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The Pillars of Quantity Surveying for a Learned Society

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The quantity surveying profession in South Africa is experiencing change with a strong emphasis on improving education, research and training.

According to the Oxford English Dictionary [7] a learned society is, "a society formed for the prosecution of some branch of learning or science." Membership of learned societies may be open to all, may require possession of some qualification or may be honor conferred by election [5]. The quantity surveying profession may therefore be evaluated as a learned society within this specific science.

The problem addressed, related to education, research, training and continuing professional development (CPD), is whether the quantity surveying profession is ready to meet the challenges facing it in respect of the responsibility toward the changing professional environment. The first sub-problem is to investigate the possible application of maturity models as a development for the quantity surveying profession. The maturity model is defined in section 2.2. Analyzing maturity in respect of the five pillars of a learned profession (education, research, training, mentorship and CPD) may assist the quantity surveying profession to develop its position as a learned society. It is proposed that maturity analysis and measurement may be based on current project management maturity research that may contribute to solutions in respect of the five pillars addressed in this paper.

The second sub-problem is to establish what contribution mentoring could make toward the maturity of a profession. Research done by the University of the Free State in respect of mentorship programs in the Eastern Cape during the past three years, shows positive results in respect of mentoring of small and medium sized construction contractors by professionals [21, 22]. It is therefore hypothetically stated that a mentorship program may play an important role in the continuing development of the quantity surveying profession.

Research is seen as a fundamental pillar of a professions' profile as a learned society. Results of a research project, conducted to establish the pillars of quantity surveying as a learned society show the importance of research in a profession [23].

Conclusions and recommendations emphasize the need to develop the five pillars, supported by "tools" previously or not used adequately, such as maturity models and mentoring.

MATURITY OF A PROJECT-ORIENTED NATION, PROFESSION AND ENTERPRISE

Maturity (Level of Development) of Nations and Professions

E. Fuessinger proposes that the maturity of a project-oriented nation includes the following project-management related dimensions:

- project management education - formal education programs are provided;
- project management research - research projects, publications and events; and
- project management marketing - a national project management association should exist [2].

Although the above services refer to project management orientation for a project oriented nation, they may equally be relevant to other professions. It is proposed that based on the above, the following elements should be present in the development of a profession:

- Education - Understanding the knowledge, science and skills needed for the profession using known technical, administrative and mentorship instruments.
- Research - Relates to the development of the profession as a learned society. And,
- Association - The development of an association of professionals with effective communication systems and instruments toward continuing professional development (CPD).

C. Gruber states that maturity implies growth over time as well as understanding why success occurs and ways to correct or prevent problems [3].

The advantages, for enterprises, to be part of such an analysis are, according to Gruber that they establish where they stand and can identify certain strengths and weaknesses in processes, implement certain methods for effective improvement and set up improvement programs [3]. Enterprises may also be lead, through maturity identification, to total product, marketing and service delivery improvement, using project management maturity model principles.

Maturity Model and Dimensions

"A maturity model is a framework describing a process whereby something desirable can be developed or achieved" [3].

It is proposed that the maturity model used to analyze the project management maturity of firms, companies and nations may assist to understand the maturity of the quantity surveying profession, particularly related to education, training and mentorship.

Figure 1 shows the average maturity profile and ratios for project management (including education, research and marketing) for South Africa. This is illustrated to show the maturity dimensions of a project oriented nation (pon) that may also be used to analyze the quantity surveying profession within a society.

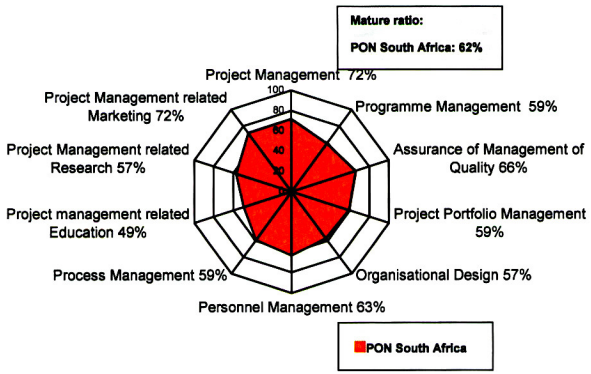

Figure 1 – Average Project Management Maturities of South Africa Based on the Survey Results (61.6 percent) [10]

EDUCATION AS A PILLAR OF THE QUANTITY SURVEYING PROFESSION TOWARD MATURITY AND EXCELLENCE

Generating Standards

The Quantity Surveying Standards Generating Body (SGB) has over the past four years developed standards for the profession on both a full qualification basis and a comprehensive set of unit-standards for all the relative quantity surveying qualification levels and outcomes. The unit-standards are soon to be gazetted. Education providers that require accreditation from the South African Council for the Quantity Surveying Profession (SACQSP) will have to adhere to these standards within the next few years [15].

Table 1 shows a summary of exit level outcomes, critical evidence for assessment purposes and assessment criteria of the quantity surveying qualification at honors level. Typically, a program leading to the award of an Honors degree in Quantity surveying aims to develop graduates who will possess demonstrable, specialized skills and competencies to do the following:

- analyze and solve problems related to the built environment;
- deal with commercial, entrepreneurial and management issues;
- communicate effectively on all matters to which their skills and competencies have been applied;
- use and apply information technology;
- interpret and apply legal principles within the context of the built environment;
- execute tasks requiring numerical and quantification expertise;
- conduct research within the context of the built environment, including consideration of interdisciplinary aspects; and
- apply knowledge of technology within the context of the built environment [15].

Honors degree in Quantity surveying. Qualifying learners are competent to:	**Critical evidence for assessment purposes:**	**Assessment criteria:**
• Demonstrate familiarity with and display knowledge and understanding of the quantity surveying practice and procedure • Well-rounded knowledge and an ability to critically question core theory, practice and methodology • Competence in modes of inquiry employed in practice disciplines • Analyze and locate the principles and performance of own work within current practice	**Analysis and problem-solving:** • Create and innovate systems of identification, assessment • formulation and solving of convergent and divergent problems • assess the impact, risks and benefits of design proposals • exercise judgment; • perform management tasks • find alternative solutions to problems or queries • apply techniques and principles of quantity surveying analysis, financial management and risk management **Commerce, entrepreneurship and management** • Understand management skills • Cost effective use of appropriate resources • Quality control and health and safety • Client needs • Understand environmental, social and community issues • Accounting • Budgets and cash flows **Economics** • Application of economics concepts and principles	• Clear identification • Planning approaches • Choice of optimal solution • Division of tasks • Prioritization • Logical structures • Establishment of reasons • Cooperation • Identification, evaluation and reporting • Planning and managing project and construction processes • Performing management tasks including analyses • Exercising judgement • Communicating project development

Table 1 – Outcomes, Evidence and Assessment of Quantity Surveying Qualifications Level 7 [15].

The descriptions in Table 2, relating to quantity surveying comply fully with the National Qualifications Framework (NQF) whereby ladders of opportunity are provided for learners to progress (within their capabilities) from the lowest levels of competence to the highest levels. This also facilitates recognition of prior learning (RPL) in that it permits learners entry at various levels.

Level 7	Learners are required to demonstrate competence in the application of **advanced** quantity surveying expertise (theory and practice) related to the built environment. **Graduates** work under the guidance of a professional Quantity Surveyor.

Table 2 – Descriptions of Level 7 for Quantity Surveying
Note: These level descriptors were developed during the QS SGB Scoping Exercise held on 15th October 2004. (Approved by the SACQSP October 2006) [16].

Accreditation Policy

At the SACQSP meeting held on 23 March 2007, the accreditation policy document was accepted. Education providers will have to adhere to this document for future accreditation. Although the policy is not seen as a "guillotine" to cut providers off, the seriousness of quality education and training provision is accepted. The policy document submitted to Council (SACQSP) by the Education Standards and Research Committee based the policy on the following criteria for Honors levels:

- Entry requirement level at 17 unweighted matric points, where a higher grade A symbol provides 5 points and an E symbol, 1 point. (Standard grade at -1).
- Research output should be at a publication output of .8 per year per permanent staff member.
- Senior lecturer equivalent (SLE) to full time student equivalent (FTE) should not be more than 1:40 [18].
- Employability of graduates [11, 27]. And,
- Qualification levels of fulltime academic staff (75 percent at Masters level or higher) [19].

The policy document is aligned with the accreditation policy of the Royal Institution of Chartered Surveyors (RICS) and the Pacific Association of Quantity Surveyors (PAQS) accreditation policy documentation [9, 12].

Apart from the above, education providers must adhere to the 19 criteria for accreditation by the SACQSP [17].

This illustrates international tendencies to improve the standards of research, education, training and services of the profession.

TRAINING AS A PILLAR OF THE QUANTITY SURVEYING PROFESSION TOWARD MATURITY AND EXCELLENCE

Identification of Work for Professional Quantity Surveyors

In terms of the Quantity Surveying Profession Act 49 of 2000, the South African Council for the Quantity surveying profession has developed a draft of core functions for the quantity surveyor [13]. This document highlighted the most important activities and functions inherent in delivering professional services, these include the following:

- cost advice and planning;
- project procurement and documentation;
- tendering and contractual relationships;
- contract services;
- specialist skills related to quantity surveying services;
- quantity surveying related to engineering services; and
- building and construction/property development [17].

This document is now being revised to adhere to the requirements of the Council for the Built Environment (CBE) and to address the duplication or overlaps that may be evident between the various professions active under the authority of the CBE. It should be noted that in accordance with the SACQSP rules a candidate who qualified from an accredited institution has to do three years of training before registration [14].

Skills clusters and competence

The South African Council for the quantity surveying profession (SACQSP) has, at the council meeting held on 23 March 2007, accepted the assessment criteria drafted by Prof. G. le Roux related to competence required for registration as a professional quantity surveyor [19]. The skills clusters and competence requirements include the following:

- Cost advice and cost planning - includes preparing and using cost data, estimates, financial feasibility viability, comparative design studies, budgets and cost plans, whole life appraisals, turnover, cash flows, cost management and reporting, applying fee scales, implementing conditions of engagement.
- Project procurement and documentation - includes procurement, contract documentation, bid analysis, price determination, documentation for sub-contractors, cost value statements, specifications and schedule of rates.
- Post Contract Services - includes cost advice, final cost estimation, variation accounting, cost benefit analyses, alternative construction methods, recording and assessing records, report on on-site requirements, cost management etc.

- Engineering - includes earthworks, roads, etc., sewerage and water facilities, plant etc. structural steelwork, process- and manufacturing plant, transformers, cabling etc., communication systems, fire detection, heating, air-conditioning and ventilation, installations, etc. [17].

The Quantity Surveying Profession

It may be helpful to compare the functions, elements and maturity outcomes (dimensions) of a possible model with the expected services or outcomes that the quantity surveying profession believes it should be able to offer the market [8].

SOUTH AFRICA	PACIFIC ASSOCIATION
Quantification	Quantification
Numeracy	Numeracy
Communication	Communication skills
Interdisciplinary and interpersonal teamwork	Personal and interpersonal skills
Commerce, entrepreneurship and Management	Business and Management
Professional Practice	Professional Practice
Information Technology	Construction Technology
Technology	Construction Technology
Law	Construction Law and Regulations
Research	

Table 3: – A comparison, between the South African situation and the Pacific Association of Quantity Surveyors (PAQS), of the basic outcomes or competencies at entry level that a quantity surveyor should possess [24].

The above table shows the most important services or expected outcomes of the profession and therefore it could be interpreted in this instance as the technical and professional skills where maturity should be at an expert level. It is expected that the profession will provide ample development opportunities to its young people to become experts in respect of these services.

MENTORSHIP AS A PILLAR OF THE QUANTITY SURVEYING PROFESSION TOWARD MATURITY AND EXCELLENCE

From the above overview that describes various interventions to uphold and promote improvement in standards regarding education in quantity surveying, it is noteworthy that experiential training, supported by active mentoring is not emphasized adequately. As with other professions such as medicine, accounting, engineering, law, etc. it is obviously imperative that the scientific use of mentoring in developing a learned quantity surveying profession should be mandatory.

The generally accepted meaning of mentorship is that it is a process of transferring knowledge and skills. Typically, this entails that an older, knowledgeable person imparts knowledge and skills to a younger protégé. In a developed world environment this typically takes place in a closed environment such as a particular enterprise, family structure or other organised endeavor.

The identification and creation of an accreditation program for construction mentors in South Africa, executed by one of the authors, is believed to be a first attempt of its kind in the world. A joint survey undertaken for a statutory body (the panel who undertook the survey, including one of the authors), could not uncover a similar initiative anywhere else in the world. Mentorship in other forms is common, but none could be found that reflected a specific intervention to support small independent construction contractors, who operate for their own account. In this context, mentoring has grown into a complex professional support service, growing toward coaching and a business advisory intervention [6, 25].

Without a weighted analysis having been done, several "categories" of mentorship are recognizable including the following:

- **Category a**: mentorship in a closed working environment;
- **Category b**: as interventions by organs of state and academic institutions to establish support structures; and
- **Category c**: as a paid professional service, mainly in category (b).

It is clear that mentoring generally takes place (or should) in a structured and controlled environment. Although it is common that mentoring in category (a) tends to be less formal, it is still of important significance, if taken seriously.

When considering categories (a), (b) and (c) above, it appears logical that young people undergoing a "professional learnership/article" period during education, or on completion of education, should fall into category (a). The problem at hand is to structure mentoring for young professional trainees in such a way that it becomes a reliable development tool, operating from a consistent platform in professional practices where young quantity surveyors are mentored. It seems that, whilst a period of practical experience is a pre-requisite to register as a professional practitioner, the "practical experience" should be structured as a measurable, mentoring program.

The question arising is to what extent senior practicing quantity surveyors are capable of providing young people with state of the art mentoring, if they themselves do not meet their own profession's CPD requirements.

J. Wilkinson states that supervisors and counsellors of APC (assessment of professional competence) candidates are in a role of advice and support but also assess the candidate's competence; however, they are not expected to train [26]. The RICS sees the supervisor, a person with day-to-day responsibility for a candidate's knowledge of his or her work, and the counselor, as a person with a more strategic role, as two persons. The SA situation may present difficulties for firms to find two people for the above roles. The RICS, however, also allows for the fact that appointing two people by smaller firms is not always achievable [26].

Wilkinson stipulates the duties of the supervisor or counsellor as follows:

- Ensure that your candidate receives training in line with the competency requirements;
- Ensure that the candidate receives training;
- 'Sign off' the candidate at three-monthly and six-monthly intervals, and at the interim and final assessment stages;
- Ensure that all records and reviews are completed accurately;
- Assist the candidate with the preparation and submission of documents for the final assessment;
- Liaise regularly with the supervisor/counsellor (if you are not the same person!); and
- Provide support and encouragement, and generally be a good friend to the candidate [26]

He further states that involvement with the training will be continuing and is most important as "You will not simply be 'dipping in and out' of the process" [26].

The question remains, are supervisors or councillors in the UK or SA actually performing the duties as they should, and do young people receive the due attention they deserve or should receive? It may be prudent to consider that a structured mentorship program that addresses a proactive development toward maturity should be introduced for the profession.

CONTINUING PROFESSIONAL DEVELOPMENT (CPD) AS A PILLAR OF THE QUANTITY SURVEYING PROFESSION TOWARD MATURITY AND EXCELLENCE

T.C. Haupt states that it is evident that all the co-operative partners, academics, students and employers need to narrow the gap between academic and experiential learning components [4].

Following from this statement the question that needs to be asked is: What is the role that the profession and its members play or should play toward quality training of young people entering the profession?

The Association of South African Quantity Surveyors (ASAQS) implemented a CPD program, on behalf of the SA Council for the quantity surveying profession (SACQSP) as early as 1999. This was done in an effort to develop

the profession toward a dynamic pro-active learned society. The categories to achieve 200 points per five-year cycle of development activities include the following:

- **Category 1**: Conferences, seminars, workshops, etc.
- **Category 2**: Small group activities, journal clubs, training sessions and committee work for the profession. And,
- **Category 3**: Individual activities, self-study, lecturing, etc.

For Category 1, two points were allowed per one hour of activity with a minimum of 80 points over a period of five years.

The five-year cycle was later extended to the end of 2006 (SACQSP, 2006).

In 2006 a new system was introduced, to be implemented from 2007. A yearly cycle was introduced and registered. Professional quantity surveyors are now required to do 25 hours of CPD activities in one year. Only two categories of activities are now accepted:

- **Category 1**: 15 hours of formal external training (including research output, congresses, etc.). And,
- **Category 2**: 10 hours maximum of informal training and other acceptable activities (SACQSP, 2007).

Harris, a representative of the CPD Institute, believes that keeping up-do-date through continued learning should become a natural habit and that professional people have a duty to up-date working knowledge [20].

Activities within the professions driven by the ASAQS and the SACQSP are pro-active and internationally relevant. Proper implementation of all the requirements and policies may lead to the development of the profession and its people to the highest possible level, a true learned society.

It is, however, a sad fact that members of the profession and registered quantity surveyors do not seem to have a high enough appreciation of the integrated education and development model that is currently being developed. The lack of CPD activities illustrates this unfortunate fact [1]. It is accepted that CPD activities will be important in respect of the firm's or individual's development toward maturity.

RESEARCH AS A PILLAR OF THE QUANTITY SURVEYING PROFESSION TOWARD MATURITY AND EXCELLENCE

Research is seen as one of the most important determinants and dimensions for the maturity of a profession or nation.

The Education Standards and Research Committee of the SACQSP submitted a research facilitation plan to the Council during 2006. This plan was accepted at the Council's Meeting in October 2006.

The aim of the Council is to promote research as a pro-active, dynamic and interactive process that will ensure the profession remains in the vanguard of its business and knowledge environment. To this end the South African accredited journal *Acta Structilia*, published by the University of the Free State, is endorsed by the Council to promote research publications.

The main strategy is therefore to establish a firm research focus for the development of the profession, and the mission is to achieve the strategy through a research journal, an interactive seminar, or mini-congress series, and by commissioning research projects. Eventually this will establish a strong development focus in the profession .

RESEARCH METHODOLOGY AND PROPOSALS

A research project aimed at establishing the importance of the five pillars in respect of their role and influence on the profile of a profession as a learned society was conducted. One hundred and seven questionnaires were sent to prominent quantity surveyors, board members of the ASAQS, council members and academics. Fifty-six quantity surveyors responded to the questionnaire (52 percent). Table 4 shows the results in respect of the five dimensions as pillars in respect of their importance on a scale where 1 is of no importance and 5 is very important.

DIMENSIONS	*IMPORTANCE*
Education	*4.02*
Training	*4.04*
Mentorship	*4.59*
CPD	*4.02*
Research	*4.00*

Table 4 – Five-Pillar Importance Rating of Dimensions of a Learned Society [23].

It is therefore concluded that the profession, based on the response, is of the opinion that the five dimensions are fundamentally important for the education and development of a profession as a learned society.

It is proposed that to be seen as a learned society, a profession must ensure that the five pillars of a learned society are developed to its highest levels and on par with world-class professions. The following are suggestions to ensure that a profession develops to the required levels:

- **Education** - Entrants are required to demonstrate knowledge, skills and attitude above that of honors level graduates;
  - The number of M and PhD students relative to the total number of practitioners and academics must compare with world-class levels;
  - Education providers, to entrants on professional level, must achieve national, but preferably also international accreditation status; and
  - A strong group of providers should focus on the education of technologists and technicians.
- **Training** - A formal post-candidate entrance training program must be a requirement for full registration or full membership.
- **Mentorship** - A structured support and learnership based mentorship program under a qualified senior mentor should be a requirement.
- **Continuing Professional Development (CPD)** - An obligatory continuing professional development program throughout a career should be a firm requirement for continuous registration and/or membership.
- **Research** - The highest possible level of research outputs by academics and members of the profession is a strong indicator of maturity of a profession and a determinant of the level of the specific profession as a learned society.

For the growth of a professional society and for such a society to be world class and a learned society, research, education, training and professional development are pillars for future survival, development and prosperity. It is suggested that the quantity surveying profession in South Africa is well on its way to becoming a pro-active learned society. This is evident from the documentation, numerous activities, policies and structures implemented by the official institutions of the profession.

However, it is equally evident that many members of the profession themselves are not sensitive or active enough in building the profession's knowledge, skills and attitude toward development and growth. CPD activities clearly show this unfortunate tendency. Professional maturity models can assist with the establishment of benchmarks, prompting professional practitioners to concentrate on their particular maturity dimensions requiring enhancement. In this regard CPD can make an important contribution. An integrated research, education, training, mentorship and development process is needed to achieve the goals of the profession.

A model for professional maturity which includes education, training, research, mentorship and continuing professional development may assist in bridging the gap between formal education providers and providers of the quantity surveying service to clients,. Such a model is diagrammatically presented in figure 2.

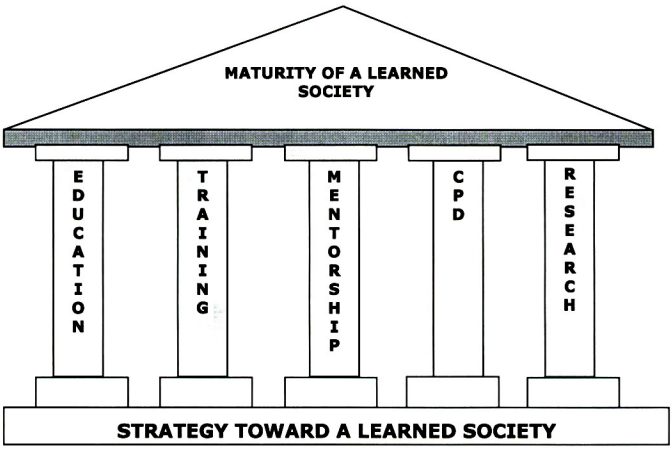

Figure 2: Five-Pillar (Education, Training, Mentorship, CPD and Research) Model to Achieve Quantity Surveying Professional Maturity {25}.

It is recognized that the candidateship system and CPD of the SACQSP goes a long way in assisting new qualified entrants to the profession. The position is however held that training the trainers and mentoring will further enhance the development of new entrants and promote the continuing development of all professionals. It will remain difficult to establish scientifically whether all the proposed objectives (dimensions of maturity) have been reached.

RECOMMENDATIONS

The following elements or dimensions are seen as pillars for development of a profession:

- Education as foundation of a professional learned society.
- Educating the profession in respect of CPD and its role.
- Activate a mentorship program that adheres to all the principles set by the policy documents.
- Training and development of mentors.
- Continuing support for the development of knowledge through research.
- Design, develop and integrate a mentorship-system as part of the total development activity. And,
- Communicating to the profession what the role of providers is and what the role of education, research, training, mentorship and CPD is.

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