PRE-TECH MAN

Thinus MATHEE
Photography, Vaal University of Technology

Abstract

This paper questions how we teach and practise within our various specialities without a holistic understanding of the self and our humanity.

Universities of Technology (UoTs) in South Africa are undergoing a search for identity which will better position themselves within the larger framework of human development. These institutions evolved from Colleges for Advanced Technical Education to Technikons, then to Universities of Technology. The example referred to, although limited to the discipline of photography, nevertheless relates to broad educational values that underpin appropriate and responsible education at higher education levels. Will all the efforts that go into exploring cross-, trans-, and multi-disciplinary courses reap long-term benefits for humanity, or are we just doing 'the new thing'? Are we educating people, or designers, engineers and photographers? Does our education enhance life experience? How will we be able to shift the emphasis of what we are doing from product to human experience if we do not have a thorough understanding of self and the people we are designing for?

These questions are not to be answered question by question, but rather as broadly underpinning a greater question of humane education. I suggest generic modules that draw on the humanities in support of the core modules that will provide the student with the skill to enter the marketplace and make a success of his/her career.

Limited emphasis is placed on human-orientated sciences within UoT programmes. Most universities are undergoing recurriculation and major restructuring to realign themselves within the Higher Education plan. This process might be the opportunity to revaluate what we are doing and how we can improve our courses to enrich students' capacity for self-interrogation and holistic human sensibility. This will provide the unique balance between technology and human sensibility that is currently lacking at Universities of Technology.

Key Words*: Higher education, Photography education, Human- focussed education, holism*

Introduction

In this paper I wish to interrogate the value of holistic education at higher education institutions with specific reference to the photography course at the Vaal University of Technology. My interest in holistic and human-centred education stems not only from the 20 years of teaching experience at a higher education institution, but more from a brief but intense formal education engagement in adult learning, and finally, in confronting meaning in my personal art works (photographs) as part of an advanced academic study.

The questions that arise are: Will all the efforts that go into exploring cross-, trans-, and multi-disciplinary courses reap long-term benefits for humanity, or are we just doing 'the new thing'? Are we educating people, or designers, engineers and photographers? Does our education enhance life experience? How will we be able to shift the emphasis of what we are doing from product to human experience if we do not have a thorough understanding of self and the people we are designing for?

The human focus

The ambiguous term *human* can also be replaced with humanity and the term *focussed* with friendly in order to eliminate too much debate on academic interpretations of the core issue, i.e. insensitivity to the human as the defining factor of our being. The literature-guided self-reflection, on a very focussed and small aspect of education in Higher Education, reminded me of our own fallibility in pursuit of a self-determined future. The theoretical contact with adult learning already mentioned made me aware

of the interrelationship between the educator (the self-human), the programme content (designed by the human), and the learner (the other individual human) in the context of "learning-centred teaching" (Gravett 2001:36). For me, the significance of this teaching approach is the emphasis on what the learning engagement is actually about - learning - and not just what Brooksfield (1999:41) refers to as "teachers' pandering to students' prejudices" which results in what he calls "cognitive imprisonment" for the student. My contribution to the conference theme is not necessarily discipline related, but rather human related.

Within the context of this paper I interpret inter-, cross-, and trans-disciplinary courses as reaching beyond the barrier of mere discipline and moving towards the human dimension. When Jansen (2009:9) refers to humanity in an article entitled "Our growing inhumanity" he states that "Humanities should be at the heart of university training". He refers to an alternative to Humanities as either Auschwitz or apartheid. His comment is most aptly directed at traditional universities with well-established faculties of pure humanities, a luxury Universities of Technology (UoTs) do not have. However, humans also lecture, study and work at UoTs. How do they come to understand the self and the other? The self as theoretical philosophical starting point in western epistemology, as well as the "care for others" (Besley 2005:80-83), might be basic foundational knowledge to the traditional university student, and totally foreign to the UoT student. No wonder Jansen referred to the UoT ethos as " a glorified high school" (Jansen 2006, as cited by du Pre 2009:52). Many of the appointed lecturers at UoTs were trained at traditional universities. They were accustomed to the notion of pure humanities, and maybe only missed it when it just was not there. Van der Merwe fittingly states that

> (T)he social sciences and humanities have an essential role to play in helping our society to contemplate the past and envision the future as we make a range of difficult and important decisions in the present (Van der Merwe 2004:1)

Pedagogy demands making decisions that affect others. I dare to say that the UoT's Technikon stigma will stay as long as an environment of humanly sensitive knowledge is missing. This for me contextualises the notion of holistic education that was referred to earlier.

Prof Jonathan Jansen further asks "what does it mean to be human... What does it mean to be human among other humans?" and: "how can the human experience be shared or expressed?" (Jansen 2009.9). His further concern over "Dramatic enrolment shifts in SA universities from humanities to commercial and management sciences" is echoed by the review of higher education in South Africa which highlights what it calls "the fourth major change" being the "serious" decline of enrolments for humanities programmes in South Africa, resulting in an exodus of experts in related fields from universities of South Africa, as well as the closing of related departments (CHE 2007:163). However, the decline in interest for humanities studies by prospective students is not the principle concern of my paper; but rather, the question is related to the paucity of knowledge pertaining to humanness and the sensitivity to the human as originator, user and consumer of technology within areas of academic and career-orientated pursuits. That said, the effect of reduced humanities studies at traditional universities should also have an effect on human-sensitive education in UoT's which do not accommodate pure humanities courses.

Students, in general, study for future employment prospects. To me, this decline in student enrolments for humanities programmes speaks of a perceived choice that students are making for better employment opportunities as echoed by Jansen (2009:9). I am questioning how we teach creative practice within the broader design and creative arts disciplines without sensitising the student towards the value systems underpinning humanity. I will also bias the question towards UoTs and will refer to design disciplines related to my specialist field of photography. To prevent any misunderstanding of what I am questioning, I will use as definition the terms human, humane and humanity with reference to "the characteristics of human kind" and not to humanism as described in the Oxford dictionary as "a rationalist outlook or system of thought attaching prime importance to human rather than divine or supernatural matters" (Oxford Dictionary of English 2006:845). The question at hand necessitates a closer look at a description of the humanities, UoTs and their relation to government intent and agenda, higher education and manpower needs in South Africa, as well as some suggestions from literature which could affect positive changes towards educational thinking.

We are aware of an environment which is lacking, in our case a human-centred educational environment, and we are equally aware of the reluctance and stubbornness with which we keep on resisting identified deficiencies which we even acknowledge.

Weikart states that

> most attempts at exalting humanity have ironically resulted in diminishing humanity (Weikart 2008:2).

and

> Not all existentialism or postmodernism leads to immoral behaviour, either. However, false conceptions of humanity can lead to destructive behaviour and harmful policies, both by societies and by individuals (Weikart 2008:5).

The need for behaving differently and altering "attitudes and values to cope with complex problems of humanity" (Weikart 2008:5) will have to become a reality for humankind before we destroy ourselves.

The emphasis of these statements brings us back to an apprehension of competent but limited humanity that lacks absolute answers for everything. We can agree that we need to alter the destructive course that humanity has set for itself, not in terms of the technological and scientific choices at our disposal, but rather the underpinning behaviour, attitudes and values to these choices (Van der Merwe 2004:127, Weikart 2008:5) There is therefore a need for an holistic understanding of humanity which will help us to make humanely informed scientific and design and creative decisions which affect and inform every part of the human enterprise.

In South Africa we have experienced a period of change that affected the whole sphere of society, including the home, the workplace, education, the economy, government, technology, entertainment and religion. Amongst the divergent choices were the educational foundations that would determine pathways to new attitudes, behaviour and values, to strengthen the fabric that needs to endure the chafing of society. The post-1994 government prioritised this as one of the pillars that the "new South Africa" could be built upon. Kenneth Stunkel (1989) explains that there can be no social order without a process of standardisation. Although the pre-1994 government adhered to a process of standardisation, the standard chosen was racially and culturally biased and exclusive, with demeaning effects on the rest of South African society, which also happened to be the majority (CHE 2007:1). It is then obvious that the new majority government was biased towards retribution. One can then say that this attitude was not preceded by a process of education but rather underpinned by political justice. Stunken places the educational system at the centre of this stabilisation process and emphasises the positive role that a cohesive humanities agenda plays within this process of stabilisation (Stunkel 1989:329). We are after all human, and the human's inquisitive appetite will largely be satisfied by the formal educational process in his/her formative years (Diffrient, Bardagjy, & Polites 1975:5-6).

Education in South Africa has gone through drastic curriculum reform and restructuring since the early 1990s to the present. Firstly, the apartheid government hastily tried to revamp an educational system that was culturally biased and exclusive in preparation for the inevitable political change that was now unavoidable. This change did not entertain the new government's appetite for change away from the previous educational philosophy (Cross, Mungadi, &Rouhani 2002), and was completely redirected by the White Paper on education and training of 1994. The goals laid out in the White Paper of 1997 became the current benchmark which presented the aim and vision of the current education system and Higher Education Qualification Framework (RSA 1997:9-10) The Freedom Charter which was adopted by the Congress of the People in 1955 commenced the education clause with "The doors of learning and culture shall be open to all". This line remained the educational benchmark for future educational policy (Johnson 1995:131).

However, there seemed to be a fundamental difference of priority between the Education and Training Framework and the reconstruction and development framework of latter times. The former pursued economic goals within an educational framework, while the latter "seeks to use education and training for socio-economic ends" in a Reconstruction and Development Framework (Johnson 1995:133). The fundamental goal of the new South African government, according to Levin (1995:203), was "to create the conditions for high rates of economic growth that can begin to create the wealth needed to satisfy the aspirations of the population". The economics focus for the individual and country was then interrogated by the notion of post-Fordism in order to establish a framework for developing a new educational system for the furthering, specifically, of science and technology (Lewin 1995:213).

Government initiatives and the evolution of Universities of Technology

The South African government has actively promoted the importance of science and technology amongst our learners from primary and secondary through to higher education over the past few years. This was done to address the current and future manpower imbalances in South Africa. The technikon education sector was essentially established for this purpose (Johnson 1995:183, Radebe 1995:5). The Committee of Technikon Principles (CTP) expanded this mandate and interrogated the notion of a University of Technology, formulating their findings in a document known as *The Philosophy of a University of Technology.*(2004) This document spearheaded the petition to parliament towards a name change, from Technikon to University of Technology. Der Heyde (2004:3) asserts that the main reason for change was that the term Technikon "had little or no international currency". Der Heyde (2004:3) warns that higher education should be

> very wary of introducing new terminologies into higher education unless the strategic advantage is very obvious and guaranteed, and the supposed pedagogic content widely understood.

In 2003, the Minister of Education, Prof Kader Asmal, announced the re-designation of Technikons to Universities of Technology (Du Pré 2009:VII). In 2002 the amalgamation of 36 higher education providers into 21 was announced (De Heyde 2004:3). The first mergers took place in January 2004 (Du Pré 2009:VII).

What is important to understand here is the process that the UoTs, as contributors of manpower needs in South Africa, went through, from the establishment of Colleges for Advanced Technical Education in 1967 (Government initiated), to Technikon status in 1979 (government initiated), degree status granted in 1993 (technikon initiated), re-designation to UoTs in 2003 (technikon initiated), amalgamation of institutions in 2004 (government initiated), establishing the South African Technology Network (SATN) in November 2004 before the amalgamations commenced (technikon initiated) (Du Pré 2009:VI-VIII). The reason for my distinction between government initiation and institution initiation is to highlight the intrinsic motivation for the change at the time. This retrospective view is also necessary to provide a possible context for the current lack of humanities content at Universities of Technology. The curricula at Colleges for Advanced Technical Education (pre-1979) did not include any form of humanities course content, and thus resulted in the lack of humanities orientation at the evolved UoTs. It is evident that there was never a fundamental change of philosophy, but instead just a steady evolvement from one institutional name to another. The notion of the new generation university is becoming an international and national buzzword. Schauffer and Thathiah (2007:2) deconstructed the notion of University of Technology by questioning the "philosophical construction of the University of Technology with the following four different emphases: *South African* University of Technology, South African *University of Technology*, South African *University* of Technology, or South African University of *Technology.* In the same way one can deconstruct the notion of a Comprehensive University or the New Generation University. Hopefully the "strategic advantage" was evident in the genesis of the idea (Der Heyde 2004:3) so that we can open a new chapter in higher education.

It also seems as if the humanities dilemma in not just a UoT phenomenon. Apart from the lack of pure humanities content in the curricula of Universities of Technology, it is reported that there is a major decline in the value of humanities programmes internationally and nationally (CHE 2007:163). The promotion of science and technology, as referred to previously, will have an even more detrimental effect on the prospective learners' perception of the importance of humanities studies. It almost seems as if humanity is trying to direct the attention away from human failure to a technological saviour.

The concern of this paper is not the pursuing of pure humanities studies, but rather the incorporation of humanities content into existing programmes. Van der Merwe (2004:136) highlights the value of the humanities in contrast with the "scientific spirit of mankind" in that it "narrows the gap between facts and values, between things and meanings, between explanation and understanding, between knowledge-as-information and knowledge-as-interpretation". He further states the change at universities has been from "bastions of culture" to "incubators of industrial and technological innovations". If this is the case with universities, where do UoTs stand, already having minimal humanities focus and content within programmes? The IBM Human Resource Division in Cana, as quoted in van der Merwe (2004:128), states that:

thinking independently, asking significant questions, analysing and weighing ideas, drawing logical conclusions and putting forth sound arguments, are precisely the skills business and industry are looking for.

It is clear from these citations that the humanities need to occupy a clear, equal position in higher education.

The holistic human-centred education that I was referring to at the beginning of this paper may suggest having a humanities faculty with pure humanities that one would find at a traditional university, as the model to draw from for the UoTs. The advantage of this traditional university model is its proven track record in established learning environments, as well as the pedagogical refinement over the years. However, the "career-focused" education of the UoTs, compared to the "career-oriented" focus of traditional universities diminishes this option. The previous Technikon and now UoT courses were structured with a selection of compulsory major and minor subjects that together added to the focussed career choice. The option for electives currently is minimal, or in most instances, does not existent. The elective system provides a human-friendly opportunity for the students to personalise their education. Attractive as it may seem, Lewin (195:207) does warn against the notion of "borrowing" instead of research-informed change. The outcomes-based school system was "borrowed" from New Zealand (Cross, Mungadi, & Rouhani 2002:183), and the concept of University of Technology from Australia and the UK (Cooper 1995:245). Although the concept of a UoT was borrowed, one can sense the urgency with which the South Africa Technology Network is promoting a unique South African UoT identity. (See: *The place and role of Universities of Technology in South Africa* (Du Pré 2009)). I do not doubt for one moment that proliferation of humanities faculties will indeed accelerate what van der Merwe (2004:135) refers to as the "tempering of science and technology...with the human element that humanities offer". However, this influx of humane, literate people will only provide a balance in the broader total society. The average will become mere statistical value, which looks good on paper, but denies the opportunity for individual human awareness, in order to become more humane.

At the traditional university the student has two options to engage with humanities content: taking a pure humanities course within the faculty of humanities or taking humanities electives as part of a degree course. Neither of these choices is commonly available at previous Technikons and now Universities of Technology. The specific perspective in this educational discussion is towards photography education at UoTs and more specifically the Vaal University of Technology. It is offered within a creative arts and design environment, under the auspices of the bigger humanities/human sciences umbrella. This career-focused course is maintained within a predetermined but cohesive curriculum. The final suggestion for possible inclusion of humanities content within such a course will be discussed after a context of the course environment is provided.

The photography course at VUT

A reflection on my personal experience might provide a better context for the photography course's specific need for human orientation. However, this does not exclude its relevance to the broader Higher Education landscape and specifically the UoT environment. I will refer to my own experience through a self-reflection of my lecturing career over the past 20 years to further clarify my educational perspective of a Technikon and University of Technology (1989 to 2009).

My academic career

Between 1989 and 1993 I had a clear conception of the Technikon philosophy. The course prepared students for the commercial photography market with staff being in constant contact with the industry on an advisory and assessment level. In 1994 the lecturers and students were all very excited about the prospect of awarding degrees and motivated students to do the new BTech degree. The main motivation for prospective students to studying the degree was status. The new BTech degree provided the opportunity to redefine the National Higher Diploma. Research methodology was added to promote academic correctness in the writing of mini- dissertations at this level.

Diploma		BTech degree		MTech degree	
Subject	**Subject orientation**	**Subject**	**Subject orientation**	**Subject**	**Course orientation**
Visual Communication 3	Aesthetic / critical	Theory of Photogrphy4	Critical	Dissertation	Critical
Applied Photography 3	60% Commercial and 40% Personal exploration	Applied Photography 4	Critical / Commercial	Applied body of work	Personal
		Research methods			

Table 1 Subject progression from diploma to MTech degree

The above Table 1 illustrates the subject linkages from one exit level to the next. Only the relevant subjects (critical theory, commercial application) pertaining to the "human sensitive" focus of this paper are indicated. On completion of the diploma the student then has the opportunity to enter the BTech degree, again an exit level, after which the master's and doctorate programmes can be followed. A strategy was devised to accelerate throughput from National Diploma to MTech and possible DTech level by conceptually linking and cascading learning outcomes in preceding levels, in turn becoming building blocks for the next level. The registered outcomes of the subjects were inclusive enough to effect a smooth transition from the one level to the next. Critical theory such as formal analysis, feminism, media theory, semiotics and phenomenology were introduced in the diploma levels in order to facilitate adequate academic rigour in the BTech degree. The majority of students found the theory content overwhelming and difficult to contextualise within a course philosophy that leaned towards an industry-orientated practical course. This led to some candidates not pursuing an MTech degree.

The BTech and MTech courses are similar in approach. A study leader is appointed who guides the academic process throughout the academic year. The MTech student has a choice between a theory-only submission of a halfway split between a practical and theoretical component.

MTech degree in photography			
Option 1	**Credit**	**Option 2**	**Credit**
Dissertation only	1	Dissertation	0.5
		Applied photography project	0.5

Table 2 MTech options

We realised the potential academic chasm that could develop between us and industry and had no immediate mechanism to remedy this situation. Students started off on a career-focussed programme and progressed through the qualification structure towards a critical theoretical field of enquiry for which they were not suitably prepared.

Personal research

All the lecturers completed their photography qualification at the Technikon or the UoT stage of the institutional evolvement. They became the instruments of change of the new curriculum content within the evolved UoT environment. The lecturers had to read themselves into the new course content that we decided to teach. I taught technical theory applied subjects and Professional Practice. I started my MTech degree with no formal undergraduate human-related subject background. I also did not teach a critical theory component which would have forced me to do some preparatory reading. My study proposed to do a semiotic reading of metaphor in selected personal landscape works and I ended up reading about ontology, epistemology, philosophy, metaphysics, hermeneutics, intentionality, space,

etc. I realised that I was on very long journey in completing the qualification. I also recognised my severe lack of understanding of the self and humanity. The foundational and basic knowledge to understand more about the origins of the relevant discourses related to my studies, made me feel like a first year thrown into a master's course. The academic approach to the study demanded a knowing of self and the other in order to self-reflect in an informed manner upon my work. This would not only satisfy an assessment system but also the self.

Broadening the horizons in the curriculum

Diffrient, Bardagjy, and Polites (1975) propose a unique solution for inclusion of human knowledge into creative education. They refer to an inner process as "another level of being" which is "sometimes more real than the consciously perceived realities". They refer to "access and flow between the conscious and subconscious that turns knowledge to wisdom and talent to genius". At the time of writing their paper in 1975 they referred to the "new forces in design" which had very little to do with a new piece of design technology but rather psychology, sociology, anthropology and human engineering. We are now in 2009. In my 20 years of educational experience I had never been introduced to the knowledge fields listed here.

Diffrient, Bardagjy, and Polites (1975:10) propose what I believe to be a credible answer to the current crisis in UoT education. For example, in urban planning, architecture, interior design and environmental planning they propose a combination of social sciences under the umbrella of environmental psychology which focuses on the built environment. This same approach can be used in other creative disciplines within UoTs. UoTs lack departments that can service specific social sciences and philosophy to the design disciplines.

Traditional Universities seem to have a solution that is imbedded in the educational ethos of the institution, a Humanities faculty, and electives that can provide the necessary human focus in the degree. Not all university programmes utilise this option of including humanities content as an elective. In some cases students can choose not to take a humanities elective. The rationale I am proposing includes human orientation, not as an option, but as an essential component without which the course becomes inhuman, technist and possibly dangerous for human intellectual consumption. The example stated by Diffrient (1975:2) et al. pertains to the built environment and environmental design. Diffrient (1975:10) et al. remind us that "the right to a well designed world is like the right to free speech, justice and livelihood: it is basic".

The Diffrient (1975) et al. proposal focusses not on what is available on campus, but rather a critical analysis of what should be included to facilitate proper human interaction and human experience for a better humanity. In the South African HE environment we currently have three differently composed universities, two (comprehensive and traditional) of which already have pure humanities to draw from. The perception might be that the UoTs have no way of remedying the lack of humanity content within the curriculum. I disagree, and will propose a process of curriculum redress next.

Thathiah (2007:87-88,93) interrogated the ethos of the UoT and emphasises the uniqueness of word technology that fundamentally differentiates UoTs from other universities. He motivates convincingly for the inclusion of a theory subject that contextualises the technological perspective within courses at UoTs. This is a novel solution, merging the ideas of Diffrient (1975) et al. with a South African reality. The challenge lies in realising suggestions, such as the two examples mentioned, into a workable structure for specific disciplines.

The overarching umbrella (environmental psychology) under which Diffrient (1975:10) et el. grouped psychology, sociology, anthropology and human engineering can also categorised under the larger scope of critical theory. Together with the notion of a technological slant we are provided with the opportunity to direct the critical theories towards a specific course need, in this case Photography. This critical theory umbrella can also be skewed to specific course focus or according to lecturer strengths, but still maintaining the overarching theme of the broader human orientation within the discipline.

The current course in photography contains a major technical scientific subject which must not be confused with the more philosophically orientated subject suggestion by Thathiah.

The following model for photography education at UoTs proposes broad subject orientations and not subject names.
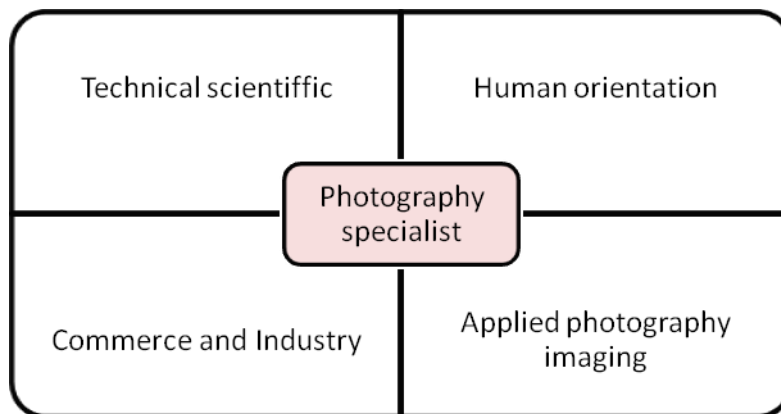

Table 3 Proposed photography course content

The technical scientific subject would cover all technical theoretical content relevant to the image-making process. The Human orientation subject can include a historical context and appropriate critical theory to address visual communication aspects as well as theory of humanity and technology. The Commerce and industry component is self-evident and can cover related business practice for the discipline. Praxis can be aligned with identified industry focus areas that will provide the student with the appropriate aesthetic and technical skills to earn a meaningful living.

In conclusion

Today, it seems that humanity is looking in three metaphorical directions. They are looking at today, regarding their achievements in the shadow of their failures that came at a great human expense. They are looking at *their* "creation", witnessing the destruction of their living space and the humanity they "created" and became. We witness the lack of attempts to solve current specialised manpower shortages in exchange for dehumanising learning environments that are inadequate for a desired future. I am not suggesting "human worship" as referred to by Weikart (2008:2-3), but a different course of action, not away from technology, but appropriating it in a humane learning environment which the current opportunity for change in Higher Education affords us. My self-reflection on my education and career path in higher education is not meant to accuse someone of inadequacy, but rather to highlight the individual's inadequacy to satisfy a fast-paced and intimidating educational beast. This frailness is not because of a technological knowledge gap but rather an unskilled self-reflective human disability to perform for the self and others.

References

Aminzade, R., & Pescosolido, B.A. 1999. *Field guide for teaching in a New Century*. California: Pine Forge Press.

Besley, T. 2005. Foucault, truth telling and technologies of the self in schools. *Journal of Educational Enquiry,* 6(1) 76-89

Cooper, D. 1995. Technikons and Higher Education Restructuring *Comparative Education*, 31(2): 243-260.

Council on Higher Education (CHE). 2007. *Review of higher education in South Africa: Selected themes.* Pretoria: CHE.

Cross, M., Mungadi, & R. Rouhani, S. 2002. Policy to Practice: Curriculum Reform in South African Education *Comparative Education*, 38(2): 171-187.

Der Heyde, T. A. 2004. *Comprehensive planning: the emergence of new HEIs in South Africa?* [O] http://chet.org.za/webfm_send/326 [01 October 2009]

Diffrient, N., Bardagjy, J. & Polites, N. 1975. Dimensions of experience: Understanding and measuring human experience in the designed environment Design Quarterly, 96(3-34)

Du Pré, R.H,. ed. 2009. *The role and place of universities of technology in South Africa*. Durban: Durban University of Technology Press.

Gravett, S. 2001. *Adult learning: designing and implementing learning events. A dialogic approach.* Pretoria: Van Schaik.

Jansen, J. 2003. Mergers in South African higher education: Theorising change in transitional contexts. *Politikon: South African Journal of Political Studies*, 30(1), 27-50.

Jansen. J.D. 2009. Our growing inhumanity. *The Times, p.9, 16 Jul.*

Johnson. D. 1995. The challenges of educational reconstruction and transformation in South Africa. *Comparative Education*, 31(2), 131-140.

Lewin, K. M. Development policy and science education in South Africa: Reflections on post-Fordism and praxis. *Comparative Education*, 31(2), 201-221.

Ludden, D. 1997. The territoriality of knowledge and the history of area studies, University of Pennsylvania12/6/97 http://www.sas.upenn.edu/~dludden/globalization.htm [05 October 2009].

Oxford Dictionary. 2006. Oxford University Press.

Radebe, J. 1995. *Speech by Minister Jeff Radebe at the graduation ceremony of the Transkei Technikon* [O] http://www.search.gov.za/info/previewDocument.jsp?dk=%2Fdata%2Fstatic%2Finfo%2Fspeeches%2F1995%2F070895005.htm%40Gov&q=(+((radebe)%3CIN%3ETitle)+)%3CAND%3E(category%3Ccontains%3Es)&t=MIN+RADEBE%3A+GRADUATION+CEREMONY+OF+TRANSKEI+TECHNIKON [01 October 2009]

REPUBLIC OF SOUTH AFRICA. Department of Education 1997. Education White Paper 3: A PROGRAMME FOR THE TRANSFORMATION OF HIGHER EDUCATION. Government printer. (WPB-1997)

Stunkel, K. R. 1989. Obstacles and pathways to coherence in the humanities. *The Journal of Higher Education*, 60(3), 325-348.

Weikart, R. 2008. *The dehumanising impact of modern thought* [O] http://www.csustan.edu/History/Faculty/Weikart/dehumanizing.htm [05 October 2009].

Thathiah, K. V. 2007 Toward Theory of Technology Modules for South Africa Universities of Technology. *New Generation Science.* 5(2), 86-99.

Thathiah, K. V., & Schauffer, D. L. 2007. How now 'Cloned' Cow? Three challenges to the architects of South African Universities of Technology *Journal of Higher education*, 21(1) 181-191.

Van der Merwe, I. J. 2004. The humanities in a changing South Africa: challenges and opportunities *South African Journal of Higher Education*, 18(1)

Contact details

Author	First Author
Name	Thinus Mathee
Institution	Vaal University of Technology
Postal address	Photography P/Bag X021 Vanderbijlpark 1900
E-mail	tmathee@vut.ac.za