Contradictions in the situational logic of the university: Implications for student success

L. Kotta
School of Chemical Engineering
University of Queensland
Queensland, Australia
e-mail: l.kotta@uq.edu.au

J. Case*
Department of Chemical Engineering
e-mail: jenni.case@uct.ac.za

K. Luckett*
Faculty of Humanities Education Development Unit, Department of Sociology
e-mail: kathy.luckett@uct.ac.za
*University of Cape Town
Cape Town, South Africa

Abstract

Nearly 20 years into the new democracy, student success at South African universities continues to be differentiated along racial lines. The tendency has been to define the problem in terms of student deficit. This article suggests that this is a limited view of a complex problem. The study reported on investigated the case of a South African university's Department of Chemical Engineering and its historical struggle with the success of black students. The study explored students' progression through a design course and the associated pedagogical realities. Using a social realist approach, the study showed that the higher education environment is a complex of necessary contradictions which create a situational logic for agents. In the process of navigating the inconsistencies of a system in which academic development and quality assurance work against each other, it seems that black students get caught in the middle, with deleterious consequences for the country's transformative agenda.

Keywords: social realism, student success, engineering education, situational logic, academic development

INTRODUCTION

While equity concerns from the 1980s onwards into a democratic South Africa resulted in a policy which allowed black students increased access to higher education institutions (HEIs), this physical access has not necessarily translated into academic success. In particular, Letseka and Maile (2008, 4) note that 'Black Africans and

coloureds, sections of society that bore the brunt of exclusion by apartheid education policies and legislation, continue to lag behind in education success rates'. Numerous studies and reports (see, eg, Badat 2010; Boughey 2010; CHE 2010; Letseka and Maile 2008; Scott, Yeld and Hendry 2007) portray a bleak picture of the current graduation rates for black[1] student cohorts, citing values well below those of white students. Scott et al. (2007, 19) in particular note that 'the major racial disparities in completion rates in undergraduate programmes, together with the particularly high attrition rates of black students across the board, have the effect of negating much of the growth in black access that has been achieved'. Badat (2010) further notes that in the fields of engineering and technology, improved access and outcomes in higher education are yet to be achieved.

Since the early 1980s, education practitioners have attempted to address these challenges by developing a number of academic development practices aimed at fostering academic success for black students (Boughey 2010). Initially this work was framed as academic support, developing later into curriculum development and teaching methodologies. Most recently, academic development work has started to operate at an institutional level as institutions move to develop policy aimed towards equity of access and outcomes. To date, however, there is limited evidence of the impact of any of this work on teaching and curriculum in regular programmes, where it has largely remained 'business as usual'.

It seems, therefore, that while historically the question of academic development has given rise to various approaches, and associated practices, and while some gains have been made, these have been limited. It is clear of course that a multitude of factors outside institutions continue to play a significant role. However, in this article we argue that the ways in which universities speak about and define themselves also create real constraints for students and academics in the system with detrimental consequences towards achieving equity of outcomes and the ultimate transformation of post-apartheid South Africa.

To this end we present the case study of a Department of Chemical Engineering at a research-intensive South African university showing how a group of academics who recognised a shortcoming in their programme attempted to remedy the situation. Noting the constrained and ultimately limited impact of this intervention, the article undertakes a sociological exploration of the situational logic which defines the context in which academics work. The larger study from which the article is drawn sought to understand the historical failure of black students in a fourth-year engineering design course. Over a period of ten years leading up to the time this research was conducted, the course had a failure rate that ranged between 10 and 20 per cent and it was noted that it was only black students who had failed during this period. This was of concern as it impacted on graduation rates, particularly in a country in which a skills shortage in the areas of engineering and science had been declared (Republic of South Africa 2006).

The article draws on social realist theory to advance the argument. The philosophy underpinning this social realist view is thus briefly outlined in the following section.

CONCEPTUAL FRAMEWORK

Archer (1995) offers a useful theory for exploring a complex socio-cultural system such as a university. Her approach focuses on exploring the interplay between structure, culture and agency, by unifying them theoretically under the umbrella of morphogenesis (Archer 1996). Archer defines culture as the stock of ideas, theories or beliefs that are at play in a given context, while structure is the domain of institutions, rules and resources, and roles. Archer's morphogenetic sequence starts with the structural and cultural conditioning of a context, which constrains or enables interaction, which then leads to social or cultural elaboration or stasis. According to Archer (1996, 282):

> When both structure and culture are conceptualised from the morphogenetic perspective then the two intersect in the middle element of the basic cycle. In other words, the interactional phase ... always entails a great deal of interpenetration between the two – this entailment being a matter of sociological necessity.

Further, Archer offers the tool of analytical dualism by which a cultural (and structural) system is related to but distinct from socio-cultural (and social) interaction in the morphogenetic cycle. She proposes that the two are logically and empirically distinct and hence can vary independently of one another.

The elements of a cultural or structural system could either display logical consistency (as introduced above), or they could conceivably display inconsistency, or be contradictory. These contradictory or complementary relations are the underlying mechanisms which create problem-ridden or problem-free situations for the agents in social interaction. In reference to the cultural domain Archer (1998, 145) notes that, 'maintenance of ideas which stand in manifest logical contradiction or complementarity to others, places their holders in different ideational positions. The logical properties of their theories or beliefs create entirely different situational logics for them'. The relations of contradiction can be either constraining or competitive while the relations of complementarity can be either concomitant or contingent (Archer 1988, 147), as elaborated further in Table 1.

Table 1: Ideational relations in the cultural system (table created from Archer (1995))

	Contradictory/Inconsistent		Complementary/Consistent	
Type of relation	Constraining	Competitive	Concomitant	Contingent
Issue in the CS	Sets of ideas that are inconsistent with each other. Agents here cannot reasonably hold all of the ideas. However one idea necessarily depends on the other.	Sets of ideas that are inconsistent with each other. The agents here cannot reasonably hold all of the ideas.	Sets of ideas that are consistent with each other. However one idea necessarily depends on the other.	Sets of ideas that are consistent with each other. However the ideas are independent of each other.
Consequences in S-C interaction	Associating with one idea or one set of ideas means one associates with the other even if they do not agree with it.	Associating with one does not mean associating with the other.	Associating with one idea or one set of ideas means one associates with the other.	Agents here can hold one idea and are free to think what they will of the other.
Situational logic	The above results in a constraining situation.	The above results in a competitive situation.	The above results in a problem-free situation. Reinforcement of the ideas.	The above results in the plurality of ideas. Archer notes that it is free from socio-cultural manipulation designed to induce, in Archer's terms, 'avoidance or adoption or aversion'.
Possible action in S-C interaction	Correction of the inconsistency. Sinking of differences.	Elimination of one of the ideas.	Protection of the 'comfortable' situation.	Exploration of congruent ideas or 'to ignore the broader horizon in view' (Archer 1995, 244).

Archer (1995) notes that the types of strategic action defined above typically apply to large sections of the population (as opposed to individual agents).

The framework described above was used in the present study to analyse how it is that macro institutional ideologies inadvertently condition micro pedagogical processes of the classroom and what the consequences are for student learning and success. Bhaskar's (2008) notion of retroductive reasoning allows a move from events that are observed to underlying unobservable cultural and structural emergent properties to posit explanations of what is observed in the world. Retroduction is

about 'reconstructing the conditions for something to be what it is' (Danermark, Ekstrom, Jakobsen and Karlsson 2002, 205). It is a *transfactual* reasoning method where a person seeks qualities beyond those which are immediately given. This approach is underpinned by the notion of a stratified reality consisting of the real, the actual and the empirical. The real encompasses both the actual and the empirical but further consists of the generative or causal structures and mechanisms which are not observable but whose effects are felt nonetheless, that is, they are independent of mind and society in the sense that they operate regardless of whether anyone is aware of their existence or not (Bhaskar 2008). Furthermore, Bhaskar argues that these structures are distinct from the pattern of events that they generate. The domain of the actual comprises phenomena, events or outcomes which are caused by these mechanisms and which may or may not be triggered and may or may not be observed. The domain of the empirical consists of that which is the experience of the observer.

The process of retroduction makes it possible to make an inferential move from a case that shows the way 'things are done', for example in undergraduate chemical engineering education, to explaining enduring pedagogic trends, contradictions and complementarities, in that institution. The complementarities and contradictions above are types of emergent properties that apply both to cultural and structural conditioning. The descriptions give an indication of how a situational logic might be shaped for the agents involved, as well as how strategic action among large sections of the population might be motivated (Archer 1995). As Archer (1995, 198) puts it, 'structural properties as features of the situations in which people find themselves, can only foster or frustrate projects'.

The view of reality described above supports the morphogenetic sequence in that through cultural and structural conditioning, the cultural system and its emergent properties give rise to the unobservable yet causally efficacious mechanisms which have a prior conditioning effect on socio-cultural interaction. Thus, the observable activities or events at the level of the actual emerge from the unobservable idiosyncrasies of the cultural system which exist at the level of the real, and of interest is the architecture of the situational logic and the consequences of these for equity of outcomes in higher education.

In the next section the context and the events that occurred are described, as well as general findings.

RESEARCH CONTEXT AND METHODS

As noted above, the larger study from which the article is drawn took as its departure point the observed trend in terms of the failure rates in the fourth-year chemical engineering design course at the HEI under study. Noting that design education began in the third year, a longitudinal study was undertaken in which a cohort of students was followed from third-year design in semester two of third year, all the way to the end of fourth-year design. This period included the Fourth Year Design

Project (FYDP) with the associated historical trend of relatively high and racially skewed failure rates.

A purposively selected group of 17 students with a diverse spread of race, gender and school backgrounds were approached to participate in the study. The staff participants were all the academics involved in the design and related courses in third and fourth year. Both groups of participants gave their consent through email. All participants were informed that they were welcome to view the transcripts and whatever else was written about them in order to see how they were represented in the study.

The data was collected in three ways, through interviews, through course and curricular documents and through the observation of practice. The data was analysed using Archer's conceptual framework as well as the standard tools of qualitative analysis.

FINDINGS

In their third year the students were enrolled in a number of courses including two theoretically oriented courses, namely, Reactor Design II (RD2) and Separation Processes (SP) alongside the Third Year Design Project (TYDP). According to Prof Reed,[2] the main co-ordinator of the course, the introduction of the TYDP dates back as far as the mid-1990s. Prior to the introduction of the TYDP, RD2 and SP each had their own design project. Prof Reed introduced a more integrated reactor design when he was running RD2 and this was further elaborated on in 2003 when the combined reactor and separator design was introduced. The integrated model of 2003 was further modified in 2008, coinciding with the commencement of the present study. At this stage Prof Strauss took over the convenorship of the TYDP from Prof Reed. He was interviewed to understand the rationale for the way the TYDP was structured. One change that he had introduced was the implementation of tight controls on the administration of the project. He wanted to move away from merely giving the project brief at the start of the second semester in the third year and then 'letting the students loose'. Prof Strauss talked about this difference in the following extract:

> In the past we set a list of tasks and we said go 'do it' and 'what happens if people do it in the last week?' ... so we've actually given them a break-down of parts and when to hand it in ... (Prof Strauss, Interview)

He wanted to make sure that students engaged with the task and made proper use of the time they had by structuring the submission dates. His insights about introducing the design project in the third year were gleaned from his involvement in the FYDP. His intentions were, therefore, to model a certain way of thinking about and approaching the design, building on basic engineering.

It would seem, therefore, that the introduction of the TYDP was done to make more explicit to the students, prior to the high stakes design environment of the

FYDP, the fundamental processes necessary to create a basic design, as well as how to move from a basic design to create an integrated whole where the bigger picture has been taken into consideration. Prior to the introduction of the TYDP, there was no *structured* way in which design was taught. After seeing the negative implications of students dealing with the rigours of design in the fourth year, Prof Strauss and colleagues grappled with the issue and that culminated in the introduction of the integrated and more structured TYDP.

It is clear from the above that Prof Strauss had educational objectives behind the restructuring of the course. He wanted to improve student learning in the very important area of chemical engineering and hoped that improving third-year offerings would allow the students to fare better in the fourth year. He divided the TYDP into five consecutive parts for submission and he felt very strongly that this sequence followed the logic of any design. In other words, task 2 could not be completed without task 1, and task 3 could not be completed without task 2, and so on.

He also mentioned his justification for 'forcing' the students to submit these parts versus just giving them the project at the start and then expecting the finished product at the end. His intention was to make sure that the students all had each of the parts working and that they all had a chance to 'elbow this thing', as he put it. Further, he noted towards the end of the interview that this sequence gave the basic design elements of the two courses – RD2 and SP – as well as detail about the design parts towards an integrated whole.

As critical as a structure is in communicating to the students what's important, the feedback to submitted assignments as a way to flag their errors and to convey the production of appropriate text is at least just as critical. Table 2 shows the submission dates for each of the five assignments and also the dates on which these were returned to the students.

As can be seen, just under a week before the final submission was due only the first three submissions had been returned. On the due date of the report, the second to last submission, that is, the separator design report, was returned. So the students started every report without feedback from their previous submission which compromised Prof Strauss' efforts towards making evaluative criteria explicit. These efforts were further compromised by the fact that those who did try to engage with the late feedback could not make sense of what he was trying to communicate to them:

> Well it would be nice if we could get our Separation Processes and our Reactor Design II back because we've got to optimize this before Monday. How do I know if I was on the right track? If I've messed my Separation Processes thing and I don't realize it then how am I going to optimize it ... (S2)

> I found the feedback terrible. There was no consistency in my opinion between what you did, what he told and your mark ... The things he wrote in no way helped me. (S3)

Table 2: Submission and return dates for the TYDP assignments (Year = 2008)

Due date	6 Aug	13 Aug	27 Aug	17 Sept	25 Sept	1 Oct	3 Oct	6 Oct
Submission dates	Physical and thermodynamic properties	Reaction thermodynamics	Mass and energy balances	Reactor design	Separator design			Final report
Return dates						First three reports	Reactor design	Separator design

These extracts reflect the students' frustration with the late feedback (S2) as well as with the feedback that did not communicate the rules for the production of appropriate text (S3).

In the absence of feedback the students were not in a position to know whether their work was correct or not and would, therefore, have potentially carried mistakes

over to subsequent submissions. In particular, they received the fourth submission (the reactor report) two days before the final submission was due which meant they had two days to fix whatever errors were highlighted by Prof Strauss in the fourth submission as well as try to design a well-functioning distillation column (the fifth submission) in the absence of feedback, for the final report. This situation meant, therefore, that the lecturer was no longer making design criteria explicit through feedback on submissions. It was left to the students to use other resources to do this.

What emerged from the above is that of the three linked message systems in education which Bernstein (1977) has written about, namely curriculum, pedagogy and evaluation, Prof Strauss paid attention to the curriculum aspect only. The pedagogy did not support his ideals as reflected in the curriculum structure nor did the evaluation provide students criteria by which they could produce legitimate text. In attempting to construct the discourse themselves, the students could not access the expertise of the two lecturers of RD2 and SP. They (the lecturers) were not involved in the TYDP and as one of them put it:

> I get the feeling that some people [the students] were asked to do things way before I covered them in my lectures and I wasn't at any stage informed that that was going to happen, ... I might have rearranged my lecture material but I would even say that design should be shifted by four weeks [and] not start until the last term ... (Dr Johnson, Interview)

It seems also the TYDP was not properly resourced. No tutors were involved in the course which meant the numerous questions the students had due to the lack of feedback could only be fielded by Prof Strauss. The evaluation of all the submissions appears to have been a mammoth task, the magnitude of which Prof Strauss had not anticipated. At the end of this period 35 per cent of the student participants failed the project and all of them were black. What is of interest is that as these difficulties emerged through the semester in the TYDP, the number of students who felt they had the right to approach Prof Strauss to dispute their marks, or indeed to engage him in conversation about the project, were distributed along racial lines. White students freely approached him but black students tended not to. As two black students put it:

> Just gaining confidence in yourself ... I'm from a government school and you know when you get here and they tell you that the education that you got was not enough. Like, we hear that every day and it kind of dampens your mood as such. (S10)

> There are certain things that some lecturers said to me that I found quite discouraging and stuff ... he told me I must have a crack in my head if I thought I would be able to manage ... (S9)

It seems that prior experiences through the programme made the students reluctant to approach some academics for help. This situation implies that this group of students

had a narrower range of options to pull from in general but particularly for situations such as in the TYDP where the pedagogy failed.

Regardless of the outcomes in terms of marks, it is clear that a learning opportunity was missed in this context for the TYDP to contribute to better outcomes for the FYDP. Arguably, had Prof Strauss involved the lecturers of RD2 and SP in the design and execution of TYDP, and had he deployed tutors to manage the marking schedule and other tasks, the TYDP would have been in a better position to realise its objectives in terms of design education. The students would have had more resources at their disposal. Again, while it cannot be guaranteed that the final marks would have been different had the above scenario been realised, arguably the overall experience would have been improved for all the students.

The question then arises. Why was the arguably 'common sense' scenario presented above not realised? Could this situation have been prevented, and if so, what needed to be in place for the situation to have been prevented? These questions are addressed in the discussion below.

DISCUSSION

Why was it not an option to involve the other lecturers in the TYDP, given that such involvement would have improved the students' experience thereof? What level of accountability exists under circumstances such as these? In other words, would there be repercussions if the pedagogy failed to meet up to its ideals (as it did in this case)? Institutionally, what rewards are there for those who do contribute to the university's educational mission? What are the repercussions for those who do not, or indeed, for what are individual academics rewarded in the academy? How do they allocate their time, what is beneficial to them in the final analysis and will allow them to realise their own concerns?

The cultural and structural landscape: Assuring quality and promoting quality

In view of the idea of retroductive reasoning presented earlier, these questions shift readers from the level of the empirical and the actual, to the level of the real. At this level the questions are about the potential causal mechanisms with their generative powers to condition events and experiences. The quality assurance management system (of teaching and learning in particular) is one such causal mechanism which fails to have its intended effect because other mechanisms, such as the performance management and reward system, are in a contradictory relation with it.

In a discussion document authored by a group of senior academics at the institution under study in 2001 (herein anonymously referred to as the DDbSA) quality assurance of undergraduate teaching at the institution is said to rest on performance planning and review (PPR). They acknowledge, however, that this system is flawed. They note that the PPR system lacks an upward reporting mechanism, making it difficult to reflect on teaching practices. In the department concerned this means that

while academic staff members are obliged to meet with their heads of department at least once every three years (for senior staff members) to plan their activities, and once every year to review staff members' portfolios against criteria for the job, the outcomes of these meetings are not reported systematically beyond the departments except for promotion considerations. The authors of the discussion document argue that the importance of performance reviews should be appreciated in their own right and not only when it comes to promotion considerations.

However, a flawed PPR system in which there is no proper upward reporting system and no proper accountability at departmental level after performance reviews creates two problems. Firstly, it means that 'bad teaching practice' has the potential to be repeated year after year without being dealt with. This amounts to several cohorts of students having less than optimum educational experiences. Secondly, even if the performance review system occurs more frequently, they do not capture details of the actual day to day practices in lecture theatres. Part of that information is captured in course evaluations completed by students.

The DDbSA, however, problematises the use of course evaluations as a mechanism to indicate the quality of a course. The authors argue that course evaluations tend to 'focus on in-class performance of lecturers and the evaluation of tutorials, assignments and reading materials is often not included in the evaluation'. Secondly they point out that course evaluations are the property of the course convener and the head of department, and as such may not always be passed on to programme conveners for the consideration of programme committees.

In the data presented, it was precisely the in-class 'performance' of the lecturer that was under investigation. The findings showed that it is those in-class practices, the nature of the student-lecturer pedagogic relation during the social and socio-cultural interaction phase, that have the potential to specialise consciousness in students. Until this 'information' is captured and reporting mechanisms are employed (to further conversions about improving practice in the higher echelons of the institution as mentioned earlier), it might not be possible to understand why certain categories of students fail.

The fact that course evaluations are not passed on to programme conveners for the consideration of programme committees (due to the PPR system and the lack of upward reporting mechanisms) could be a symptom of the type of quality assurance system adopted at the institution under study. According to a report by the Quality Assurance Working Group (QAWG), the institution has chosen to adopt a model of quality assurance that encourages self-evaluation and development and locates as much responsibility for quality assurance as possible in the hands of the academics. According to the QAWG (2004) report, the focus of the self-evaluation model is on the institution's own capacity to identify problems and to then address them effectively.

According to Luckett (2006), this approach is based on a model of quality assurance sympathetic to collegial rationality which means that it is conducted within the norms and values of 'communities of scholars'. She notes that the purpose of

this approach to quality assurance is aimed towards the enlightenment of academics in departments, for them to 'learn more about their practices and as professionals, determine how to improve, so that students learn better' (Luckett 2006, 37–38). She further notes that while the institution may be involved in supporting the evaluation and ensuring that improvements do happen, it is the academics who are the key agents of the process. In the model, staff members are at liberty to involve their 'peers' in the sense of outside academics who are in the same discipline and as such share a 'feel for the game'. The model tends to view students as novices and while course evaluations may be considered, they do not have stand-alone weighting.

According to Luckett (2006, 38–39):

> The findings of the evaluations ... are usually reported in a diagnostic and advisory manner, ... The findings of the evaluation are owned by the staff concerned and it is up to them to exercise their connoisseurial or professional judgement and decide how to take the findings forward and what measure of improvement are required. They also determine to what extent the findings should be publicised. Because the purpose of the evaluation is intrinsically motivated enlightenment and improvement, the outcomes or consequences of the evaluation are typically non-threatening and are unlikely to be linked to any extrinsic rewards or punishments.

Luckett (2006) notes, however, that the model can be incestuous and protectionist due to the intimacy involved. She notes that cover-ups and avoidances are permitted thus allowing power and personality issues to get in the way of sound judgment. Finally, she notes that the model assumes that all academics are motivated by professional pride and that they do care about students, and the status of their department and institution. Arguably, however, this model and method of quality assuring teaching and learning, while invoking feelings of warmth at the notion of 'community of scholars', may in fact be working against the purposes for which it was developed.

In the DDbSA it is pointed out that any system of quality assurance that is developmental, such as this one is, needs to have rewards and incentives. 'Developmental' according to this document means it has at its centre the enhancement of academic staff by finding ways to reaffirm the primary task of lecturers by promoting and supporting good practice through opportunities for professional development and by strengthening the ways in which sound and innovative teaching practices are acknowledged. Schemes mentioned to reward excellence in teaching include the professionalisation of teaching at universities, clear definitions of what good teaching entails as well as demonstrated support for staff who are committed to this route. Ultimately, however, the research indicates that rewards in the sense of promotions to higher ranks (and not, eg, once-off monetary amounts such as those awarded to the Distinguished Teacher's Award recipients) would prove to be the most successful because 'that is what academics understand' (Ramsden 2009, 6).

Rewards and recognition: Teaching and learning versus research?

The previous paragraph suggests that promoting quality through rewards and recognition needs to work alongside quality assurance. Boughey (2007, 6) captures this by stating that 'quality-related work is, then, a cyclical process involving moving the institution towards where it wants to go and monitoring that it is, indeed, going in that direction'. The implication of course is that the primary task of lecturers is teaching and that on this basis anything good they do in this space needs to be acknowledged. A discussion on promoting quality in teaching and learning by rewarding good practice is moot, however, if in fact the academy fundamentally does not see teaching as valuable as, for example, research. The associated faculty's system of rewards and incentives is based on a combination of self-review and peer review. On this note it is argued in the DDbSA that for research-intensive universities such as the one under study (as declared in the university's mission statement), the peer review systems tend to be inherently conservative.

Moreover, according to the institution's teaching and learning report of 2010, there is a persistent perception that teaching continues to lag behind research as an activity that should be rewarded. The same report states that projects aimed at improving teaching do not reach all staff. Nothing further is said on the latter point and, therefore, it is not clear as to the exact nature of the issues associated with this failure to reach all academics. It seems, therefore, that ultimately academic excellence is equated largely with research. This phenomenon is, however, not unique to South Africa. In a study conducted by the Higher Education Academy in the United Kingdom (UK), with a view to understanding the factors associated with the reward and recognition of teaching, Ramsden (2009) concludes that most academics feel that the status of teaching is low compared to that of research and that the function of teaching in higher education and overseas has become unrecognised and unrewarded as compared to research. He notes that 'research tends to dominate teaching in international league tables and to be perceived as a principle source of individual academic status' (Ramsden 2009, 2). This view is supported by other studies done in Australia (Ramsden et al. 1995) and the United States (US) (Fairweather 1996). These report a trend where HEIs do not recognise and reward teaching as consistently or as often as they do research. The general consensus among all these studies is that in order to raise the status of teaching, reward schemes, such as for promotion, need to be revised.

The foregoing discussion presents a range of contradictions in the situational logic in which academics at research-intensive institutions find themselves, the consequences of which are then left to the individual academics to negotiate. Firstly, there is the issue of an institution committed to the idea of quality assurance as 'the measure of value of what we do', but which then subscribes to a quality assurance model underpinned by a commitment to a liberal notion of 'academic freedom', thus making accountability difficult to attain. Secondly, and related to the first, is the issue of the institution's espoused commitment to transformation, with teaching and learning used as one of the vehicles towards that end, but which associates

excellence with research and not teaching. It will be argued that these two issues represent a situational logic of constraining contradictions.

A further point to be made is that the academics' actions in the space of interaction, viewed as outcomes of their deliberations about the situational logic, in turn condition the students' actions in particular ways in the realm of social interaction.

Conclusion: Identifying the situational logic which confronts lecturers

The conceptual framework introduced earlier rests on the idea that cultural and structural systems exert a combined conditioning influence on agents in the space of interaction. In the current study, this focus on morphogenesis was thus used to explore both social and socio-cultural interaction to explain the enduring phenomenon of failure rates in the FYDP. The foregoing discussion painted the cultural and structural landscape of the institution under study, the conditioning of the space in which the FYDP takes place. Here it can be seen that, structurally speaking, the rules that govern promotion at the institution require high research outputs from academics. Further, the adopted quality assurance system appears to empower individual academics such that the structure is tightly linked to the academic role. Culturally, the university has an espoused commitment to transformation and academic freedom, and further identifies itself as a research-led institution.

On the face it of it there is nothing obviously problematic about simultaneously endorsing the idea of academic freedom while valuing transformation and being identified as a research-led institution. The contradictions manifest themselves in the space of interaction when agents (lecturers) are faced with decisions. Primarily it can be assumed that their decision making will rest on what Archer (2003, 122) terms their 'personal projects'. Furthermore, the contradictions exist across both culture and structure, as well as from structure/culture to interaction. In other words, is it reasonable to expect transformation with teaching and learning while education practitioners are primarily rewarded for research (because the space in which they function is a research-led space)? Here the ideas held in the cultural domain seem to work against the elements of the structural domain. Of course there is also a question of consistency around the issue of being research-led and still using teaching and learning as a vehicle to achieve transformation. Moreover, is it reasonable to achieve true transformation through teaching and learning when the quality assurance of teaching and learning rests on the efforts of individual academics, because the space in which they function endorses academic freedom? These contradictions and their consequences are further elaborated on below.

According to Ramsden (2009), in Australia there is a discrepancy between policy statements about the value placed by institutions on teaching and the actual experiences of the academics. At the institution under study, the responsible department and faculty have both declared a commitment to improving teaching and learning. However, certain practices, such as the poor reporting systems and structures mentioned earlier, cast doubt on the validity of these commitments.

The related faculty website has a link to awards and achievements for the faculty, naming a few recipients of such awards each year. The website shows a number of awards for the years 2006 and 2007. Notably in 2007 three awards are listed: the Distinguished Woman Scientist Award, the Young Scientist Best Presentation Award, and the National Science and Technology Forum Award. This list omits the recipients of the Distinguished Teacher Award for 2007. The university awards four of these per year and in 2007, two of the four recipients were from the Faculty of Engineering and the Built Environment in two different departments. While these awards are not international, they are indicators of excellence. Their omission, in a faculty that claims to endorse teaching and learning, arguably undermines this commitment.

Earlier in the discussion it was argued that academics in a research university such as the one under study operate in an environment which requires them to deliver quality in teaching, but conveys a contradictory message which emphasises the importance of research output for individual academics. The QAWG (2004) report notes that academic staff members in universities do not have to have teaching qualifications and many do not. They argue that the re-qualification of academics in order to combat this scenario would be counterproductive as in many cases young academics are under pressure to launch successful research careers. The implication here is that there would be no time for the re-qualification of university academics because there are more pertinent 'things' to do, namely, developing a research career. This emphasis on launching a successful research career is further strengthened by the funding that is made available for young researchers to 'kick-start' their research careers. No such funding is available to allow academics to become familiar with the 'other' of the two primary functions of academics, namely, teaching, and management and leadership.

What is perhaps paradoxical is that some of these academics do not necessarily view teaching in a bad light. The academics in the current study, for example, had genuine concerns for student learning and it was these concerns that were the impetus for some of the course level changes. In a study reported in an editorial in the journal *Nature* (Education ambivalence 2010) it was found that university scientists felt that teaching was as important as research; but, because they felt that their universities valued teaching less than research, their actions in the teaching context did not reflect their perceptions about the importance of teaching. Inherent in this then is a particular situational logic which results in certain courses of action and decision-making by members of staff who find themselves in such contradictory situations. Arguably, therefore, this contradiction is constraining because university reward and recognition structures, as well as quality assurance structures (as discussed above), become constraining causal mechanisms in terms of what lecturers could achieve in teaching. This does not mean this situation is deterministic, but only that lecturers are then conditioned in a certain way by these mechanisms. This situation activates constraints because lecturers have defined projects to realise their own concerns about their academic careers.

These contradictions have been called constraining rather than competitive even though the perception in HEIs is that there is a competition between the imperatives of research and teaching.

Even though in some parts of the world, such as the UK, some institutions define themselves as exclusively teaching institutions, the institution under study is not one of these. It rather defines itself as research led, but defines the core functions of an academic as teaching and research (DDbSA 2001). This implies that being an academic in the institution means living with both of these imperatives even if in reality the academics are only committed to one. A *competitive contradiction* in Archer's terms would be a case where invoking one does not invoke the other. This is not the case at the institution under study, where being an academic means having to engage with both teaching and research, regardless of the academic's perceptions about the importance of the one relative to the other.

Archer (1995) argues that *constraining contradictions* create a situational logic of correction in which conflicting ideas need to be modified so that they are mutually consistent. Arguably, however, academics in the institution would not be in a position to correct both, thus making them mutually consistent. There are neither the resources nor the time for that route in that if they do not have teaching qualifications it is difficult to engage in teaching informed by *educational* research. Moreover, and perhaps controversially, if there are no real consequences for practices that are 'less than professional', either due to poor reporting mechanisms or the type of quality assurance models at work, what would be the point?

In correcting this situation the preferred mode of action, arguably supported by the approach to the quality assurance of teaching and learning adopted, is one which tolerates one condition while fully committing to the other more rewarding position. The implication would be to do that which is the minimum with reference to the less favoured position, hence potentially compromising or containing it, and spend more resources (time and mental resources) on the favoured position. By bare minimum is meant those strategies that would be considered 'less burdensome', to use the words used by one of the lecturers in the study. The common refrain would be something like, 'I am not involved', such as was used by another lecturer in the study. Yet another academic used the words, 'I just let him do what he likes', even though he was aware that it was not in the student's best interest at the time. The implication is that these academics see themselves as carrying a heavy load and 'do not need to have extraneous responsibilities put on them' which they could do without.

This attitude is unfortunately exacerbated by the notion of *independence* inherent in academic freedom as it is defined by the Education White Paper 3: A Programme for Higher Education Transformation (DoBE 1997) which encourages the notion of 'the absence of outside interference'. In this definition, the 'impermeable' boundaries, that is strong classification, are between the institution and the government, or external quality assurance agencies. But it is suggested in the article that the same impermeable boundaries exist between academics which allow them to 'not interfere in each other's areas of expertise', namely, courses they convene. Because, as alluded

to already, since collegial rationality allows individual academics to be the key agents of the evaluation of their courses they may 'tacitly protect each other from failure *by remaining aloof*, for their turn will be next' (Luckett 2006, 39, emphasis added). This situation is highly at odds with the espoused purpose of collegial rationality as an approach to quality assurance. The harsh research agendas imply that, contrary to the espoused purposes of collegial rationality, academics may not in fact learn more about their teaching practices because the system does not deliver on this. Furthermore, there is no one in a position of power, such as Head of Department, with sufficient educational expertise or discursive resources to comment on the quality of teaching. As such, teachers may not improve, and students may not in fact be provided with better learning opportunities.

To conclude, what this analysis suggests is that it is difficult to assure the quality of teaching and learning when (a) a 'no-interference' approach (couched in the discourse of respect for each other's autonomy and expertise) means that the key agents do not 'interfere' in each other's areas; and (b) the institution's enduring legacy sends a message which says teaching and learning is not really (or not yet?) 'our core business' even though there is an 'in principle' commitment to this activity.

RECOMMENDATIONS

The article has attempted to argue that lasting changes to teaching and learning which transform the students not only in terms of what they know, but also in terms of who they are, go beyond one academic staff member in one department making changes to how they teach in one course. Various levels of accountability beyond the academic staff member are implicated, as well as various agents with different levels of power and control. However, it is also clear that in order to enrich the experience of students enrolled in any engineering design course, that course has to be structured in an integrative way. This is crucial as engineering design by nature is multidisciplinary and brings together various forms of knowledge in creating a process design or any other form of engineering design. As such, students have to have various 'people' resources with the requisite knowledge and experience for them to draw on during any design project. These might include senior students who act as tutors, as well as other academics who teach in the subject areas implicated in the design projects. This ensures that the lecturer in charge of the project is not overburdened and is then in the best position to provide timely and well-thought through feedback to allow the students maximum learning opportunities.

ACKNOWLEDGEMENTS

The financial assistance of the National Research Foundation (NRF) is gratefully acknowledged as well as the Carnegie PhD Sabbatical Grant.

NOTES

1. The term 'black' is used in this article in an inclusive sense to refer to all persons who would have been classified as black, coloured or Indian in the apartheid system of population classification. The use of racial terminology here is not meant to imply any essential view on race, but rather to recognise that in the lingering effects of colonialism and apartheid, South Africans' lives and educational chances continue to be largely associated with race.
2. Please note that Prof Reed, Prof Strauss and Dr Johnson constitute pseudonyms.

REFERENCES

Archer, M. S. 1988. 1988. *Culture and agency: The place of culture in society*. Cambridge: Cambridge University Press.

Archer, M. S. 1995. *Realist social theory: The morphogenetic approach*. Cambridge: Cambridge University Press.

Archer, M. S. 1996. *Culture and agency: The place of culture in social theory*. 2nd ed. Cambridge: Cambridge University Press.

Archer, M. S. 2000. *Being human: The problem of agency*. Cambridge: Cambridge University Press.

Badat, S. 2010. *The challenges of transformation in higher education and training insitutions in South Africa*. Midrand: Development Bank of Southern Africa.

Bernstein, B. 1977. *Class, codes and control*. Vol. 3. London: Routledge & Kegan Paul.

Bhaskar, R. 2008. *A realist theory of science*. 2nd ed. London: Routledge.

Boughey, C. 2007. Marrying equity and efficiency: The need for Third Generation Academic Development. Perspectives in Education, 25.

Boughey, C. 2010. *Academic development for improved efficiency in the higher education and training system in South Africa*. Midrand: Development Bank of Southern Africa.

CHE *see* Council on Higher Education.

Council on Higher Education. 2010. *Access and throughput in South African higher education: Three case studies*. *Higher Education Monitor* 9. Pretoria: CHE.

Danermark, B., M. Ekstrom, L. Jakobsen and J. C. Karlsson. 2002. *Explaining society: Critical realism in the social sciences*. London: Routledge.

DDbSA. 2001. *Quality Assurance*.

Department of Basic Education. 1997. *Education White Paper 3: A Programme for Higher Education Transformation*. Pretoria: DoBE.

DoBE *see* Department of Basic Education.

Education ambivalence. 2010. *Nature* 465(7298): 525–526.

Fairweather, J. S. 1996. *Faculty work and public trust: Restoring the value of teaching and public service in American academic life*. Boston, MA: Allyn and Bacon.

Letseka, M. and S. Maile. 2008. *High university drop-out rates: A threat to South Africa's future*. *HSRC Policy Brief*. Pretoria: HSRC.

Luckett, C. 2006. *The quality assurance of teaching and learning in South Africa: An analysis of national policy development and stakeholder response*. Stellenbosch: University of Stellenbosch.

QAWG *see* Quality Assurance Working Group.

Quality Assurance Working Group. 2004. *Guidelines for academic review*. Cape Town: University of Cape Town.

Ramsden, P. 2009. *Reward and recognition of teaching in higher education: A collaborative investigation*. Loughborough: Higher Education Academy.

Ramsden, P., D. Margetson, E. Martin and S. Clark. 1995. *Recognising and rewarding good teaching in Australian Higher Education*. A project commissioned by the Committee for the Advancement of University Teaching, Canberra.

Republic of South Africa. 2006. *Acelerated and shared growth initiative – South Africa (ASGISA)*. The Presidency.

Scott, I., N. Yeld and J. Hendry. 2007. A case for improving teaching and learning in South African higher education. *Higher Education Monitor* 6: 1–85. Pretoria: CHE.