A creative humane university – coping with the business model

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Abstract

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In this article it is attempted to indicate that the economistic application of economy of scale in the context of a university pushes a university, even in its reigning epistemology, ideologically in the direction of technicism, scientism, and economism (imposed by neo-pragmatist managerialism). Economistic application of economy of scale includes minimising academic staff and their support systems, but combined with the maximum intake in student numbers. This managerial system introduces stereotypical forms of innovation, and inhibits risk-taking, although, disciplined playfulness is indeed needed for creative scholarship. It is also attempted to analyse creative possibilities in terms of the spectrum of possible scholarly problem statements with their proportionate risks. The basic forms of abstraction are also outlined in order to give some indication of how scholars are to support the development of a responsible spirit of renewal of knowledge in their students.

Opsomming

'n Kreatiewe, mensgevoelige universiteit – die hantering van die besigheidsmodel

In hierdie artikel word gepoog om aan te toon dat die ekonomistiese toepassing van die ekonomiese skaalvoordele binne die konteks van 'n universiteit, ook ten opsigte van sy dominerende epistemologie, ideologies voortgedryf word in die rigting van tegnisisme, sciëntisme en ekonomisme (opgedring deur 'n neo-pragmatistiese besturokrasie). Hierdie ekonomistiese toepassing sluit die minimalisering van akademiese

personeel en hulle ondersteuningstelsels in, maar gaan ook gepaard met die maksimering van studentetalle. Hierdie bestuurswyse stel egter stereotiepe vorme van innovering aan die orde, en inhibeer die neem van risiko's, alhoewel 'n gedissiplineerde speelsheid nodig is vir kreatiewe vakmanskap. 'n Analise word ook gebied van die kreatiewe moontlikhede wat die spektrum van moontlike wetenskaplike probleemstellings bied. Ook die basiese vorme van abstraksie word omlyn om sodoende 'n aanduiding te gee van hoe vakwetenskaplikes die ontwikkeling van 'n verantwoordelike houding van kennis-vernuwing in hulle studente kan ondersteun.

1. A narrative introduction to the issue

While restructuring our university, management instructed us: "Set your programmes and curricula in such a way that best use is made of 'economy of scale'", which in essence means: *Get the maximum out of present capacity.*

For this purpose the concepts of *research* and *teaching* have been separated administratively and in practice, and in each area the maximum was required. The following questions can thus rigthly be asked:

- What is the product/output quality of *the universitas magistrorum atque scholarium* under these conditions?

- Can we turn the tide in a better direction, and how can we do so?

For the past four to five years I have been teaching a compulsory philosophy course for final year students of the B-degree (first degree). This course concerns more or less the philosophical foundations of the group's majors and future professions. The course was part of the last semester of the third year, and therefore of the final part of their degree. For the purposes of this article it does not matter which professions and majors are involved. I only mention these particulars to indicate what happens with bright young people in an educational institution if *economy of scale* becomes a dominant norm of training.

Proposition 1:
> *Scholarly creativity and quality are endangered by "economy of scale" type managerialism.*

The following story illustrates this statement:

A Monday morning, 08h15, in September 2002.[1] My office phone rings. A kind female voice greets me – the chair of the Students' Academic Council:

She: (Somewhat formal tone): Professor, is it correct that your philosophy of science students wrote their midterm test Saturday morning? (*I think: Stupid question – everybody knows that all 3rd years of the university had to write that examination the previous Saturday.*)

I: Correct.

She: Professor, is it correct to say that the test counted out of 200?

I: Yes. I have been quite graceful to them. I asked them to answer two questions out of a battery of six, and each answer is graded percentage wise.

She: (*Continues the irritating formal tone.*) And is it correct, Sir, to say that the duration of the test was 90 minutes? (*I am trying my best to hold my polite pose under cross-examination, not showing my growing irritation.*)

I: Yes. It is correct. Something the matter?

She: (*Sounding strict enough for me to imagine a frown*): Professor (*now she accentuates my title*), I regret to have to inform you that we have received a complaint against you.

I: Complaint? What kind of complaint?

She: Professor (*she sounds strict again*), the students are complaining that it is impossible for them to write down 200 facts in an hour and a half!

I: Huh?

She: And they also want to know where they are supposed to find a hundred facts about X or Y? (*"X" and "Y" stands for the names of paradigm changers in the disciplines involved. For physics it could be Newton or Einstein, for Psychology it could be Watson or Freud or Jung.*)

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1   A referee of this article called this story "anecdotal". If the referee meant that it is an imaginary narration of what could have happened, then I must insist that it really happened, and that I tried to tell it the way it happened.

I: Listen ... I shall take up the matter with the students in class. I bet that it will be students from discipline P?! Correct? (*My turn to ask that question – with the right tone of voice. The group of about 70 consists of two major disciplines connected to two related professions. She confirms, a bit surprised by my cleverness!*)

Tuesday morning I meet the class. There is a larger block – group "P" consisting of about 55 (the complainants), and a smaller group of 15 from another profession – lets call them "Q".

I: Good morning everybody! Yes, I see you are looking disappointedly at my hands! You will unfortunately not receive your test scripts today. There is a little hiccup – some of you have filed a complaint against me with the Student's Academic Council. It goes more or less like this: That I expected the impossible of you, having to write 200 facts in an hour and a half. And that you cannot deliver a hundred facts about any of the questions I asked. (*The Q's are smiling; the P's look somewhat brighter: It seems just possible that the dumb philosophy professor may have understood their problem*.) I am going to start from scratch with the grading (*not completely true*), and I am going to change the way I calculate your marks. Each answer is going to count only one mark, and the whole question paper out of two. Of course then you can answer the question, even if you have only one fact ... (*The Q block – they are in competition with the P block – now roars unprofessionally with laughter ...*)

I proceed to explain how one approaches an essay type of question: how to analyse the question first, and only after that produce a schema, an allocation of time, and then answer the question. And then I proceed with the day's scheduled work ... After class the P's sent a delegation to come and apologise for the behaviour of the Q's.

Comes the end of year exam. A day or two before the paper will be written, a knock at the door. In the passage about fifteen students from group P.

Representative: Prof, we still do not know where to find 100 facts about X, Y, or Z. And this time it is going to be worse: we have to answer three questions of 100 marks each in only two hours. We are really afraid of answering your paper. (*I loose courage – since it is their final exam, these youngsters' degrees are now dependent on me!*)

I: People, I am more concerned than you are at this stage. To me it appears that, for three full years, through about 20 module exams, and as many midterm tests, and still more class tests, you have only done multiple-choice question papers. This is against the rules – lecturers are not allowed to set all papers that way.

Voice from class: Do you mean "monkey puzzles" Prof?

I: If you promise not to go and complain that I called you "monkeys", then the answer is "yes".

Lady: Not true Prof. We did a lot of monkey puzzles, but we also had to give written answers.

I: You got me with that one. If you had to formulate your answers in written form all the time, why are you so afraid of essay type questions? You know what to do, don't you?

Lady: (*Her face is very serious. An expression which says some professors are truly handicapped*): No professor, not essays. We wrote paragraphs! It works like this: if the question counts out of five, then one needs five facts, and if ten, then one needs ten facts in your paragraph.

I: And if the question counts out of 100, then ... (*Her face brightens – even the most handicapped professor can finally figure out their problem!*)

About two weeks later I drop in at a colleague who teaches discipline Q. When I ask why their students were only required to write short factual paragraphs, she points to the stack of two hundred exam scripts on her desk.

One year later. I teach that compulsory module again. I decide to give the students value for their money. I shall teach them how to ask and answer questions, how to plan the answer. This is the essence of method. Using model questions, I train them. No memoranda – no parrotting – analysis and synthesis. I give them assignment topics in the format of research problems.

One can become dumber by learning. Even clever students can become dumber at university. Lippezaner horses can learn to dance, but they do not produce the music or devise the steps. When I listen to some of my colleagues, they work like old Lippezaners – they know and give the recipes. And their students follow their example.

One of the students from group Q, not a star student (she got about 65% in tests) appears with her assignment, late. I do not like it when students hand in assignments late, since I seldom have an assistant, and I experience extreme time pressure with grading. However, after reprimanding her a bit, she tells me that she appreciates the fact that I take care to grade and write comments, continuing:

> I really pity some lecturers. The poor people do not know whether they are coming or going. This one lecturer in discipline P – actually he is cute: explains things well – couldn't get to giving us a midterm test. So he gave an assignment for homework, in order to get an admission mark for the exam. It was near the end of semester. So he finds this clever way of grading: If your reference list contains more than six sources, you get 100. If you have at least three, you get 80. And if you have two, you get 60. You know, I always get around 65 – I am not a top student. I fact I think I am a bit dumb. This time I got only sixty, since I had only two sources. But at least I read them, and analysed them. Many of those who got 100 simply collected titles from the library catalogue, and they copied from one another. The lecturer had no time to really take us seriously.

Another year passes by, and I throw in the towel against economy of scale! I start looking for ways to process "students" too.

What is the issue then?

- Economics of scale forms part of the big-business model applied to even small educational institutions. In any large group of students ("clients"), there will be a number who do not want too much value for their money, for it implies they must carry part of the responsibility for their own education and training. They have already imbibed the neo-hedonistic values of late capitalism. They refuse the anxiety of personal production. Professionalism reigns, but we produce weaker professionals, who are sent out into the public arena by far not ready for "life" in its complexities.

- Academic staff are overloaded, and in order to produce the necessary output, they economise in the ways of accompanying their students. They take technical short cuts, and in fact are pressurised to do this, for the sake of increased throughput within the context of growing massification. It is simply a survival strategy.

- One of the most serious problems is the neglect of the humanities and the social sciences as a necessary base for every profession. Professional specialisation is necessary, but equally necessary for a good professional is understanding of, or at least sensitivity for the life contexts in which professionals work. Professionals have to be introduced to these life contexts by way of contextualising their studies, as well as by being surrounded by such colleagues in their profession. Good knowledge of Greek and Hebrew may be necessary for a minister of religion, in order to do exegesis, but Ph.D.'s in both languages still do not make good ministers.[2] Engineers in practice have indicated that they need a wider context in their study programmes than only technical expertise (cf. Van Vuuren, 1992:3).

Are we not presently engaging in the dumbing down of ourselves and our students to technicians (cut-and-pasters, imitators, and technical data collectors)? And how can we return to a position of responsible renewal of knowledge?

In response to these questions, I am going to argue that "market"-determined "innovationism" in university training leads to a stereotypical kind of scholarship, whilst a more culturally contextual approach may result in better graduates, even for technical professions. We are being limited in our sense of worthwhile knowing under pressure of economy of scale. Secondly, I shall try to indicate possibilities for a more creative, yet responsible scholarly education of our students, by being sensitive to historical and normative contexts, and by being imaginative in a disciplined way, taking on challenging problems playfully, and working on an abstract level in a logical and morally responsible way.

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2   Exactly at a time when even more money than before is allocated to train engineers in South Africa (there are unemployed engineers, and there has been a brain drain of them), the case of Tammy, who died because of physical abuse by his adoptive mother, makes headlines: The *Sunday Times* states in an editorial: "There are over a million orphans in South Africa and there are thousands of South Africans willing and able to open their hearts and homes to these children. We need the services of more, dedicated social workers to ensure that these children find the love they need to thrive and do not end up like Tammy Herman (*Sunday Times*, 2006; see Anon., 2006). Another issue which "market readers" keep on forgetting is that a proportional relationship exists between the number of engineers employable and the number of technicians available, and also, in developing countries, a positive relationship between effective government spending and the employment of engineers.

2. Science and culture – innovationism

In a former article (Venter, 2006) I argued that it is not possible for institutional education to fully reproduce the circumstances of the work situation, as the mainstream interpretations of "outcomes-based education" tend to require. Time and again the world of work seems to ask for the impossible – a completely trained employee. This does not mean that I am choosing for the other opposite – the "ivory tower". I do believe that there are ways in which to consider the work situation, yet remain a university in the "traditional" sense of the word. This is why I am pleading for a decrease in early specialisation, and a more contextual approach.

Suppose, however, that institutional education could successfully imitate the industrial workshop production structure. This approach would factually change university education from a culturally contextualised, scholarly knowledge apprenticeship, to purely technical training in production techniques. This training in production tecniques will then, however, too easily become training without reflection about such techniques, and still within a cultural context, but without critically rethinking this, or even explicating it. In some areas contemporary universities have already gone very far on the road of work-simulation, although the degree of simulation remains suspect.

Proposition 2:
> *Good scholarship transcends technical training and innovation by taking account of the cultural foundations in which it is rooted.*

Scholarship is born from a cultural context, and supported and sustained by it. Students of the humanities know that even the natural sciences, and especially the world of engineering, are rooted in a cultural tradition, and practised in terms of such a tradition.

- The shift from the organismic to the mechanistic world picture in the seventeenth century after the advent of automatic machines is a case in point (Venter, 1992; 1997). This shift, furthermore, had a clear influence on the practice of medical science, and soon after also of social science.

- A more difficult example, but very significant, is the issue of balancing the books (accounting) in Renaissance international trade practices. On the one hand it stimulated the growth of abstract balances called algebraic equations, and on the other hand it provided the context in which the metaphor of

gravitational equilibrium could find expression, not only in physics, but also in economics, evolutionary ecology under natural selection, and even in some ways of expressing the so-called law of entropy (cf. Venter, 1997). Given the calculative balance sheet, and even more, the equilibrium approach, science appears like a neutral technique, or a "pragmatic method without dogma", rather than the product of a cultural development, a religious attitude, a socio-political power struggle, economic privilege, or aims of control, and more.

Even though it is going to be an important context of, and directly influence the work situation, few students in technical fields are made to think about human rights and transformation, and few students in the humanities, and especially the economic sciences, are forced to think about the human implications of the technology from which they are going to make money. Thus, at a recent international congress, a South African owner of a biotechnology company, but trained as an advocate, argued that those who object to experiments to develop superhuman biotechnologically are superstitious and endanger human dignity (Jordaan, 2006). He apparently has never studied the history of the *right* to dignity, which among others has its roots in previous attempts to create a superhuman race.[3]

> If we want to produce responsible yet creative graduates, an understanding not only of the history of science, but also of the history of culture is needed, as well as a very deep sense of how metaphors and other imaginative forms of expression function in science/scholarship. Such a cultural explanation of our processes of 'academic knowing' will contribute to a healthy relativising of present ways of understanding and thinking (and therefore a sense of our dependence on our predecessors).

Such an approach will also unmask the reductionist view that all science is only quantifiable fact and law, for both established "facts" and acknowledged "laws" are the products of the cultural formatting of that which we abstract from the "reality-process".

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3   Although the idea of "human dignity" has been formulated by the Stoics and Cicero about two millennia ago, it only became a protected right after World War II, partly because of the treatment of people as subhuman, and of the attitude of being superior. The introduction to the United Nations Charter (1945), and its Universal Declaration of Human Rights (United Nations, 1948), show this background very clearly.

However: sensitivity for such cultural formatting is disappearing from the mind of young natural scientists.

- The historical sense is diminishing as even photographs and brief biographies of scientists are disappearing from contemporary textbooks.

- The "literature-study" sections in post-graduate theses are artificially limited to only the most recent publications (say: of the last three years) on a very narrow (so-called "focused") topic.

- The date of publication goes upfront in the Harvard reference method. The impression is created that what is older, is irrelevant. This lack of historical sense makes the reading of Einstein irrelevant, and anachronistically induces absurd references such as: "Plato, 1992 ….". Dating one's work is not a neutral activity. The ideological striving after constant innovation (not the unpredictable quantum jump of creativity), in the competitive capitalist society has created the impression that the recent is both the new and the important. Old experiences are not important, not remembered, and thus sometimes reinvented! In fact the non-experienced future is the most important. However, for a long time the other extreme reigned. In the Middle Ages the adage was: "What is old, is good, and what is good, is old." Backdating one's own authorship to an ancient famous predecessor was one way of expressing this, as in the case of the Gnostics and Pseudo-Dionysius Areopagita. In fact even modern and recent writers, before the fragmenting of tradition a few decades ago, tried to find predecessors in ancient times (the most recent being the New Age occultists who boast that their spirituality goes back to ancient wisdom, much older than Christianity).[4]

- The role of the histories of economics, economic thought, and the economy itself, is diminished or even disappears from the teaching programmes of faculties of economic sciences.

As Latour says: *yesterday has become the trash can of today's history* (Latour, 1994:5 ff.). Therefore: some tiny bit of yesterday's theory becomes today's unchallengeable technique, or undisputed

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[4] One reviewer made the strange remark that I, myself, am guilty of such absurd references. In case readers feel that too, please note that this formalism is part of the standardisation required by this journal. It does not make my argument against such formalisms invalid.

fact (computers and numbers [supposedly] cannot lie!), but they also become tomorrow's crumpled up scribbles in the trash can. We learn to "know" and "live" in an eventualistic way, uncritical of the way we are carrying the past underneath the surface of our work, and unable to be responsibly critically-creative.

3. Limits and limiting of techno-scientism

There are real limits to knowing by and through technical standardisation. Scientists have themselves noted that the absence of different schools in a discipline, and the dominance by paradigm leaders who earn large sums of money, have transformed science into a boring business with not enough inter-subjective controls (Highfield, 1997:24). Also, some elements in the private sector are slowly beginning to acknowledge that the standardised thinking processes of the "hard" sciences lead to inflexible, stereotypical approaches to problems (Henzler, 1990).

Propostion 3:
> *Views of contemporary technicism, economism, and scientism are expressed at university level in the forms of formalistic, bureaucratic technical management, and the training of students in recipes for research and professional work.*

3.1 Techno-managerial faddism versus authority

Important managerial fads of the past decades very often had their origin in the thinking of engineers attempting to design organisations after the analogy of designing machines – a more literal organisational engineering than the positivists ever dreamt of. Some of these guru authors are only now realising that (ironically) efficiency, but especially creativity and innovation, have suffered because they have neglected "the human factor" (Henzler, 1990). They have transformed managers into engineer-technicians who keep the organisational engine going.

Of course the "engine" is *de-subjectivised* – it is not asked for an opinion, and is not allowed to talk back. The methods and aims of the authoritarian business manager may be the only admissible aims and methods valid inside the firm (in the name of shareholder value), but *he/she is at least accountable to shareholders*. University managers and councils do not represent shareholders, so at universities managerial authoritarianism can be worse. Kuhn and Geis have analysed the effects on commitment of staff which this tendency has: they slip down from core commitment (sharing the

ideals of the organisation) to calculative commitment (focusing on remuneration rather than ideals), and finally to cog commitment (just turning with the other gears in the machine, not seeing reason for any initiatives). (Cf. Kuhn & Geis, 1988:159.)

While neo-liberal economists assure us that the only guarantor of "freedom" is the unfettered market, both private and academic sector employees have the experience of very authoritarian managers who use managerial techniques to manipulate staff into submission to their aims and methods. This is not simply a personality problem in the manager, who may not even be conscious of it. It is rather a product of neo-pragmatist "managerialism" as an ideology.

Proposition 4:
> *Neo-pragmatist capitalism is one of the most authoritarian forms of managerocracy.*

Pragmatism is *methodistic* – the means or methods or techniques that "work" is the the truth. And when the pragmatist says "it works", he/she means that the intended goal has been reached. Individualistic capitalism feels very much at home with the pragmatism of William James: "*it works" means "it works for **me**"* (James, 1970:20 ff., 41 ff., 131 ff.). Thus in the private sector, it "works" when it works for the CEO. But the buck does not stop with him/her: he/she is accountable to the directors, shareholders, and in some sense to organised staff. In the academic world then, it "works" when it works for the CEO (rector/principal) – but: he/she is responsible and accountable to whom? (This state of affairs invites political intervention in totalitarian democracies, where politicians pretend to "represent" the interests of all of "society".) The long tradition of collegial leadership at universities has collapsed under the pressures of the "market", which now determines the ways in which universities are led.[5]

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5   As I was in the process of finally editing this article, South African education minister, Naledi Pandor, expressed her concern about the huge salaries some vice-chancellors of universities claim for themselves. I do agree with her. However, guidelines by politicians about such salaries will not solve the problem. State intervention – the mergers, SAQA. HEQC, and affirmative action – have helped create huge bureaucracies. Government salaries (municipal managers), private sector salaries, competing with overseas standards, are all part of the problem. There are universities where the VC's are not necessarily overpaid, but huge bureaucracies swallow up a large component of income, while strictly controlling the salaries of academics, and creating red tape that

There is an important issue in this respect: *technical expertise in management is not the same as authority.*

- **Authority** presupposes the understanding of the norms/ conditions applicable to the whole situation, and the way(s) to realise them (cf. Venter, 1987:115 ff.). One can be an authoritarian technical manager without being an authoritative, respected manager. Authority is a kind of wisdom not dependent on technical expertise.

- **Pragmatism** is one of the irrationalistic heirs of Positivism. Thus it promotes *techno*-scientism and *technical* management. It still searches for progress through tough-minded empirical *experiment* and technical *planning* (Dewey, 1916). Thus the technical manager's aims will determine the planning, and the planning will determine the experiments selected in order to find the way forward. In the context of a university this approach becomes acute and serious at ground level – via institutional structuring based on the over-simplified principle of "structure follows function/strategy", an epistemology and a philosophy of education/training is *imposed*. Management determines the aims, and implement them by technical means. Management determines the budget, and the budget is prioritised according to management's priorities. *Thus the means to do the work is determined (on the whole) by management: this includes research methods used and the educational approach*. Techno-scientist managers tend to look at qualitative research as expensive in staff, and untrustworthy in character, and may easily reduce the human teaching staff in favour of more "machines". University managers may make serious mistakes in selecting aims, and in finding the right connection between aims chosen and means provided,[6] but *the intellectuals in the lecture room and the laboratory/library have to make the (sometimes unworkable) plans work (*and usually *they* will), for they chose a career directly connected with the future of the world, in and through the younger generation. All over the world, well-established collegial institutions of universities (faculty boards,

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consumes the time of productive academics. Managerial bureaucracy loves intransparency, so they are often beyond accountability.

6   The business world has found a "cas-evac" procedure for its failed "managerocrats" – the "golden handshake": preventing both parties from losing face through one party sacrificing money. However, I have not actually heard about any university CEO receiving a golden handshake!

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senates), have been rendered powerless by management. The new approach – rationalised in terms of economy of scale – sometimes does bring financial advantages, but the quality of output in graduates has, in my opinion, decreased considerably.

- The **power principle** in this respect is **ideological** in the bad sense of a controlling and manipulative idea, incarnated in powerful human beings. It is subterfuge to say that after the fall of the Berlin Wall there is no ideology left. *When a whole society is manipulated into accepting an idea of knowledge, human living, and valuable reality, then it surely is under the yoke of an ideology – it is under suppression of ideas which are incarnated in power relationships.*

In the following paragraphs I am going to look very briefly at the limitations of the new approach, both in terms of the demands placed on the scholar, and in terms of the coping strategies devised, and the results thereof. The technical approach is over-emphasised, and academics follow the lead (or the pressure) of management in this regard.

3.2 The limits of technical training

In another article (see footnote 3 referring to Venter, 2006) these issues have been treated in more detail. I summarise some of the relevant arguments from it:

- Although required by the OBE principle, it is impossible in a formal educational institution to completely unify the world of study and the world of work. Employers want universities to produce professionals who can do the "job" right away. Not even engineering laboratories at a university can be real simulations of the external work situation.

- Factually very few engineers and natural scientists remain in their disciplines for much longer than five years, after which they move into management (or become part of the brain drain). Or worse: they become managerial gurus with very limited experience of practical management.

- Given the problems already caused by such shifts of career, the revision/reduction of the purely technical component of training needs serious consideration. Finding a slot in the programmes for training in *philosophy* and *aesthetics* may be a time and cost effective way to create sensitivity for the quality of human life.

3.3 Worthwhile knowing

Yet not only the human factor suffers from technicist training. Epistemologies, philosophies, worldviews, determine what we see as worthwhile to investigate, or to transfer to others. The new ideological approach is skewing our sense of worthwhile knowing. And technical creativity itself is inhibited by this new stereotypical thinking. Some business leaders are trying to overcome this by exposing their staff to artists (sic!), writers (sic!) and philosophers (sic!) (Henzler, 1990).

Proposition 5:
> *The "market reader's" indications of what is worthwhile to know, does not necessarily lead to "quality" or responsible scholarship.*

We are slowly but surely being *limited in our sense of worthwhile knowing* by the supposition that quality knowledge is more or less limited to *marketable* knowledge and programmes. We are blinkered into the narrow belief that the *only* way to live (physically, biologically, and even culturally) is to be full participants in the formal or measurable market. Experts in economic sciences teach this view in their classes, and in regular radio and TV interviews. The variety of cultural expression, even within the field of economic agency, is left out of perspective (something for museum anthropologists). After Mandeville (beginning of the 18th century) no theory of economics I know of took account of the economics of crime, or of unpaid, voluntary work (usually done by women). The economic practices (self-sustenance) of desert communities still need to be studied. Why? We could possibly learn how to handle very scarce resources responsibly.

A more serious indication of this trend is the very one-sided promotion of certain scholarly disciplines by politicians, managers, and public relations officials of universities, by businessmen, and labour unions, while others are reduced to bare shells or eliminated from curricula. This direction is almost deterministically enforced by *that empty concept of "excellence" as "competitiveness"*, double-checked by the universal "*audit*".**7** Competitiveness is given some content in terms of the values of consumerism, the (non-productive)

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7   My article about the new bureaucratic control mechanism of the "universal audit" will appear in the Proceedings of the FISP Congress held in Istanbul, in 2003 (to be published in 2006).

entertainment sector and financial market economies.**8** The growing presence of future professional sports stars attached to the academe is but one form of this.

In good academic tradition "quality" has until recently not been measured simply in terms of minimising costs, time-to-market, and maximising output and income, or even throughput. The "market", or "competition", does not guarantee quality; rather quality supports competitiveness. *Quality is often a sustained and known tradition*. Good academic quality resides not simply in the ability to follow the rules and the recipes that work for some(body's?) goal/gain, but rather in good yet relevant work in areas where financial gain and direct solutions of problems are not the primary focus. Famous works like Russell and Whitehead's *Principia Mathematica* and *Kuhn's Structure of Scientific Revolutions* took a very long time to conceive and write. They did not directly serve the building of a bridge or a change in interest rates, and they probably did not make money fast (compared to some of the technical and one-sided faddist intellectual products which became best-sellers within a short period).

Technical scientists tend to ignore the role of *imagination* in science and the academe at large. *Yet no abstraction process, and no construction of theories and models can ever take place outside the productive process of a disciplined imagination*.

This statement requires a concept of "relevance" that transcends pure utility, and serves as a norm for interaction with the contextual burning issues to which the techniques are applied. Such a concept of relevance could include standing in the shoes of great scientists in order to "see" the issues from their perspective (as far as possible), and to imagine how they overcame the limitations in vision and technique of their day. *This may be the most creative, but also the least expensive part of a student's training*. Technicism, however, tends to ask firstly for the hard material instruments and the ability to use them.

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8   Presently one of the strong factors in my university's way of determining salaries of academic staff is the median of salaries calculated for 500 companies of "similar" staff compositions. In order to determine how deviation from this median is needed, the scarcity factor of the scholar's expertise within the "market" is determined. On asking how the scarcity factor of an astrophysicist would be determined, I got no answer.

The semi-materialist belief that the resetting of the material "base" will take care of socio-cultural problems in the "super-structure" has penetrated everywhere into capitalist society, also into education. In developing countries *socio-cultural* problems are different from those in the developed ones. The pain of human relationships in rich countries, however, shows that solving problems of material welfare does not also "causally" solve socio-cultural problems. Ideological pragmatics, which should be searching for the workable, shows a strange resistance to relinquish beliefs which have not worked for centuries – these beliefs unreasonably sustain themselves. Such is the (ideological) belief that the improvement of the material base automatically improves conditions in the superstructure. This belief originated in the 18th century free market model of Turgot, was taken somewhat further by Adam Smith, changed into a dialectic by Marx, and still hides behind the story that the "market" promotes (even guarantees) freedom, welfare, and good culture, as the Monetarists and the neo-Classical economists would want us to believe (cf. Venter, 1997a:5-8; 2002a:289-300; 2002d:425 ff.).

This kind of argument is also valid for science/scholarship in general – machines/technical apparatus cannot solve problems without human intervention/control. But if human intervention does not include socio-cultural understanding, we may solve a present detail problem technologically, but not sustainably. *However: understanding the context may lead to a responsible transforming of the techniques*, under the guidance of:

- *justice* in designing and producing anything, like a car (which implies a responsible relationship between safety and affordability); or

- taking account of *quality of life* in the planning of a city (a quality partially determined by the aesthetic planning of an area);[9]

- of *dignity and rights* in biotechnology, human development or environmental care.

Then: why not teach engineers some social philosophy and town planners artistic design?

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9   Those of us who have seen utility architecture in residential quarters of Communist-era housing in Eastern Europe will know that these areas are almost uninhabitable.

Note: the "trans-disciplinary" aggregates that are now presented as academic programmes and team research, lack disciplinary depth as well as visionary integration. The humanities can help to provide both, i.e. the depth of insight for all technically trained intellectuals.

3.4 Scholarship, scientific control, and human subjectivity

Of serious concern is the scientistic tendency to forget the subjectivity of human beings and the need to live in a humane society. One of the dangerous factors is the erosion of normative concepts like "human dignity".

Proposition 6:

> *Modernity's tension between the "absoluteness" of the human being and its "naturalistic" origins, is collapsing in favour of naturalism, combined with a desire for scientistic control of all human life, and thus of dehumanising the human being in scholarship.*

Kant already faced a dilemma with regard to the above-mentioned issue. His concept of dignity – never to treat any rational creature merely as an instrument[10] – presupposes that other human beings are recognisably "rational" through their actions. But exactly at this point lies a serious problem: Kant believed that humankind in the initial ("childhood") stage ("nature"), is dominated by his subrational ("natural") faculties. Yet, inevitably, maturing over thousands of years, progress towards a rational, cultural, social life has taken place. "Nature" in fact, is the driving force towards such an autonomous rationality. However, progress towards this position is inevitably delayed, since it is exactly the subrational ("natural") faculties, under conditions of *conflict and competition*, that carry this progress. "Reason" is too peaceful and fair to be the motor of progress; one needs aggression for it. The kingdom of reason is the immanent eschatology in Kant's historical universe – it is the destiny of eternal peace for the mature human race.[11] In fact, the ordinary

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10   The third formula of the Categorical Imperative reads as follows: "Act so as to use humanity, whether in your own person, or in the person of another, always as an end, never merely as a means" (Kant, 1901:246). On the previous page, Kant explains human existence as one which has "absolute value". Significantly in fascism dignity is the very opposite: it is being subject to the will of the leader as the incarnation of the state, and to sacrifice oneself for the state. The two views, however, share the importance of conflict as ennobling.

11   The idea of the maturation of the human race towards rationality as its destination came to the fore very prominently in the periods of the

(unemancipated) human being does not even know "nature's" aim. But (the enlightened) Kant does know both "nature's" aim, and he knows that for the overall majority this aim has not (yet) been reached. How then to recognise the struggling, miserable beings as so special (human) that they are not to be used merely as instruments? This question highlights Kant's tense views of being "enlightened" and "enlightenment":

> *Enlightenment is man's emergence from his self-incurred immaturity*. *Immaturity* is the inability to use one's own understanding without the guidance of another. This immaturity is *self-incurred* if its cause is not lack of understanding, but lack of resolution and courage to use it without the guidance of another. The motto of the enlightenment is therefore: *Sapere aude*. Have courage to use your *own* understanding (Kant, 1994:54).

The dilemma in short: Kant accuses ordinary human beings of "self-caused" immaturity, and yet he argues that "nature" is the cause of the rate of maturation. He insists that humankind is on the way to rationality, yet lives under a strict determinism of "nature". Kant himself has apparently already reached the dignity of being maturely rational – *imposing the laws of morality and nature onto the world!*

It is the latter pretence which is of concern. Since Descartes the rational scientist has been claiming control of nature (Descartes, s.a., 51, par.1, part six). This stance leaves Kant in a severe dialectical tension between control (used as an instrument) and autonomy (recognising the human being as absolute in its own right and an end in itself).

Soon after Kant the dialectical see-saw would tip over to the side of viewing the human being as merely a "natural" being, no different from any other *natural* being. *This* "natural" *being was thence assumed to be subject to scientific control, remaking, and technical reproduction.*

In the supposedly "scientifically objective" comedies of the positivist Darwinist doctor, Chekov, ordinary human beings are ridiculed and stripped of all their dignity. Only the doctor as scientist remains in

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Enlightenment, and in Modernity as a whole. It is the hidden lifeview core of the story of humanity in Defoe's *Robinson Crusoe,* in the doctrine of the emancipation of the human race in G.E. Lessing, in Rousseau's vision of the social contract, in the theories of competition of Turgot, Smith, Kant, Darwin, and in the philosophies of history of Hegel, Comte, Marx, Godwin, and others.

control of himself, and through his scientific technical skills (pills!) to some extent in control of other human beings (cf. for example *The Seagull*). But listen to a contemporary adherent of technicist scientism speaking:

> Human subjectivity does not exist – and this is the true kernel of Skinner's theory – beyond Nature, but is part of it and resides within it. By making its physical nature an object, the human being also makes its subjectivity an object – and thus a part of Nature. The strict difference between subjectivity and Nature, which forms the basis for the concept of human dignity, disappears ... Nothing could be more short-sighted at this point than the objection that this scientific penetration and technological control only apply to the natural side of the human being, not to its spiritual side and subjectivity ... (Bayertz, 1996:86).

The discourse of the Skinnerians turns the progressivistic Enlightenment discourse against itself. Modernity got rid of the medieval divine "supernaturalism" (God intervening from outside natural history), by introducing a naturalist supernaturalism. For modernity the "supernatural" emerges from the "natural" – out of the natural "base" (matter, organic life, instincts, sentiments) emerges rational subjectivity, and elevates itself above the "natural".

But the Skinnerians simply flattened this double storey on the basis of an extreme scientism, arguing: since subjectivity emerges from the "natural", then it must be simply (or no more than) "natural", and has to be completely opened up to the procedures of the natural sciences.

The idea of nature had already also been suitably reduced by the techno-scientism of Modernity itself, by Descartes and even more explicitly by Enlightenment rationalism (cf. Venter, 2001; 2002c). The behaviourists had an easy task to twist the ambiguous naturalistic discourse of the humanist Moderns in the direction of a clear-cut naturalism that denies all special dignity to the human being, and propagates exactly the instrumentalising which Kant tried to resist or prevent. One might characterise this twisting of discourse as the final flattening of the medieval double story ("natural-supernatural") discourse.

When science as *maker* no longer cares about the dignity of the human being, then the following requirements become evident:

- *The necessity to confront all scientists with human subjectivity.* Gabriel Marcel refers to the free subjectivity, even of the body (cf. Venter, 2002b:362), and warns not to treat it as purely instrument or disposable object.

- *The imperative to expose the narratives of mastery and control for what they are: dangerous pretence.*[12] Scientists who deny dignity are in the company of those ideologues against whom the United Nations pronounced the right to dignity directly after World War II.

- *The insistence on the limitations of all control.* Everything produced by science at some stage has to be reintroduced into "nature". At the point of re-entry human control is weakened or lost. And as Von Hayek indicated, given the fact that we are part of the whole which we study, all attempts to be in control must necessarily end in totalitarian dictatorship over the little area where we feel we are in control (cf. Venter, 1996:230 ff.). Descartes hoped for control over all of "nature". Thus we have to take a good look at the beliefs that inform human control, and under what conditions control takes place.

Given the limitations of techno-scientific control, and its dangers, the issue of *playfulness* and *disciplined imagination* comes back onto the agenda – the more constructive side of this article. Scholarship is a serious responsibility, but the play of ideas/thoughts, when guided by sound criteria, may improve responsible outcomes above that which marketable technology can reach.

4. Human sciences and scholarly creativity

Creative scholars very often (more often than not?) show a *playfulness* or *experimental attitude* that pushes the borders of

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12   "Master narrative – how else to translate Lyotard's *grand récit*? And in this translation we glimpse the terms of another analysis of modernity's demise, one that speaks not of the incompatibility of various modern narratives, but instead of their fundamental solidarity. For what made the *grand récits* of modernity master narratives if not the fact that they were all narratives of mastery, man seeking his telos in the conquest of nature? What function did these narratives play other than to legitimise Western man's self-appointed mission of transforming the entire planet in his own image? And what form did this mission take if not that of man's placing of his stamp on everything that exists – that is, the transformation of the world into a representation, with man as its subject?" (Owens, 1987:65). I was writing this article while our TV screens were swamped with reports on the Tsunami disaster. At least it denied one tenet of Modernity: that rational human beings can be lords and possessors of nature.

"*method*", and experienced "*reality*" as known to their con-
temporaries. "Creativity" overcomes present systems of rules:

> There is a marked difference between creative and innovative
> work. Creative work disrupts habitual ways of thinking.
> Innovative work utilises habit, tradition, and culture, to arrive at
> new ways of doing things. The steps in innovation are
> incremental and do not involve breakthroughs and quantum
> jumps. Innovation is needed to deal with problems that interfere
> with the achievement of collective objectives … Creativity, on
> the other hand, depends on the presence of gifted people who
> are capable of escaping from the channels of thought that are
> intrinsic to the culture of organisations. Creative people tend to
> be disruptive, while innovators support the social structure upon
> which they depend.

> Creativity and innovation involve different modes of thinking.
> The movement in thought processes is vertical in creativity,
> from highly structured and disciplined to loose, associative and
> symbolic. The vertical movement is from secondary process
> thinking, which is sequential as well as logical, to primary
> process thinking, which is characteristic of the unconscious.
> The innovator applies horizontal modes of thinking. While
> horizontal thinking uses analogies and past experience, it
> depends on a limited number of styles of thinking, the most
> predominant being linear reasoning and successive trials.
> Innovation therefore involves lower levels of emotion and less
> anxiety (Zaleznick, 1988:38-39).

The troubles which students experienced in my class (given in the
introductory story), have their roots in *avoidance strategies*. They
were avoiding the anxieties of thinking for themselves; they rather
opted for a collectivising process, guided in every way by the
lecturer.

Proposition 7:
> *The client type of student is a risk-avoiding consumer, and
> economy of scale changes scholars into risk-avoiding
> producers. Good training would support students in taking
> responsible risks with regard to challenging problems.*

*Being a self-learner rather than being prescribed to, is not a new
idea at all*. It is simply the only approach worthy of a university.
However, the "client" type of student does not buy into this – they
want the opposite, namely to consume "facts". And economics of

scale often forces lecturers to provide just such consumerism. The system works like a machine, mechanically orderly[13]. And yet students come out of such a system, trained in techniques and facts that will either be outdated in less than five years after finishing their studies, or "everlasting" in their triviality – so trivial that nobody will be prepared to pay for it.

Moreover, students enter the university unprepared. Academic staff thus have to cope with students with good potential, but given the requirements of economy of scale, are almost powerless to do something about it. Two types of scholars develop: The textbook-and-recipe type, who proceeds with technical research while processing students on pure parrot work. The quality academic, who tries to get students to the level required, as well as doing research (and neglects his/her own humanity by being forced to forget about social and family life, and finally leaves the academe totally demoralised). How to structure our universities to keep the latter kind of scholar in academic leadership?

4.1 Creative problem statements

Both short-term technical and factual training, as well as trivialities, have now become part of the university scene. Many students (and often brilliant lecturers) are therefore not able to adjust their methods according to problems facing them. In the immediacy of students' complaints we can see the traits of an oppressive amount of conserving the supposedly established, and avoiding new issues.

However, given some time and personal attention – note: "*time*" and *personal* – one can attempt to make intellectuals understand the differences among static (sometimes suppressive) thinking, innovation, and creativity. I have devised a diagram to show students' approaches to statements of problem, since this is where their first difficulty appear, and to help them find a responsible combination of renewal and conservation. The diagram outlines approaches to problem statements, in terms both of the context and of its own characteristics. I assume that creativity is *responsibly disruptive*, i.e. it may disrupt "lower" conventions (such as literary genres), but will pay respect to "higher" norms (the creative person

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13   "Ideas have legs", they say. But they drag their feet. In our days, when everybody questions the mechanistic world picture, universities are changed into machine by their managers.

will not devise a special genre for the propagation of genocide) (cf. Venter, 1998:24-28).

The diagram shows a continuum of approaches to questioning, between the extremes of perfect solvability (trivialities) and total unsolvability (dilemmas and paradoxes).

- An example of a *trivial question* could be:

  (a) "The ring on your finger – is it a wedding ring?"

  (b) Here the answer can directly be obtained from the person asked, and can be limited to "yes" or "no" – which will be a complete answer.

- Examples of unsolvable problems would be:

  (a) "Can you explain to the class how to go about constructing a square circle?"

  (b) "What was the influence of apartheid on colonialism?"

In the case of (a) one can play around with the question for fun, but it will not be possible to come up with some ingenious answers, since the problem includes a contradiction in terms. However, it may get the imagination going. In the case of (b) there is somewhat more to be done: one has to do some reading in history before one can attempt to answer the question. The question will then prove to be impossible or very difficult to answer, since colonialism preceded apartheid in the strict sense. However, such a challenge gives the student the opportunity to criticise the question as such, which puts him/her on the way to creative thinking.

It takes a special kind of teacher to guide students in their insecurities, in order to get a responsible relationship between conservation and renewal of understanding. The diagram to follows links the different mental and emotional factors with renewal and discovery, to enable students to weigh *risk* against *security*. Weaker students (especially the lazy ones), avoid insecurities, and will therefore be unhappy in courses which have a more open-ended experimental design. Both security and risk are important considerations, and one should avoid misleading students into the idea that only the risky, new, is worthwhile (the square wheel must then be invented). Students need to be guided into experi-mentation, imaginative alternatives, and management should not immediately conclude that insecurity in some students indicate bad teaching!

Reading the diagram from left to right indicates an order:

From (i) low risk easily answered questions, (ii) technical applied research (such as statistics for marketing), and (iii) normal science, through (iv) the balance point into (v) the higher risk area of vaguer anomalies, (vi) open-ended systems, (vii) metaphoric problematic, (viii) paradigm shifting, to (ix) the basic disciplines of philosophy, (x) high risk dialectical problem statements, and (xi) finally ending at the other extreme of insoluble problems (dilemmas and paradoxes).
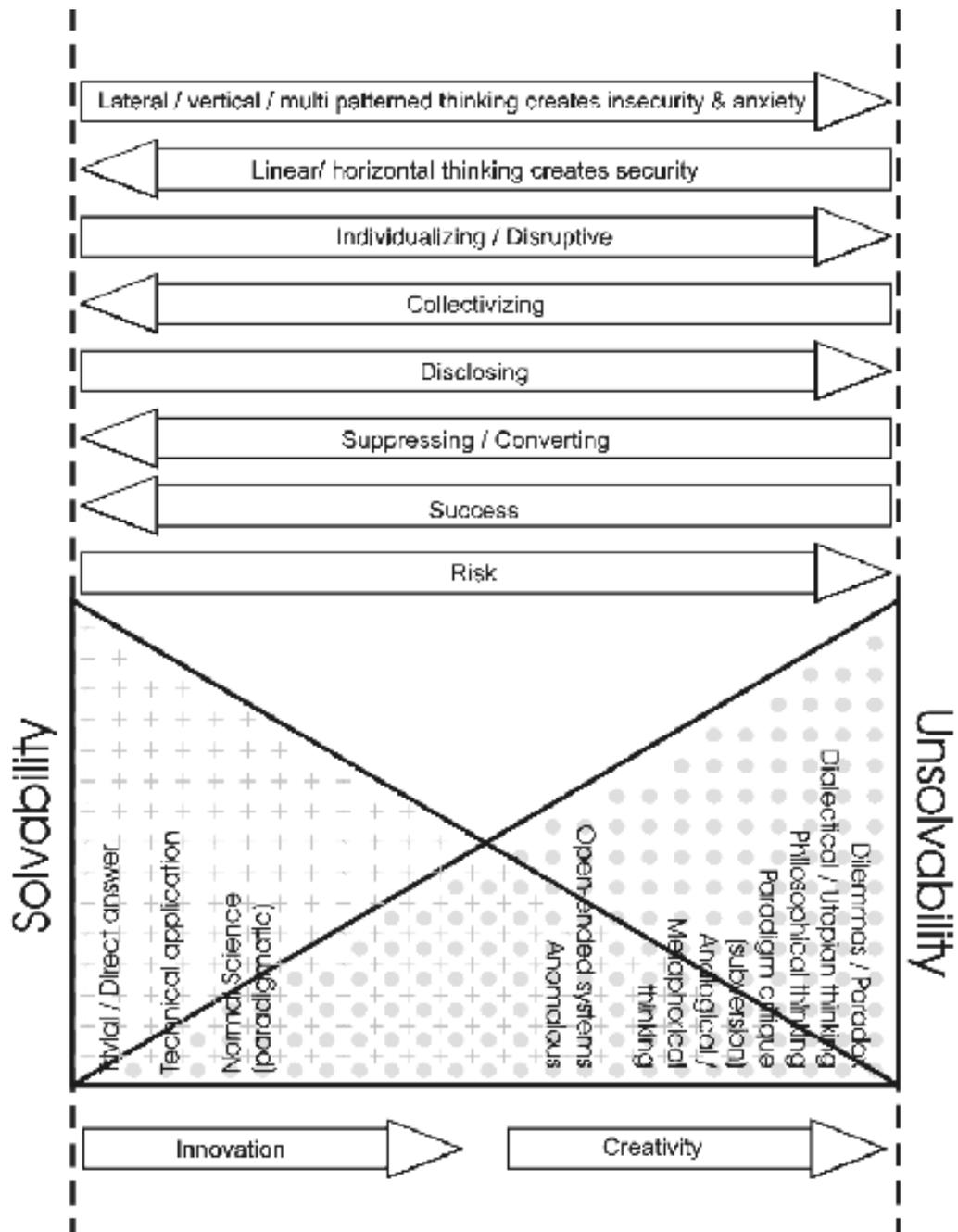
Different authors (Kuhn's paradigm theory is but one) point to the fact that major creative changes, even in the natural sciences, imply a change in basic philosophical concepts.**14** It is therefore also not far-fetched to suggest, as the diagrammatic model suggests, that the basic disciplines of philosophy are markedly positioned in the high risk area, and may contribute significantly to creative shifts.

Normal science lies in the low risk side of the model; it is situated in the innovative rather than in the creative zone. To dwell in the region from normal science to technical application may produce necessary, meaningful, and innovative research results, as well as a safe career. To move in this safe zone is in fact what most academics do, and *the model does not aim at making such meaningful work seem nonsensical*. (There are some, however, in the academic brotherhood, who work in that safe area, but use advertising and sales techniques to make it appear as if something really new and creative has been produced.)

Those working in the high risk zone may struggle on the career ladder – the results may be few and far between, and gained at high cost. Such scholars may even have to suffer distrust in their professional abilities from the side of journal editors and safe-side colleagues, since they defy the crowd, challenge the rules, have a different view of reality, and so forth. (And we must concede: very few of us are Newtons, Lavoisiers, Einsteins, Kants, Hegels, or Bertrand Russels.) The model indicates, however, that our problem statements do need some open-endedness. We have to aim for a position slightly to the right of the balance point, if we are looking for more than just re-applying standardised procedures which produce results similar to what the majority are producing.

The two directional arrows, "conserving" and "disclosing", indicate something of the way in which we ought to train scholars. Starting with established techniques, one proceeds to the more open-ended disclosing strategies. Academic creativity does not occur easily if we continue working in the "conserving" direction.

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14   "What is changed by poetic language is our way of dwelling in the world. From poetry we receive a new way of being in the world, or orienting ourselves in this world. ... If this analysis is sound, we should have to say that metaphor shatters not only the previous structures of our language, but also the previous structures that we call reality ... The strategy of metaphor is heuristic fiction for the sake of redescribing reality. With metaphor we experience the metamorphosis of both language and reality" (Ricoeur, 1991:85).

Scholarly creativity will, however, not occur without the established basic skills either, since they form part of the minimum standards (or model) according to which our work is judged as part of scholarly work at all. (In this respect the danger of technicism again looms very strongly – both with regard to research and to academic journal referees, who meticulously guard all the techniques prescribed by the standard paradigms, without any flexibility for a new approach).

The diagram includes further aspects of renewal – taking a conserving direction is associated with *collectivising*. One wonders about too many university advertisements asking for "team players" (those who do not play for the audience at the cost of the team, but maybe also those who do not rock the boat with too much novelty). One thus also needs to note that the disruptive effects of a creative individual may be quite costly in the economic sense. Business-type universities therefore tend to discriminate against individualistic staff in favour of "team playing" innovators. *The university is, however, exactly the place where also such creative individualists should feel at home* – or be part of another type of "team".

4.2 Breaking the rules

A complex problem exists with regard to the way creative thinkers think. They seem *to break the rules of rational thinking*, because they seem to change the logic itself. Ricoeur sensed this (see footnote 15).

Proposition 8:
> *For the sake of responsible, but creative graduates, the playful, methodological weirdo who does not necessarily generate money, must be welcomed at universities, and students, including undergraduates, have to be exposed to this kind of scholar.*

The above-mentioned statement does not necessarily imply a breaking of the rules of basic logic, although creative thinkers may disrupt the accepted interpretation of rules in terms of a specific paradigm. Not even dialectical thinkers completely deny the validity of the principle that one should not contradict oneself. They rather reinterpret its way of functioning in terms of a view of how reality "develops".

It is important to note that the habit-and-rule environment requires innovation rather than creativity. This is what Thomas Kuhn alludes to when he says that scientists are conservative. They tend to cluster around certain basic ideas about reality and method, and to

identify good science with their way of doing things. Furthermore, they use expensive technology, which cannot easily be replaced, and therefore is forced to function within the limitations of their capital investment (very often not even realising these limitations). Lyotard's famous work on post-modern knowledge was intended as a warning that computer-formalism was going to enforce it over the whole spectrum of knowledge processes (cf. Lyotard, 1979:30 ff., Chapter 1). Investment seems to create its own truth, rationality, acceptable methodology, and these days often cover-up of failure.[15]

Those known for so-called "paradigm shifts" have mostly been the weirdoes in science and scholarship, and have very often also been social "misfits" to a certain extent. Crick and Watson, discovering the structure of DNA, are a case in point. Such scholars do not follow all the standard techniques, and their basic ideas (metaphors/ analogies) do not necessarily come from the discipline in which they made the vertical/lateral jump. Some have been philosophical and methodological heretics (cf. Mason, 1956; Hooykaas, 1972[16]), and very often also very one-sided in their insistence on their ideas (which in fact limited them again), while some mainstreamers saw them as "unscientific". Briefly a few cases:

- The Renaissance was known for its Classicism; its absolute idealisation of especially pre-Christian Classics, yet the outcome was something quite new. *Copernicus*, for example, was something of an *esoteric* thinker, a Pythagorean elitist who believed that mathematics is only for the initiate. He thought of the sun, after the example of Pythagoras and Plato, as a special reflection of the divinity. Thus he could only conceive of the sun in the neo-Platonist way: as the centre reaching out to the circumference. He got away with this probably because of his esoteric approach. He circulated his work only among the "initiate"; his book was only published while he was on his deathbed (on the insistence of a friend). But note: because of his Classicism he took a *different* possibility into account: that the

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15   It no more seems acceptable to write a Masters in Science, concluding that "my hypothesis was wrong". Sponsors of research want marketable results, not academic progress by falsification. Researchers will of course not say this publicly, but they do admit to the problem in the tea room.

16   It is worthwhile to read both these in toto, for both authors constantly come back to the role which has been played in the development of science by religious people, but not the one hundred percent orthodox.

earth was moving around the sun and rotating around its own axis. He probably used techniques very similar to those of his "opponents" (the Ptolemaeics). According to Kuhn the shift did not even immediately imply progress in solving problems (Kuhn, 1975:75-76), but it did provide a simplification that proved very fruitful in the long run. Using another avenue of thought, which later proved to be considered heretic by the Catholic Church, Copernicus found "new" analogies for a construct of the whole visible reality.

- *Antoine Lavoisier* is another significant example. Lavoisier studied chemistry at a college where the laboratory demonstrator was a weirdo himself. The latter tried his utmost to make experiments in the laboratory deliver results opposite to those predicted by the professor in his lectures. And of course Lavoisier came to know about the quantification of physics by Newton. Lavoisier became his father's bookkeeper, and in his private laboratory he repeated every one of Priestly's experiments with gases, in order to explain certain thus far inexplicable phenomena. He, however, changed the method by quantifying according to bookkeeping methods. This approach already implies: the experiment is not a *complete* method. According to standard theory phlogiston was supposed to be added in burning processes. For Lavoisier this meant that after burning, the ashes had to be heavier than the original wood, but the very opposite proved to be the case. And thus he searched for that something which was lost in the burning process, and finally found oxygen. The adherents of the phlogiston theory were not impressed. They explained the phenomenon very well by saying that phlogiston has "negative weight". Lavoisier insisted that the books have to balance. His analogy: bookkeeping procedures, in order to follow the quantitative procedures of Newton (cf. further Gale, 1979:112 ff.). Hotheadedness and analogies from elsewhere changed the face of chemistry through the work of Lavoisier.

- Mason, in his interesting (although now dated) book, *Main currents of scientific thought* (1956), which covers the centuries of Modern science, could not refrain from constantly drawing the attention to the fact that important scientists had been openly religious, but very often off-centre in their religious allegiances. Interestingly *Darwin* himself was somewhat an off-centre *theologian*. He was not a natural scientist. "Somewhat" off-centre, since he was deeply influenced by the deist form of rationalist

theology, already fashionable since the Enlightenment. He used the medieval concept of what is "fitting for God",[17] to argue that God did not create species separately. He was also strongly influenced by the mechanistic tradition in economics, especially the conflict/competition motive, which he linked up with discourse from the advancing technology, as well as cultural practices of selection (farmers and pigeon breeders). And finally all these elements contributed to a central concept which is the kingpin of his whole theory: *the metaphor of "natural selection"* (cf. Venter, 1996:209 ff.).

In all these cases, *some rules have been broken*. One does not need to agree with the product to know that the world considers these products as "creative". In the cases above, we have "scientists" producing something "new", and the "new" is in the *explanation* of "established facts". The explanation can be *metaphorical, analogical,* or *symbolical* – the fact is, it does convince a large number of peers and intellectuals.

The explanations may have been one-sided, but even in their one-sidedness, still covered so many "facts'" requiring an explanation, and also covered so much that still needed to be discovered through an explanatory lens, that too many people may even have accepted them as final. Note, however, that *the explanatory coverage happens from a certain distance, called "abstraction"*.

Proposition 9:

Scholarly creativity is born from a disciplined imagination working within the rules of good abstraction.

Where do we then find scholarly creativity? Exactly in this process of *breaking the rules*. This process sets in with hunches and

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17   The idea of "fittingness" for God has its origins in the Greek philosopher, Xenophanes. He criticised as "unfitting" for the gods the tribal structure and human behaviour ascribed to them in mythology. Fitting for the one and only god would be to view him as simply a thinking consciousness. Parmenides and Aristotle expanded on this – the divine became the simple unity of thinking subject and thought object. Tertullian fought this kind of rationalism, adopted by some Gnostics, saying that God can act contradictorily (given his free will). Anselm of Canterbury, however, returned to the rationalist fittingness hypothesis, saying that then the will of God is always "rational" – in the human sense of the word rational, which means that God cannot contradict himself. Darwin uses this perspective to defend a deistic rational God, for whom it is "unfitting" to be directly involved in the creation of species.

hypotheses, and supports a deviation from the *habitual* view of "reality". It is the mentioned distancing: *abstraction*.

4.3 Abstraction

Abstraction has the potential to *liberate the imagination* from a stereotypical approach. In scholarship it may liberate intellectual imagination from established disciplinary techniques, opening up possibilities to move to the right hand side of the diagram.

This kind of liberation may, however, lead to difficulties in grading, peer evaluation, and career making. From the point of view of the paradigmatic establishment, and especially from the point of view of economics of scale, surprising abstractions may be resisted as "unscientific" and "costly guesswork", or even "speculation". *What is required is good abstraction, i.e. a strong empirical context of reference, and a disciplined logical imagination doing the abstractions.*

There are different kinds of abstraction:

- substituting a part for the whole (*symbolic* abstraction);

- substituting the individual for the universal (*representative* abstraction);

- extracting an aspect from the totality (*focused* abstraction);

- omitting "irrelevant" details from a complex structure or network (*simplifying* abstraction).

- **Moving from the individual to the universal (generalising abstraction)**

I do not claim that my analysis of abstraction is exhaustive; it remains a first attempt. However, distinguishing types of abstraction opens up different possible ways of looking at the same reality, i.e. it allows for different kinds of twisting of hitherto accepted "reality constructs". Severe twisting of well-established reality constructs can give the *impression* of a total change of "reality" itself.

- **Symbolic abstraction**

Symbols are open-ended and ambiguous, and thus make it possible to find aspects not hereto accentuated before. Symbolism is stronger in fine arts and literature, because it oversteps the boundaries of disciplined abstraction further than may be allowed for in scholarly work. It can therefore open up avenues of potential for

the scholar, upon which to test a disciplined imagination. The use of symbols has been further abstracted into the use of signs in mathematics and logic, making symbolical abstraction available for use in generalising abstraction.

- **Representative abstraction**

- Individuals are experientially nearer to us, and finding the coherence of their multiple aspects may give a new perspective on the universal. "Laws" and "concepts" – the forté of disciplined scholarly work, are all universals. Inductive and metaphorical abstraction from empirical individuality reaches out into the "unseen", for it is never possible to have direct experience of "all swans …" or "the swan" or "the law of gravity" or "the process of natural selection". The discipline of self-relativising is therefore something to be instilled into students.

- **Focused abstraction**

Focusing on one aspect outside the context of the normal view of its coherence, may help to construct another understanding of that aspect, which may also have its effects on the understanding of other aspects. Focusing, however, remains *pretending* – that the coherence among aspects can be ignored for the moment. However, the coherence has to come into focus at an early stage – not simply by way of synthesis in hindsight. No system is ever closed, and taking the openness of the system into account, may change the perception about, or understanding of the aspect focused on.

- **Simplifying abstraction**

Simplifying allows for modelling, and makes it possible to twist and turn the model, and also use the model as a norm for explanation in areas other than its origin. Models can also be metaphorised. Models are representations of structure – but simplified and therefore ignoring certain aspects or factors considered as irrelevant. Scientific laws are such structural coherences often found by way of modelling. Models are probably a complexity of universals. By shifting some elements in a model, one can obtain a different explanatory perspective. However, from Plato onwards these abstract simplifications were elevated into a normative position. Students therefore need to learn how to avoid oversimplification, and to avoid absolutising the model and its branched out metaphors, as if the final truth.

- **Generalising abstraction**

Since Socrates this process of abstraction has been explicitly analysed in all its forms over centuries. It has different forms: (i) From mythology over Plato and the Renaissance to the modern Bedyayev, thinkers generalised from part to whole – the assumption being that the microcosmical part is a likeness of the macrocosmical whole. In present-day statistical analysis *sampling* is a conscious construction of the part to be like the whole (but how do we know it *does* look like the whole?); (ii) *Induction*, a well-known procedure, is to generalise from and identify with the help of *shared characteristics* in individuals. Next (iii) is *idealising* abstraction, which can employ the two others, moving upwards to ideal types. Since Plato, it is an attempt to cross the gap between "is" and "ought", and between individual "case" and "law". Generalising abstraction is the process which generate most stereotypes and prejudices, and students need a thorough introduction to this.

A condensation[18] *of meaning and power* is inherent in abstractive processes, which, as was said above with regard to technology, *overshoots or undershoots, or sometimes hits the target* intended. Condensation of meaning and power enables followers and critics to find further innovative possibilities in the basic creative idea: both constructive and destructive.

4.4 Abstraction and responsibility

The issue of responsibility can thus not be avoided. Abstraction is not a neutral process – it starts out from a perspectivised "reality" (containing previous abstractions), and is done by a complete person, whose interests are co-determined by religion, education, personal experiences, interests of all kind, handicaps, mental tendencies and intuitions skewed one way or the other.

Proposition 10:

> *The manipulation of "factuality" allowed for by abstraction does not absolve scholars from respecting the deeper layer of normativity, such as human dignity, stewardship towards the environment, mutual care, justice, etcetera.*

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18 An *Open University Coursebook* about creativity says a creative product may be composed of well-known things, but in such a way that new possibilities can be disclosed in different situations.

Condensation has to be offset by *coherence*. Human beings cannot create anything out of nothing, and the imagination will therefore always have to depend on analogies and simplifications which have their sources "elsewhere". For Einstein the "truly creative principle" in physics (and in fact in all sciences) "resides in mathematics" and not in "experience" (which includes laboratory experiences). There is a openness, a "fictitiousness", on the side of principles, that allows for alternative explanations of the same phenomena. Einstein therefore believes that the concepts of physics cannot be derived from experience, but are the products of pure mathematical thinking, which somehow reflects the structure of the world.[19]

However, the *condensation* side of Einstein's abstract procedures is of serious concern. On the one hand he saw the alternative possibilities in mathematics; on the other hand he put himself under the discipline of a view of physics and science which is very one-sided. He believed in the idea of a unified science under the guidance of a deterministic causal view of the world, and this in the format of a deductive system. In order to find a unified science in a deductive format, he could only take his point of departure in mathematics. Secondly, not a mathematician himself, he had to search for an open mathematical system (that of Riemann), which could accommodate his intuitions. He therefore had to reduce certain physical features to geometric ones: time became a fourth dimension. He, however, did not investigate the basis of Riemann critically, or the reduction of the multiformity of time to a fourth dimension.

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19   But quite apart from the question of comparative merits, the fictitious character of the principles is made quite obvious by the fact that it is possible to exhibit two essentially different bases, each of which in its consequences leads to a larger measure of agreement with experience. This indicates that any attempt to logically derive the basic concepts and laws of mechanics from the ultimate data of experience is doomed to failure. If then it is the case that the axiomatic basis of theoretical physics cannot be an inference from experience, but must be free invention, do we have any hope that we shall find the correct way? Still more – does this correct approach exist at all, save in our imagination? … To this I answer with complete assurance, that in my opinion there is the correct path and moreover, that it is in our power to find it. Our experience … justifies us in feeling sure that in nature is actualised the ideal of mathematical simplicity. It is the author's conviction that pure mathematical construction enables us to discover the concepts and the laws connecting them, which gives us the key to the understanding of the phenomena of nature (Einstein, 1960:82-83; cf. further Venter, 1999:169 ff.).

Even more questionable was Einstein's *causal* approach, not only in terms of quantum mechanics (which could not be accommodated, apparently exactly because of the concept of time), but because he could not take account of *moral responsibility*.

> In the freedom of man in the philosophical sense I do not believe at all. Every human being acts not only under external compulsion, but also according to inner necessity. Schopenhauer's statement 'a human being can do what he wants but not want what he wants', filled me lively since my youth, and was always a comfort to me in seeing and suffering the hardships of life, and an inexhaustible source of tolerance. This consciousness softens in a beneficent way the easily paralysing feeling of responsibility, and causes us not to take ourselves and the others too seriously. It leads to a conception of life which also allows humour in a rightful place (Einstein,1955:7).

It has already been stated in this article that creativity means overcoming habitual rules. But how far may this go? For Einstein the laws of physics are the laws of biotic life, the psyche, artistic activity, and religious faith. This means that *scientism* is for him the final answer. He can keep nobody responsible (not even Hitler). Einstein himself would not be paralysed by the feeling of responsibility.

The process of universalising abstraction, which is the mechanism used to construct a deductive, unified approach, has limits in itself. This becomes clear when one reads Russell and Whitehead's "explanation" of the most fundamental axiom in their famous *Principia mathematica*: the "stroke function". Although they do attach some verbal meaning to the function, they also state that it is in fact impossible to do so. Thus, since all the laws of logic and mathematics can be deduced from this function, it becomes pure abstract technicism: *pure procedure*. Given that we actually cannot know what the function means, it becomes impossible to really determine whether the claims made about it are in fact sustainable. Secondly, if the deductions are to be valid, they presuppose the laws of logic, which are only deduced much later down the line! (cf. Russel & Whitehead, 1970:xiii; xix). As Wittgenstein (1974:74) said: "What we cannot speak about we must pass over in silence" (see Proposition 8).

The denial of other forms of human knowledge, whether scholarly knowing in the humanities, streetwiseness, artistic intuition, or moral wisdom, therefore actually absolved Einstein from theorising with contextual responsibility. He – a Jew – scholarly "forgot" the history

of physics and its role in Hiroshima, and the history of chemistry and its role in Auschwitz within five years.

5. In retrospect

I therefore maintain that there are limiting conditions that have to remain upright: the care of being, whether human or otherwise, in all of different senses. Natural science, technique, technology – all have their rightful place. *If human context and these limiting conditions are, however, not taken into consideration from the very beginning then on the one hand abstractive processes will remain within the innovative stream. On the other hand, "creative" processes will overstep their normative boundaries and condensed meaning and power will become explosive.*

I have tried to indicate that economy of scale in the university context, which includes minimalising academic staff and its support systems, combined with the maximum (how determined?) intake in student numbers, pushes the university, even in its reigning epistemology, ideologically in the direction of technicism, scientism, and economism (imposed by neo-pragmatist managerialism), which introduces stereotypical forms of innovation, and inhibits risk taking, although disciplined playfulness is needed for creative scholarship.

Finally, I have tried to analyse the range of problems with their proportionate risks, as well as the basic forms of abstraction, in order to give some indication of how scholars are to support the development of a responsible spirit of renewal of knowledge in their students, without reinventing the wheel.

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Key concepts:

creative scholarship
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Kernbegrippe:

innovering
kreatiewe vakmanskap
neo-pragmatiese besturokrasie
skaalvoordele
tegnisistiese onderrig