

# THE ARCHITECTURAL AND QUANTITY SURVEYING PROFESSIONS IN SOUTH AFRICA - ARE THEY SUFFERING FROM A TERMINAL ILLNESS?

R.G. Pearl; Professor of Quantity Surveying; School of Civil Engineering, Surveying and Construction; University of Natal, South Africa.

## Summary

This paper critically investigates client perceptions and expectations regarding services provided by quantity surveyors and architects, the distinguishing features underpinning their service delivery, and potential pitfalls to avoid if these professions are to maintain a position of importance within built environment practice in future. Whilst specific to South Africa, the results are considered pertinent to a wider audience, particularly in the light of globalised business activity. The findings show that greater attention needs to be paid to client satisfaction by professional consultants if they wish to retain a significant market share of new project developments.

**Keywords:** *Client satisfaction, knowledge domains, skills, responsibilities, procurement.*

---

## INTRODUCTION

There has been a surprising lack of debate within the South African built environment professions concerning the implementation of a new suite of legislative acts in 2000. Van der Dusen (2000) is the exception to this, other than where there has been criticism of the introduction of Continuous Professional Development [CPD] for specific professions. Interestingly however, considerable thought-provoking criticism of the construction industry, specifically the role played by the professions, has been made by prominent academics (Hindle, 1996; Rwelamila, 1997a, b; Hindle, 1998a, b, c; Hindle and Rwelamila, 2000; Hindle 2001a, b). It is notable however that there has been a total absence of any 'defence' by practitioners - a situation which can only lead any neutral observer into believing that the assertions made do have substance.

Virtually none of Hindle and Rwelamila's publications are aimed specifically at any single profession. It could be contended however, that the architectural and quantity surveying professions should particularly take cognisance of their criticisms if they wish to maintain (perhaps 'to be restored to' would be a better term) a position of importance in the construction sector. This implies a need for a strategically focussed re-engineering process to be adopted which realistically evaluates the present state of each profession, and establishes operational and tactical objectives which will eradicate any present inadequacies.

Of paramount importance in this exercise is the need to understand the environment within which the professions operate, as well as ensuring that new avenues for broadening service provision are opened. In adopting this approach, education and training policies and philosophies need to be frequently reviewed and adjusted where necessary to ensure that they are appropriate for the present and future needs of the professions. This is the cornerstone upon which various general business management processes such as Total Quality Management (TQM), supply chain management, business process re-engineering etc. have been promoted. In trying to apply the principles of these systems to our present professional situation, I believe that the concept of 'the learning organisation' as explained by Senge (1994) is the most appropriate one. This focusses on the need to develop any firm's (or organisation's) most valuable asset, i.e. the people it controls, to a state where a critical advantage is gained over any competitors.

## KNOWLEDGE - THE KEY TO COMPETITIVE ADVANTAGE

A primary concern in developing a 'knowledge-driven' approach to service delivery is that core knowledge and

skills domains need to be identified, as well as an understanding of the performance levels that should be achieved. Whilst in practice there is often a degree of overlap between the activities of consultants from differing professional backgrounds, the present structures in terms of the Architectural Profession Act (Act 44 of 2000), and the Quantity Surveying Profession Act (Act 49 of 2000) are clearly based on the historically established areas of independent responsibility.

### **Architects**

The role of the architect has traditionally been to design buildings within the framework of building regulations, by-laws and town planning restrictions, and to document and supervise erection in order to meet the employer's requirements. It is highly significant that this has required the architect to act as the principal agent, or 'leader / co-ordinator' on projects. This clearly requires the architect to extend the core design function 'skill' to incorporate a management function involving the co-ordination of design and construction teams, and continuous interface with the client. This requires the architect to be an excellent 'communicator', have a clear understanding of factors influencing group dynamics, and be able to demonstrate a capacity to successfully take on a leadership role. Other role players within projects also expect the architect to have in-depth knowledge of the 'pillars' supporting decision-making at this level which encompass issues such as 'technology (especially 'buildability' and project planning), property law and construction contract applications, and basic design economics.

In the United Kingdom, there has long been a perception amongst architects that they have been marginalised as project leaders. This led the Royal Institute of British Architects (RIBA, 1992) to conclude that the architect is no longer in a position to strongly influence the construction process. Their view is that this is mainly because of the increasing competitiveness and the influence of the other professions. In a study prepared by Smith and Morris(1992), it was noted that out of a total of 44 services listed in the Standard Form of Agreement for the Appointment of an Architect, 39 were undertaken by competing professions. No published research is available which indicates whether the same situation occurs in South Africa. However, there are fairly clear indicators that the situation is not very different. The most obvious proof is the 'battle' which is currently taking place amongst the professional organisations comprising the Council for the Built Environment (CBE) in terms of the 'reservation of work' for the various professions. The introduction of the 'new' Project and Construction Management Professions Act 2000, has caused great difficulties for the architectural, engineering, and quantity surveying professions in particular, in this regard.

Critics of the architectural profession often suggest that the education process is to blame for perceived inadequacies in their knowledge of law, economics and other non-design issues. There appears to be some substance in this suggestion in South Africa. Visits to architectural libraries at tertiary education institutions reveal that, apart from limited holdings of prominent international journals and 'new' textbooks, few architectural students or practitioners are observed referring to general construction / property literature. In addition, inspection of the curricula and syllabi of University and Technikon courses discloses that very little in-depth attention is paid to subjects which are not part of the well known design studio culture.

It is extremely disappointing that there does not appear to be any concern amongst South African architects (or their professional body) regarding such issues. This contrasts markedly with that of the RIBA (1995) where their members were urged to *"(build) on our collective strengths, by being willing to rethink together what it is that architects should be trying to achieve in modern society"*. Two recommendations that this report put forward were:

1. *If the new idea of professionalism is inherently based on the quality of our collective knowledge, then the*

*RIBA's most important task must be to develop architects' knowledge and architects' skills. However, it is equally clear that the architectural profession's knowledge base is unstable and shifting, needing continuous maintenance and development to remain credible.*

2. *Our influence depends not upon the careful maintenance of our professional boundaries but on our ability to apply design imagination and design skills to anticipating and satisfying user needs projected into the future. Alliances with other disciplines are even more vitally necessary. Our colleagues' insights and their own areas of specialist knowledge in the construction industry and elsewhere are needed to advance our architectural programme. Architects must cross more boundaries - the very opposite of the fear of being marginalised*

There would appear to be a need for the South African architectural profession to seriously consider the future position of the profession in terms of identifying necessary skills and knowledge areas. The attainment of such objectives would most likely best be facilitated through a cohesive, structured programme of continuous professional development - perhaps through jointly developed courses with other professional bodies.

### **Quantity Surveyors**

Can the quantity surveying profession claim to be the repository of any 'unique' knowledge, or the holders of any specific skills which are not able to be easily gained by those who are not members of the 'inner circle', i.e. registered professionals ? This depends partially on what 'knowledge' or 'skills' the quantity surveyors profess to be their areas of expertise.

As far as 'knowledge' is concerned, the core knowledge domains revolve around the fields of technology; information management systems; organisational and legal frameworks within the construction industry; and general knowledge relating to economics, and the business and financial environment within which the professional service is provided (RICS, 1992; ASAQS, 1990). By no stretch of the imagination could these fields of knowledge be considered to be the preserve of the quantity surveying profession. Indeed, the almost total absence of quality published material relating to these topics within the context of the South African construction industry, clearly indicates that there is no single group within the country (except a small core of academics that undertake focussed research), that can lay claim to such expertise. It would also be very interesting to visit the offices of professional quantity surveyors to establish what library material is available which could reinforce any claims they may make of being knowledgeable about the theoretical aspects of these subjects. Exacerbating this is the undeniable fact that most of the tertiary educational institutions that provide courses in quantity surveying have woefully inadequate library holdings dealing with current, topical areas of professional expertise !

What then of 'skills' ? Once again, an analysis of the skills identified as being 'unique' to quantity surveyors (RICS, 1992; Nkado and Meyer, 2001) discloses that there is very little that cannot be undertaken by non-professionals with very limited exposure to the basic principles. In fact, many of these 7 primary skills (analysis, appraisal, communication, documentation, management, quantification and synthesis) are undertaken by other persons when non-traditional procurement systems are utilised. Of course one could take a more basic view of quantity surveying services by identifying what work is 'reserved' for professional quantity surveyors in terms of legislation. The primary activities described are : measurement and calculation of quantities; project documentation such as bills of quantities, variation accounts, final accounts etc; and the analysis and synthesis of cost / value of construction projects. Again, all these activities are commonly undertaken by others in the day-to-day running of construction projects in South Africa. What is not clear is the quality of service that non-quantity surveyors attain. The strength of the quantity surveyors' case in terms of their future role should not however be restricted to comparing their service level to that of the competitors; rather to show that registered quantity

surveyors produce a service that meets both the needs and expectations of their clients.

### **SERVICE LEVELS OF CONSULTANTS - A DUBIOUS TRACK RECORD**

The dramatic fall in the demand for construction in recent years (Hindle, 2001a), underlines the major challenges facing both the South African construction industry and built environment professionals in the coming years. In response to this, it is clearly necessary to establish an integrated strategy towards the growth and development of the industry, based on detailed research and analysis. The Construction Industry Development Board has consequently been established to take on this role. However, the activities of this organisation are at an early stage and specific components of a developed strategy still need to be identified.

In the United Kingdom, the Egan Report (1998) initiated a similar process in compiling a review of the scope for improving the quality and efficiency of delivery of UK construction. The Construction Task Force that produced this report compared the construction industry with other industries, with which it tended to compare unfavourably. A number of recommendations were made, based on the experience of other industries, identifying a series of factors which were considered fundamental to achieving an efficient process resulting in good quality. The primary issues identified were:

- committed leadership
- a focus on the customer
- integrating the process and the team around the product
- a quality driven agenda
- commitment to people

Arising from these issues, it can be seen that a vital requirement for survival of any participant individual, commercial or professional concern or representative organisation emerging from this scenario, is the need for us to ensure that we clearly identify and meet the core business needs of our clients.

### **Architects**

There are two basic problems that one encounters when commenting on performance levels of architects in South Africa. Firstly, there is the universal problem of measuring Design Quality. It is quite conceivable that architects may differ from other role players' opinions on whether a project design is successful or not. A typical example of this is the well-publicised criticisms of modern-day award winning architecture by the Prince of Wales several years ago. It is interesting to note that the RIBA is currently supporting an initiative of the Construction Industry Council in the UK to devise a series of Design Quality Indicators. If the process of developing these measures is transparent, and can engender widespread support from both the architectural profession and other role players, they may form the basis for generally accepted future assessment of design quality - in the meantime there is no generally accepted standard of assessment.

The second problem is that there is a total absence of any published material relating to performance levels of South African architects, other than the glossy project reviews that predominantly comprises the content of journals relating to architectural matters. A search of databases relating to postgraduate studies also fails to reflect any studies of the nature described. This is probably a result of what the RIBA (1992, pp. 70) describes as a tendency of architects to "*interpret quality in terms of the finished product while clients increasingly see it in terms of control of the design and the construction process*". Pertinently, this source also states that "*their (client) dissatisfaction would appear to have arisen as architects moved away from being responsible for programme and financial control, the areas of most concern to clients, towards pure design. It would also appear to have arisen because clients and architects have different perceptions of quality in construction*". It is likely that the situation in

South Africa is similar to that described in the RIBA document which goes on to state that "*From our studies of what clients think of architects, the RIBA has learned that clients really do like and value design ideas....but also that they dislike very much the ways in which architects tend to deliver what they have designed*". It also says that "*success is being measured all too often, even by our best architects, by internal efficiency, by peer group judgements, by introverted architectural criteria*".

It is very disappointing that the local architectural profession itself does not appear to be interested in critical performance appraisal, or the perceived client satisfaction achieved in relation to their services. However, there are a limited number of published papers that include descriptions of architectural performance relating to issues of brief elicitation, procurement method selection, team leadership and group dynamics within project teams.

In reviewing the briefing process adopted mainly by architects in South African construction projects, Bowen *et al* (2000) indicate a number of shortcomings that currently manifest themselves. A strong response by architect respondents to a survey questionnaire used in the study favours the idea of a 'briefing consultant', whose role would be to facilitate brief development and formulation. In addition to implicitly recognising problems in the services that architects currently offer in this area, the response appears to provide an acceptance of the need to utilise independent project managers for such activities.

Bowen *et al* (2001) describes a study undertaken to establish the methods employed in the selection of an appropriate procurement system, and the relationship between procurement method selection and client dissatisfaction. Architects are heavily criticised by clients for being selective in their provision of information, possibly because of an alleged lack of knowledge regarding the various procurement options available.

In a further study on the group dynamics in building procurement teams, Bowen *et al* (2002) report that most clients hold the view that a project manager is essential on major projects, an opinion shared by less than half of the architect respondents to a questionnaire survey. This difference can only be explained by a desire by South African architecture to cling to the principal agent role assigned to them by the traditional procurement system commonly adopted. There are numerous references in the literature to an established relationship between procurement team cohesion and project success. It is therefore disquieting that this study discloses several shortcomings in the process, mostly a result of poor communications and sometimes due to poor leadership skills being implemented.

### **Quantity Surveyors**

It can be clearly shown that the current performance levels of South African quantity surveyors is extremely poor. This has even been attested to by the Association of South African Quantity Surveyors who conceded that *clients perceive the profession to be delivering an inferior service* (ASAQS, 1990). Has the situation improved over the last decade since this report was published ?

Significantly, substantial research has been undertaken by South African academics into aspects of service quality within the major areas of quantity surveying practice described above. Pearl (1992) clearly describes the pre-tender estimating performance of local practitioners as being less accurate, and more inconsistent than their overseas counterparts. A recent extension of this study shows that there has been no significant improvement in estimating performance since the original research was conducted. In addition, Nkado *et al* (1999) established that our local quantity surveyors lag far behind their international counterparts in most aspects of construction time estimation.

Recent in-depth study of issues relating to procurement methods adopted in South Africa has revealed alarming flaws in the service levels of local quantity surveyors (and other built environment professionals), which are built upon the basic skills referred to above. In addition to the theoretical and technical ignorance uncovered, the communication channels between built environment professionals, as extensively researched by Bowen (1993) cannot be considered satisfactory, with 20% of clients describing the communication between themselves and quantity surveyors as being 'adequate' at best.

Proctor (1997) similarly produces damning evidence that a significant proportion of clients are dissatisfied with the service provided by their quantity surveying consultants. When reviewing the published research findings, it is clear that there is no single major aspect of the knowledge / skills domains 'claimed' by quantity surveyors, that is being performed at a satisfactory level.

### **IS THERE A CURE FOR THIS PROBLEM ?**

Clearly, much requires to be done to redress the present situation. As the primary 'ills' appear to have their source in aspects of training and education, this should form the focus of the short-term strategy. It is very tempting to lay the blame for the present ills at the doors of the various tertiary education institutions providing pre-registration training. There is a clearly great need for all technikons and universities to work closely with the Professional Councils to ensure that the 'knowledge driven' strategy is a success. This includes their traditional role of producing young graduates / diplomates, but further requires a commitment to improve library holdings, active research activities, and the underpinning of the CPD programme by providing appropriate courses to practitioners on 'state-of the art' topics.

However, as importantly, it is suggested that the primary thrust of any drive to improve the situation should be aimed at completely re-structuring the registration process for architects and quantity surveyors, which responsibility falls upon the professional councils, in terms of the recently adopted legislation. If one looks at the present professional registration requirements, one is struck by the impression that it is designed around recognising 'experience' (however inadequate this may be), rather than the more admirable value of 'expertise'.

At the level of 'accreditation' of tertiary educational institutions offering quantity surveying as a course of study, there is no logical, objective assessment procedure in place - the process is essentially an arbitrary one where no reliable set of minimum performance criteria is prescribed. For those quantity surveyors in training that have to write Council Examinations, the situation is even more desperate ! Failure rates are high and a large amount of anger is generated amongst candidates, due primarily to the absence (noted many years ago) of a coherent examination preparation process. Most disturbing is the fact that there does not appear to be a will amongst the administrators of this hopelessly inadequate system (from a knowledge / skills enhancement point of view) to urgently improve the situation. Perhaps the most admirable part of the registration process is the manner in which the Assessment of Professional Competence is conducted, providing participants with a clear understanding of what performance levels are expected. If however, one uses this as a gauge of the basic 'body of knowledge' which aspirant professional quantity surveyors should display, it too is clearly inadequate.

The disturbing situation described above is not beyond salvage however. The introduction of Continuous Professional Development (CPD) programmes can, if wisely administered, prove to be the catalyst in improving architects' and quantity surveyors' service levels. It is essential that submissions be carefully scrutinised to ensure that registered practitioners are gaining meaningful exposure to material which can enhance their knowledge / skills base. It is however, worrying to note that there have already been indications in the quantity surveying profession that this 'assessment' process is to be 'watered-down' to accept arguably worthless

material.

## **THE CHALLENGE OF REGISTERED PROJECT MANAGERS**

The issues discussed above all relate to ways in which the skills and knowledge of architects and quantity surveyors can be improved. The premise upon which this is based, is that the professions can best protect themselves (in terms of continued influence and importance in the industry) by providing high quality service across a broad range of activities. However, their ability to practice in the fashion permitted to date is seriously challenged by introduction of the Project and Construction Management Professions Act (Act 48 of 2000).

At present, councils representing the various professions in terms of the Built Environment Act (Act 43 of 2000) are compiling definitive listings of work activities which are essentially 'reserved' for the various specialist professions. In order to be registered as a project manager, an individual needs to be 'substantively' acting in this capacity (as opposed to 'normal' professional activities - even though this may include being a 'principal agent' ). Those architectural and quantity surveying practices that currently identify themselves as Project Managers will have to comply with registration requirements once the full scope of this legislation is implemented. There is then a distinct likelihood that many (most ?) of these firms will have their potential employment pool severely limited. If this is the case, and if the professions do not improve their current poor performance, alternative procurement routes could be chosen which obviate the need for their employment.

This scenario is not that far fetched ! It is noted that in the UK less than 40% of construction (by value) was procured 'traditionally' in 1998, as compared to over 70% in the mid-eighties. In addition, it is notable that most of the parties active in the development of the new project management legislation and its subsequent committee structure, are drawn from the construction contracting sector, or are involved with construction management teaching at tertiary education establishments. It is also very surprising that the present situation, where two distinctive 'professions' (construction management and project management), with very different features and stakeholder interests, has been permitted to be 'joined' legislatively. The established professions have clearly been 'outflanked' by the initiators of the new project management legislation whose decisions could have far reaching implications for the other professions.

For instance, this could mean that in future, those giving the lead in procurement choice (i.e. project managers) could have a distinctive 'contractor bias', with a resultant swing to systems that they are more comfortable with. The obvious practical action which consultant architects and quantity surveyors could take, would be to ensure that they qualify for, and are registered as project managers. Notwithstanding the claims of present-day members of these professions that profess to have the necessary skills and knowledge, this would require significant further 'education' on the part of most practitioners to perform satisfactorily in this role.

A more dramatic approach could be to 'launch' an entirely new profession (in the context of South African legislation) - that of Facilities Management. A study of definitions in the literature clearly shows that in fact Project Management is a sub-set of Facilities Management, which effectively extends the 'design' and 'construction' stage into the 'user / maintenance' phase. However, here the challenges of acquiring project management skills would be made even more difficult by the need to more effectively consider life cycle issues. In the 'traditional' model (even where project managers are employed), the effects of poor life cycle decisions are often not considered as these tend to manifest themselves many years after the project team has dissolved. Where a facilities management concern has a long-standing 'partnering' arrangement with a client body, the importance of such decisions is unmistakably apparent.

## CONCLUSION

It would appear as if the greatest potential barriers to creating a more vibrant and relevant profession in terms of the issues raised lie within the management structures of the councils for the various built environment professions themselves. Implementation of any credible improvements to the registration process would require a change in mindset of the councils in terms of ensuring that the creation and support of the 'knowledge' driven process is given top priority. More importantly however, is the courage needed (a core leadership quality) to break from traditional procedures and roles within the delivery systems adopted, even should this require those responsible to relinquish perceived personal or group 'power'.

John Porter, as cited by Woods (1999), stated that "*People under estimate their capacity for change. There is never a right time to do a difficult thing. A leader's job is to help people have vision of their potential*". At no previous time in the history of the built environment professions in South Africa has there been such a critical need for leadership as it presently faces. Koestenbaum (1991) provides the ingredients of the recipe to be applied, stating that any true leader requires vision, a sense of reality, a code of ethics which underlines its true meaning (to be of service), and a great deal of courage, for courage means to act with sustained initiative.

Do the various councils representing the built environment professions in South Africa have the capacity for 'leading' their profession into a new, and better future ? - only time will tell. However, each individual practitioner also has a responsibility to ensure that they personally contribute by developing a global mindset which recognises a need for creative thinking. Perhaps Senge (1994) illustrates this best when he points out that in the Chinese language "learning" literally means "study and practice constantly". This is a challenge that all professional consultants should take heed of if that oft spoken fear that the various professions "are dying" is not to come true.

## References

- Association of South African Quantity Surveyors (ASAQS) ( (1990) Strategic planning for a quantity surveying practice, ASAQS, January.
- Bowen, P.A. (1993) A communication-based approach to price modelling and price forecasting in the design phase of the traditional building procurement process in South Africa. Unpublished Ph.D. Thesis, University of Port Elizabeth.
- Bowen, P.A., Pearl, R.G., and Edwards, P.J. (2000) Client briefing in South Africa: an effective communication process ? *The Civil Engineering & Building Contractor*, Vol 35, No 1., pp. 37-43.
- Bowen, P.A., Cattell, K.S., Hall, K.A., Pearl, R.G., and Edwards, P.J. (2001) Group dynamics in building procurement teams: do we work well together in the client's best interests ? *The Civil Engineering & Building Contractor*, Vol 35, No 4., pp. 40-49.
- Bowen, P.A., Cattell, K.S., Edwards, P.J., Pearl, R.G., Hall, K.A., and Opperman, L.M. (2002) Procurement team selection: a pilot study. *The American Professional Constructor*, Vol 26, No 2., pp. 8-20.
- Department of the Environment, Transport and the Regions. (1998) Report of the construction task team *Rethinking Construction* [online]. Available from: <http://www.construction.detr.gov.uk> (Accessed 30<sup>th</sup> September 2003)
- Hindle, R. (1996) Do we need the 'professions' ? . *ProjectPro*, Vol. 6, No. 2, pp.30-31.
- Hindle, R. (1998a) What is wrong with the construction industry ? *The Civil Engineering & Building Contractor*. Vol. 32, No.8, pp. 10-12.
- Hindle, R. (1998b) The professions...following the path of the dinosaurs ! (Part 1) *ProjectPro*, Vol. 8, No. 4, pp. 20-21.
- Hindle, R. (1998c) The professions...following the path of the dinosaurs ! (Part 2) *ProjectPro*, Vol. 8, No. 5, pp.

40-41.

- Hindle, R. and Rwelamila, P.D. (2000) Built environment professions bill - a giant stride backwards ? *ProjectPro*, Vol. 10, No. 6, pp. 29-31.
- Hindle, R. (2001a) Declining demand and its impact on construction firms & consultants in South Africa. *The Civil Engineering & Building Contractor*. Vol. 35, No.3, pp. 54-55.
- Hindle, R. (2001b) Business process development in construction responding to change in the South African construction industry. *The Civil Engineering & Building Contractor*. Vol. 35, No.4, pp. 50-51.
- Koestenbaum, P (1991) Leadership: the inner side of greatness : a philosophy for leaders. Jossey-Bass Publishers
- Nkado, R., and Meyer, T. (2001) Competencies of professional quantity surveyors: a South African perspective. *Construction Management and Economics*, Vol.19, No. 5, pp. 481-491.
- Nkado, R., Akintoye, A., Bowen, P.A., and Pearl, R.G. (1999) Forecasting construction time by quantity surveying practices in South Africa. *Urban Forum*, Vol. 10, No. 2, pp. 165-182.
- Pearl, R.G. (1992) Factors affecting the accuracy of quantity surveyors' pre-tender price forecasts in South Africa, Unpublished MSc dissertation, University of Cape Town.
- Proctor, C, J. (1997) Satisfaction and service quality in the quantity surveying profession, Unpublished MSc dissertation, University of Cape Town.
- Royal Institute of British Architects (RIBA) (1992) Strategic study of the profession. Phase 1: Strategic Overview. RIBA Publications
- Royal Institute of British Architects (RIBA) (1995) Strategic study of the profession. Phases 3+4: The Way Forward. RIBA Publications.
- Royal Institution of Chartered Surveyors (RICS) (1992) The core skills and knowledge base of the quantity surveyor.
- Rwelamila, P.D. (1997a) More questions on construction "professionals". *ProjectPro*, Vol. 7, No. 3, pp. 22-24.
- Rwelamila, P.D. (1997b) Adapt or die - the dilemma of the construction "professions". *ProjectPro*, Vol. 7, No. 4, pp. 13-14.
- Senge, P. M. (1994) The Fifth Discipline - the art and practice of the learning organisation. Currency Doubleday.
- Van der Dusen, L (2000) Beroep in krisis: VPO 'n patetiese antwoord. [Http://www.asaqs.com](http://www.asaqs.com). August 2000.
- Woods, D (1999) Diversity....the challenges for leadership. Video production in the series Stanford Executive Briefings. Kantola Productions.