to propose measures to ensure appropriate application of transdisciplinarity in support of indigenous needs within local varied cultural perspectives.

There is an uneasiness….

Let me begin by proposing that, in the words of Richard Bernstein (1983) there is an uneasiness spreading throughout intellectual life that is currently affecting academics in almost every discipline[1]. Amongst the 'against method' science revolutionaries such as Paul Feyerabend (1975) and Thomas Kuhn (1962), debates in the sciences fluctuates from a position from where scientist are starting to look inwards and evaluate the very essence of their profession, to debates on necessities to communicate science findings to the public(s). These debates generally culminate in a growing critique emanating from the public sphere about the (negative) impact of science on people's lives. Bernstein (1983) began to notice a similarity taking place in philosophical debates. Let me recall Bernstein's (1983:1) opening words in *Beyond Objectivism and Relativism* (1983): "…an uneasiness has spread throughout intellectual and cultural life. It affects almost every discipline and every aspect of our lives. This uneasiness is expressed by the opposition between objectivism and relativism, but there are a variety of other contrasts that indicate the same underlying anxiety: rationality versus irrationality, objectivity versus subjectivity, realism versus antirealism". In this sense philosophy is no longer the conduit for intellectual progress providing knowledge *(epistēmē)*, but has become the *doxia* – a battleground for competing and shifting opinions" (Bernstein, 1983:3).

The uneasiness Bernstein (1983) refers to could as easily refer to the application of transdisciplinarity as research approach which has the potential to upset traditional, discipline-bound academic institutions. Moving 'beyond disciplines', as Basarab Nicolescu (2003) states, leads us to uncontested and a mostly unknown space for new knowledge. This paradigmatic shift possesses the ability to challenge existing academic structures and to upset the known paradigms that are driving modern research. As example, Basarab Nicolescu (1996) saw similarities between neurophysiological discoveries, quantum mechanics, quantum theory and philosophy. What he considers as the 'ontological axiom' refers to what we encounter in nature and in our knowledge of nature: there exist different levels of reality and, correspondingly, different levels of perception. The 'logical axiom' refers to the passage from one level of reality to another, ensured by the logic of the included middle. The 'complexity axiom' forms the structure of the totality of levels of reality or perception and as complex structure: every level is what it is because all the levels exist at the same time. Nicolescu (1996) takes care to explain that axioms are not theorems and cannot be demonstrated; they have their roots in experimental data and theoretical approaches and their validity is judged by the results of their application. (Nicolescu built up quite a following of like-minded academics and is responsible for drafting the *Transdisciplinarity Manifesto).*

Our current growing awareness, facilitated by science communicators, of the complexity of problems we collectively face - such as climate change and its effect on human right abuses -requires a transdisciplinary understanding of our world. To illustrate the scope of the problem, Edgar Morin (2002) manages to capture a description of our current complex situation by saying that we are currently living in a 'planetary context' confronted by a 'polycrisis'. Describing the complex realities we

---

[1]   Borrowing from Richard Bernstein's evocative introductory words in *Beyond Objectivism and Relativism: science, hermeneutics and praxis* (1983).

are faced with, Manfred Max-Neef (2005) uses the term 'problematiques'". Paul Cilliers (1998) reflected on the differences between complexities and complicated by looking at the complexity of the human brain against the creation of complex systems to facilitate technological and social systems - based on the organisation of an extremely complicated process of selection.

With growing evidence that topics are becoming *problematique,* disciplinary bound research is changing. Michael Gibbons (1984) in his *Science, Technology and Society Today* identified a 'Mode 2' of knowledge production that takes place in contradiction to the traditional and discipline-bound Mode 1 system of knowledge production[2]. A characteristic of Mode 2 [3] points to the determinants of a potential solution that involve the integration of different skills in a framework of action. The result (or 'consensuses') might not be permanent as it is depended to conform to the requirements of application.

In our desire to give up disciplinary and topical confrontation and constraint in our transdisciplinarity approach, we might have to consider what Rorty (1980:315) describes as: "…the demise of foundational epistemology"[4]. According to Bernstein (1983:2) *thinking* depends on a framework of standard oppositions and deep assumptions, commitments and metaphors that have shaped these oppositions from which they gain their seductive power (Bernstein, 1983:2).Therefore Bernstein (1983:2) is of the opinion that "… something is wrong with the ways in which the relevant issues and options are posed – a sense that something is changing the categorical structure and patterns within which we think and act". Bernstein (1983: x), as a result, proposes that a new sensibility and universe of discourse is in the process of emerging; one which seeks to "… integrate dialectically the empirical, interpretive, and critical dimensions of a theoretical orientation that is directed towards practical activity". With the identification of this 'reformation of theories', he then proceeds to dive straight to the core issue that needs to be challenged: the dilemma of human rationality. He considers this as an opportunity to raise new questions about/within old paradigms including the confrontation between hermeneutics and critical theory and what he called the 'spectre of relativism' (Bernstein, 1983:x).

---

[2] Mode 1 captures the conventional way of research where knowledge "… is validated by the sanction of a clearly defined community of specialists". When one shifts outside the parameters established by accepted research paradigms and academically constructed disciplines one starts to work transdisciplinary. By breaking the hold of discipline-bound structures one renders their methodologies inadequate. .

[3] Mode 2 was proposed as an alternative route for research methods that could also capture knowledge that was imbedded within communities in their traditional 'ways of doing and knowing' and thereby provided additional (and different) knowledge to that of the discipline that the scientist/researcher is working in.

[4] Rorty (in Pojman, 1992) calls for philosophers to undergo therapy to rid them of the 'scandal' of philosophy and of the notion that philosophy is the foundational discipline of culture. Philosophy does not know about knowing, language and represents, and is, in the end, just another voice. The notions of 'science', 'rationality', 'truth' and 'objectivity' are linked and mutually supportive. As rationality is a notion that pre-suppose the so-called 'objective', procedures such as 'methodical', 'rational' and 'scientific' have been followed. It follows that such objectivity will be used in a secular culture to resist notions such as belief systems, etc. (beauty and moral goodness became known as subjective) (Rorty in Pojman, 1999:626). Bernstein (1983, 6) summarizes Rorty's dilemma as one of questioning the assumption that there is such a thing as the 'proper object of philosophy' and by addressing philosophy's lack of a systematic methodology – thereby identifying a need for us "…to get rid of the illusion and the self-deception that philosophy is or can be the foundational discipline of culture" Bernstein, 1983:6).

This, according to Bernstein (1983:xi), could well be identified as "… the fundamental intellectual crisis of our time" [5].

Taking a sideway glance

Since we all share the global effects of climate change, there is no dearth of topics to explore under this title. Similarly, with the increase in complexity of problem statements and multiplication of methodological choices that is the inevitable result of increased work in multi-inter- and transdiciplinary research, new areas of interest that impact on core ideas become possible. One such an example that I would like to use is to bring together the issue of violence in its relation to human rights. This example will also serve the purpose of demonstarting the application of the theoretical framework proposed by Nicolescu (2003) by exploring the 'layers of reality' in all its complexity.

I will use the hypothesis posed by Slavoj Žižek (2009) in his book: *Violence: six sideways reflections.* Žižek (2009) developed a hypothesis around the complexity of bringing together different approaches (transdisciplinarity) within the concept of violence in an effort to understand as well as resolve its *problematique.* The axiom of violence (subjective violence) is, according to him, "… just the most visible portion of a triumvirate that also includes two objective kinds of violence. First there is a 'symbolic' violence embodied in language and its forms, what Heidegger calls 'our house of being'", and then there is "'systemic' violence, or the often catastrophic consequences of the smooth functioning of our economic and political systems" (Žižek, 2009:1).

The catch, according to Žižek (2009:2) is that subjective and objective violence cannot be perceived from the same standpoint: "… subjective violence is experienced as such against a background of a non-violent zero level. It is seen as a perturbation of the 'normal' peaceful state of things. However, objective violence is precisely the violence inherent in these normal state things".

The so-called 'humanitarian crisis' that happens with growing frequency within a cultural, ideologico-political and economic complexity is reported by the media in a somewhat sensational manner. The real human suffering often takes second place since, as Žižek (2009:2) argues: "… the humanitarian sense of urgency is mediated, indeed overdetermined, by clear political considerations". When we are confronted with horrors such as the decade long mass slaughter of 4 million people in the Democratic Republic of Congo, it evokes lukewarm response. When we are told that Osama bin Laden, the leader of Al Quada was executed by USA troops, emotions flare and the media erupts in a frenzy of 'celebration'. What is the difference? The Congo has long past been positioned in a "…Conrandean heart of darkness" (Žižek, 2009:3). Bin Laden, as symbol of the west's 'other' was declared a collective 'celebrity enemy'. This is a demonstration how cultural, ideo-political and

---

[5] Hans-George Gadamer (1975) similarly embarked upon what is called "… radical critiques of the intellectually imperialistic claims made in the name of Method" .

economic considerations too easily overrule human values and truth. It also points fingers at the responsibility of the over-sensionalised media reporting of events.

Why then does Žižek (20090 proposes a 'sideways glance' to try and understand the problem? It could well be that these sideways glances represents Nicolescu's (1996) 'complexity axiom' that forms the structure of the totality of levels of reality or perception and exists as complex structure: *every level is what it is because all the levels exist at the same time*. These sideways glances represent the passage from the 'ontological axiom' (different levels of reality and different levels of perception) to the 'logical axiom' (passage from one level of reality to another and ensured by the logic of the included middle) to the 'complexity axiom'.

This is what Žižek (2009:3) does: when discussing violence, he goes beyond a dispassionate conceptual perception and a cold analysis of violence that somehow reproduce and forces you to participate in its horror. He tries to position factual truth to stand against truthfulness in all its unreliability, confusion and inconsistencies.

To structure the complexity axiom Žižek (2009) firstly talks about systemic violence (ideological violence, political violence, capitalist violence and even sexual violence).

Secondly there is the politics of fear (post-political bio-politics).

Thirdly he argues that the growth of phatic communication (Arab spring for example) that is based on an insistence for recognition based on a vague unarticulated resentment, with no clear utopian vision (symptomatic of our post-ideological times) is demonstrated through major outbursts of public violence.

Fourthly   Žižek (2009:89) refers to the Kantian notion of 'antinomies of pure reason' in its conflict of reason (as in notions of freedom of the press, religiously sanctified images and sovereign states taking up moral positions.

In the fifth place we find the 'culturalisation of politics' where perceptions of intolerance overrules perceptions of inequality, exploitation of injustice.

Lastly Žižek (2009:151) refers to the role of 'divine violence' in all its religious and popular media manifestations. In his own unique manner Žižek (2009:174) reflects on the topic of violence from the point of view of rejection of false ant-violence to endorsement of emancipatory violence: rejection of subjective violence while committing systemic violence and personal and national fear of the neighbour inflamed by violence that adheres to language itself.

 In reference to Bertholt Brecht, Žižek (2009:175) comments how Brecht wrote: *all betake/ what an exhausting effort it takes/ to be evil.*

What about Africa?

To formulate an understanding of the socio-political complexities of South Africa we are progressively moving towards a situation questioned by Jacques Rancière in *The Philosopher and his Poor* (1983) where he draws attention to class divide (the divide between the workers class and the philosophers). His example is based on the socio-political reasons which led to the May 1968 student upraise at the Sorbonne University in Paris. Rancière (1983:xi) was interested in the working class discourse and wanted to know: how can those whose 'business' is not *thinking* assume the authority *to think* and thereby constitute themselves as '*thinking subjects*'? His conclusion was that the " … worker who had never learned to write and yet tried to compose verses to suit the taste of his times was perhaps more of a danger to the prevailing ideological order than a worker who performed revolutionary songs". If researchers, through Transdisciplinarity, embrace both worlds – that of the worker and that of the academic (philosopher), we can rightly begin to ask: whose world is most threatened by 'the prevailing ideological order'?

How do we relate all of this within a broader African context? Is it wise to do so? I will say yes if and when it serves the purpose of providing a better understanding of the complexity of the specific situation in Africa: post-colonial, post-apartheid, etc. As example I would like to refer to the philosophical debate about *rationality* that provides (and often miss) an opportunity to include the valuable contributions of African academics (philosophers). The western perception dominates that 'Africa is not rational'. Numerous examples exits and ideas were promoted for centuries by authors such as Lévy-Bruhl's (1910) *How Natives Think* and Lévi-Strauss's (1966) *The Savage Mind*. Accordingly, western philosophers like Kant (1781) contributed to such notions through his efforts to contextualise the 'position of the African' and misconceptions about 'their systems of knowledge'.

However, it is fruitful to look at the reaction to this perception by African authors. The early Pan-Africanists like Joseph Ki-Zerbo (2005) saw the solution to the, what is referred to as a 'crisis of rationality' (and African culture) in the promotion of 'discovery' of authentic African ideas and thought systems uninfluenced by outsider accreditation. This gave birth to concepts like 'Negritude' and 'African Socialism'. Some others like Kwame Gyekye, (1997) reflected on the reluctance of African communities to change traditional mind-sets (without defining with clarity what these mind-sets are). According to him African cultures are blamed for not having a commitment to the advancement of the scientific knowledge of the natural world. He further states that , historically, African societies made not the slightest attempt to investigate the scientific theories underpinning the technologies they developed. As a result, the disposition to pursue sustained inquiries into many areas of their life and thought does not seem to have been fostered by African cultures. The successive generations of participants in the culture could not augment the compendium of knowledge that they had inherited from their forefathers , but rather gleefully felt satisfied with it, making it into a hallowed and mummified basis of their own thought and action' (Gyeke in Eze, 1997:31).

Coming from a more philosophical perspective, Michael Cloete (2008) states that, with the denial of other (non-western) forms of knowledge and rationality, "… the possibility of other non-western 'subjects of reason', committed to different forms of inquiry, and equally committed to an explication of the rational grounds of legitimations and validation of the knowledge claims, raised within their own philosophical systems of thought, is therefore ruled out". Though Emmanuel Eze (2008) developed a framework for categorical discussion on African rationality that embraces the formal or logical, the hermeneutic or interpretative, some phenomenological models, the empirical-probalistic, the sceptical and the political, illogical 'popular' perceptions about African rationality rules. Within a framework of colonialisation, Africa stay subjugated to Europe's memory. This subjugation includes Africa's conceptualisation of the world, its notions of democracy, commitment to the state in the form of a nation-state and even its notion and definition of rationality and epistemology. There is a dire need to overrule perceptions like these about Africa's organisation of knowledge, which includes western methods for interpreting and coding knowledge (as a result of western colonisation) and the deliberate scientific neglect of traditional knowledge systems and practises. To do so requires a transdisciplinary approach – the solution lies beyond disciplinary structures and not within.

Though numerous scholars blamed the west for plundering African intellectual knowledge during colonial times, Hountondji (1997) implored researchers to persist in the evaluation of the scientific need of Africa and to review factors that contributed to the problem - such as a re-evaluation and a better understanding of what he called the exported *raw data* of the colonised countries and its interpretation by the west. He predicted a need for introducing some checks and balances in the flow of unprocessed and undocumented intellectual resources and the resultant miss/interpretation by the west. If the knowledge (intellectual and technological) and raw materials in Africa were utterly useless such a plundering would not have taken place (Hountondji, 1997: 4).[6]

More examples illustrated the way researchers in Africa grappled with differences introduced as *scientific research* by modern as well as traditional societies. The modern societies *'are organised around an image of constant change: we expect new theories, we reward and encourage the recognition if the enterprise of science survives'* (Appiah, 1992, 129). The *traditional* societies, on the other hand, followed a remarkably different route. Kwame Appiah (1992) described this difference as a process whereby ….. '*my ancestors knew that some people know more than others, and that there*

---

[6] Nabudere of the African centre in Mbale, Uganda, saw this as an ongoing debate in Africa. (Nabudere unpublished paper presented at UNISA 2003). He and Valakazi (1999), argued that *'what is required is a two-pronged strategy that will create a link between the African intellectuals and the African masses-* those whom Vilakazi (1999) called the *'uncertificated man and women in the villages in the production of knowledge for the 'high culture'* were those that were referred to by Hountondji (1997) as the sources of *intellectual raw material.* Nabudere argued that, if such a dialogue was to be achieved, the process will introduce the start in history whereby western scholars will work side by side with the ordinary people in the rural communities This dialogue call for researchers to go to these communities, visit their *culturally specific* knowledge sites and acknowledge the fact that *'culture is dynamic and knowledge, including the process of its production, is part of a people's culture that is continually reproducing itself'* (Nabudere unpublished paper presented at UNISA 2003).

are things to be found out. But they do not seem to have thought it necessary to invest social effort in working out new theories of how the world works, not for some practical end but, as we say, for its own sake' (Appiah, 1992;129)[7].

In conclusion some questions arise:

Do we need a clearly defined 'transdisciplinary theory of values'

According to Honderich (1995:895) the philosophical concern with *value* is focussed on three issues: what sort of property or characteristic is required for something to 'have value' or 'being of value'? Is 'having value' an objective or subjective matter – that is; does value reposes in the object or is it a matter of how we feel towards it? Lastly, just the act of trying to consider what things have value, is valuable. However, while appropriating a transdisciplinary approach, we are left with a dilemma. How do we consider the value of objects, systems, cultures, sciences or practices in an African context since western perceptions considers Africa as being irrational?

Do we revisit the application of 'Hermeneutics'.

Hermeneutics refer to "… the inherent circularity of all understanding, or the fact that comprehension can only come about through a tacit foreknowledge that alerts us to salient features of the text which would otherwise escape notice" (Honderich, 1995). According to Bernstein (1983:38), in the interpretation of texts, the earlier traditions of hermeneutics distinguished three elements: "… *subtilitas intelligendi* (understanding), *subtilitas explicandi* (interpretation) and *subtilitas applicandi* (application)". According to Bernstein (1983:144) hermeneutics is ontological and the type of knowledge and truth that hermeneutics yields stays focussed on practical knowledge and on truth. Both shape our contemporary understanding of praxis. Bernstein (1983: 157) stated: "… the problem for us today, the chief characteristic of our hermeneutical situation, is that we are in a state of great confusion and uncertainty (some might even say chaos) about what norms or 'universals' ought to govern our practical lives" [8].

It is appropriate to conclude this preliminary discussion on the application of transdisciplinarity with the statement that the strength of a transdisciplinary approach lies in the confusion that is created by moving beyond the disciplines. It is within this uncomfortable space within the complexity of humanity

---

[7] Such differences have a range of grounds and reasons. One such is the culture, for instance, to never disagree with what is said (by the elders) as this could be considered as being impolite. It could be argued that this behaviour and perception of etiquette restricted the fostering of a critical mind and scientific approach.

[8] One of the turning points in philosophy that leads to the current revivification of hermeneutics as an important concept originates from Gadamer (1975) when he discusses the way in which we interact with art, texts and tradition which take place in an interpretative manner and we use play to find a clue to the ontological explanation of hermeneutics. He uses prejudice, authority and tradition as a (required) periphery to understanding (Bernstein, 1983:114–131). *Truth and Method* (1975) provoked some serious reaction that lead to discussions around issues such as the "… significance of philosophic or ontological hermeneutics for biblical interpretation and more generally for the interpretation of religious traditions" (Bernstein, 1983:41).

and the complicated systems we designed through social (cultural) and scientific systems that we find the challenge and motive to exploration new and different paradigms in our universal search for 'truth and value'.

Bibliography

Appiah, K. 1992. *In my Father's House: Africa in the Philosophy of Culture.* London. Oxford University Press.
Bernstein, R. 1983. *Beyond Objectivism and Relativism: Science, Hermeneutics and Praxis.* Oxford: Basil Blackwell.

Cilliers, P. 1998. *Complexity and Postmodernism.* London: Routledge.

Cloete, M. 2008. HIV/AIDS and Modernity in Africa: a Philosophical Perspective. In: *Acta Academica*, 40 (2).

Eze, E.C. 1997. *Postcolonial African Philosophy*. Oxford: Basil Blackwell.

Eze, E. C. 2008. *On reason. Rationality in a World of Cultural Conflict and Racism.* Durham: Duke University Press.

Eze, E. C. 2008. *Reason, memory and politics.* Pretoria: University of South Africa.

Feyerabend, P. 1975. *Against Method: Outline of an Anarchistic Theory of Knowledge.* London: NLB.

Gadamer, Hans-George. 1975. *Truth and method.* 1st South Asian Edition 2005. Translated and edited by Garrett Barden and John Cumming. New York: Seabury Press. (This edition 2004.Translation revised by Weinsheimer & Marshall, D. London: Continuum).

Gibbons, M. and Gummett, P. (eds.) 1984. *Science, Technology and Society Today.* Manchester: Manchester University Press.

Gibbons, M. Limoges, C., Nowotny, H., Schwartzman, S., Scott, P. and Trow, M. (eds.). 1994. *The New Production of Knowledge: the Dynamics of Science and Research in Contemporary Societies.* London: SAGE.

Gyekye, K, 1997. *Tradition and Modernity. Philosophical Reflections on the African Experience.* New York: Oxford University Press.

Gyekye, K. 1997. Philosophy, culture and technology in the postcolonial. In: Eze, E. *Postcolonial African Philosophy*. Oxford: Basil Blackwell.

Honderich, T. 1995, *The Oxford Companion to Philosophy.* Oxford: Oxford University Press.

Hountondji, P. 1997. *Endogenous Knowledge: Research Trails.* Senegal: CODESRIA.

Kant, Immanuel. 1781 [1929]. *The Critique of Pure Reason.* (Translated by Smith, N.K. 1929). London: Macmillan.

Kant. E. 1991. *What is orientation in thinking.* In: Reiss, H. 1991. *Political writings.* Cambridge: C.U.P.

Kuhn, T. 1962. *The structure of scientific revolutions*. Chicago. University of Chicago Press.

Ki-Zerbo, J. 1990. *General history of Africa. 1. Methodology and African prehistory* (abridged edition). Oxford: James Currey.

Ki-Zerbo, J. 2005. African intellectuals, nationalism and pan-Africanism: a testimony. In: Mkandawire, T. *African Intellectuals. Rethinking Politics, Language, Gender and Development*. London and Dakar: Zed Books and CODESRIA.

Kuhn, T. 1962. *The structure of scientific revolutions.* Chicago: University of Chicago Press.

Kuhn, T. 1981. A function for thought experiments. In: Hacking, I. 1981. *Scientific revolutions.* New York. Oxford University Press.

Lévy-Bruhl, L. 1910 [1985]. *How Natives Think.* Princeton: Princeton University Press.

Lévi-Strauss, C. 1966. *The Savage Mind*. London: Weidenfeld & Nicholson.

Max-Neef, M. (2005). Foundations of Transdisciplinarity. In: *Ecological Economics.* Vol. 53, Elsevier. Pp. 5-16.

Morin, E.2002. From the Concept of System to the Paradigm of Complexity. *Journal of Social and Evolutionary Systems.* Vol 15, 4, pp. 371-385

Nabudere, D. 2011. *Afrikology, philosophy and wholeness: an epistemology*. Pretoria: Africa Institute of South Africa.

Nicolescu, B. 1996. *La Transdisciplinarité*. Paris: Rocher.

Nicolescu, B. (ed.) (2008) *Transdisciplinarity: Theory and Practice*. New Jersey: Hampton Press.

Nicolescu, B. 2002. *Manifesto of Transdisciplinarity*. New York: SUNY Press. (translated from the French by Karen-Claire Voss).

Okpewho, I. 1992. *African Oral literature. Backgrounds, character and continuity.* Bloomington and Indinapolis. Indiana University Press.

Rancière, J. 2005. (first edition 1983). *The Philosopher and his Poor*. Edited by Parker, A. 2005. Durham: Duke University Press.

Rorty, R. 1980. *Philosophy and the Mirror of Nature.* Oxford: Basil Blackwell.

Rorty, R. 1982. *Consequences of Pragmatism*. Minneapolis: University of Minnesota Press.

Vilakazi, H. 1999. The Problem of African Universities, In: Makgoba M. W .1992. *African Renaissance-The New Struggle*, Cape Town: Mafube Publishing Limited.
Žižek, Slavoj. 2009. *Violence: Six sideways glances.* London: Profile Books.

Žižek, Slavoj. 2010. *Living in the end times.* London: Verso.