Where is Surveying Heading – Issues in Educating the Public?




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Summary

It has been clear for some time, at least from the evidence presented at a number of FIG events, that the profession is changing with a huge number of recognised competencies. This raises fundamental questions for the global surveying profession that include: what core subjects should be encompassed in educational curricula; how can we attract and educate new recruits into the profession; how should we market the core surveying competencies; and how can we address the demographics of an aging profession?

Different parts of the world report a range of major challenges, including low student numbers, closure of surveying courses, an aging teaching profession, inadequate job opportunities in some locations with an insufficient supply of graduates to fill the vacancies in others.

Overarching these is the lack of any clear international recognition of definition of the profession of "surveyors" for the 21st century. Thus we risk failure to promote, at a global level, the full range of surveying skills to both our clients and to the broader public, thereby constricting both the supply of and demand for surveyors.

This paper argues that there is need for a review of the core competencies that one might expect of a surveyor and the establishment of a focused marketing programme that influences national and international agencies and overcomes the relative ignorance about the nature, structure, education and regulation in the profession in different countries. This paper identifies and discusses these issues, and challenges the whole of FIG to contribute to developing a range of global solutions to ensure the survival and future of our profession.

1. Introduction

In 2007 the authors presented a paper at the FIG Conference in Hong Kong, SAR, China, Mahoney et al. (2007) suggesting that the surveying profession faced critical future issues. The rapid deterioration in the economic climate in many countries since then has made the imperative to address them greater. This paper sets out to explore some of the fundamental challenges facing the surveying profession.

New technologies and new opportunities have enabled surveyors to broaden their skills and competencies, and as a result they may be involved in such diverse activities as estate management, digital image processing, boundary demarcation, engineering design, and satellite orbit analysis. The number of competencies that surveyors claim now number over 200. This might suggest that that surveyors have become multi-talented professionals, or specialist generalists but it may also point towards a profession that has difficulty in defining its core expertise. This is further confused by the fact that a competency regarded as part of the surveying profession in one jurisdiction may be part of an entirely different profession in another jurisdiction. The general perception may be that surveyors are 'opportunists' rather than 'pragmatists'. This has implications, for the way the profession defines, educates and markets itself.

The global recession being experienced in many countries is reported to be having a profound effect on the surveying profession as a whole. Some members with professional skills currently encompassed with the "surveying" domain will see a dramatic decline in workloads, while others are likely to find a major increase in workloads.

In addition, there has been a fundamental shift in the role of 'professionals'. Threats and challenges emerge in the form of an increasingly litigious and consumer-aware society; a few years ago professional knowledge was required for the interpretation of complex data, but this is now no longer the case. The traditional values of integrity upheld by the professions have succumbed to commercial pressures. This is reflected too in the evolution of the professional skills required of surveyors, who are increasingly delivering more commercial advice. (RICS, 2004) This leads to a number of critical questions being raised:

- What will constitute the core skills of professional surveyors in the medium to long term?
- What does the profession need to do not only to retain its position of expertise within the professional community and in society but also to enhance it?
- Have some areas become too niche?
- Are surveyors too generalist?
- Should measurement be the focus of the profession?
- Is valuation really a form of technical accounting?
- How should education develop to meet the challenges of a changing profession?
- Is the drive for niche courses driven by the educational institutions need to attract more students?

To ignore these questions or to leave these questions unanswered potentially threatens the survival of the surveying profession.

2. Supply and Demand

During the last decade, surveyors faced crucial supply and demand problems. The promise of massive injections of capital into infrastructural projects suggests that those involved in associated engineering surveying activities, may well be largely immune from these problems. It remains to be seen if this is a temporary manifestation or a long term permanent change.

The absence of a protected market in the UK allows the unqualified to compete with the professionally qualified. This is exacerbated by the fact that RICS does not recognise the academic qualifications gained from the majority of UK universities, thereby limiting the market for quality recruits. In some countries, in particular, the UK and New Zealand there is a general lack of surveying technicians.

Another issue is how to attract the highest calibre students into the profession. The public perception of surveyors is varied, and the reality is that we have an extremely low public profile when compared to other professions, except in a very few surveying specialisms. Having attracted students, the challenge then becomes one of providing an educational programme that not only retains the interest of Generation Y[1)], but also encourages them to become skilled and resourceful professional practitioners. For over a decade, almost every surveying degree programme in Australia has struggled to attract its full quota of students. Anecdotal evidence now suggests that students are leaving more 'arts based courses' and looking for academic qualifications that give them much more value for their student fee. Is this an opportunity that the surveying profession can exploit?

Mills et al. (2005) suggest that attracting students has been a problem in the UK. There is a demographic time bomb in the profession which means that a large number of surveyors will retire in the next ten years – where will their replacements come from? This is also a particular problem within academia, where an aging teaching profession is a very visible barrier to attracting young people into University surveying education.

3. A Fundamental Problem

The profession has developed in isolation in different jurisdictions to reflect the needs of their markets, what may be considered to be the field of expertise of a surveyor in one country may be considered to be the expertise of some other professional or technical specialism in another country. Plimmer (2001) demonstrated the variations of competencies (based on the FIG definition of "surveyor") which comprises the profession of "surveying" in 16 European countries. Unless the current economic climate brings about radical change there is no evidence of an external driver to force commonality within the profession. According to Williamson, (1997) over ten years ago, "*The surveying profession is currently struggling for an identity in both the developed and developing worlds.*" The profession requires a clear, coherent and relevant identity.

3.1 National and Regional Variations

This issue of 'identity' is interesting, but perhaps it needs be asked if individual surveyors are concerned with status or identity? A cynical view might suggest that part of the problem may be the senior members of the profession who are resisting change, in order to maintain their own position and status rather than equipping the profession for the future.

In the wider Australasian context, surveyors are typically defined as specialists in spatial measurement and boundary demarcation. Land sur-

1) defined in www.dictionary.com as "The generation following Generation x, especially people born in the United States and Canada from the early 1980s to the late 1990s."

veyors are not estate agents or realtors, they are not specialists in building construction nor are they land valuers – these are all distinctly different industry groups, typically with a lower level of education and skills such that they would not meet the membership requirements of the local surveying profession. However, the Royal Institution of Chartered Surveyors (RICS) argues that a much wider range of specialisms constitute the surveying profession and embraces other groups of specialists into the profession.

While all parties to the reciprocal agreement between all the Australian states and New Zealand, consider land law, spatial measurement and the definition of cadastral boundaries to be the essential body of knowledge for a surveyor, surveyors in New South Wales and New Zealand tend to place added emphasis on municipal engineering. In these particular jurisdictions, the surveyor has traditionally been the designer of urban subdivisions, including all its engineering services. By way of contrast, in the United States municipal engineering is strictly the domain of the professional engineer and certainly not that of the surveyor. There, the surveyor tends to specialises in spatial measurement and land boundary definition.

There are also issues affecting divisions between surveyors and professional practice in some jurisdictions. For example, some of the specialisms of building surveyors are the sole preserve of architects within certain countries of the European Union. Similarly, the functions undertaken by quantity surveyors are not practised in some EU countries – professional valuers in the UK often combine the roles of valuation advice and estate agency, but this is traditionally unacceptable to professional valuers in some EU countries. (Gronow &Plimmer, 1992)

3.2 International Perception

At the other end of the spectrum, within the international community, there are documents which categorise the range of occupational and activity-based data often used to appoint appropriate people or organisations to undertake work. Two of these documents that show how surveyors and their professional skills are represented to the international community are two UN documents – The International Standard Classification of Occupations (ISCO) and the International Standard Industrial Classification (ISIC Rev. 3).

ISCO provides a system for classifying and aggregating occupational information obtained by means of statistical surveys and is one of the standards of international labour statistics. Within ISCO-88, ten separate classifications for "surveyors" are listed, which do not cover the range of competencies recognised by FIG. Thus, "surveyors" are shown as having a fragmented and disparate range of activities with no cohesion, focus or single identity. These classifications were agreed in 1988 and the profession has developed significantly since then.

ISIC is a basic tool for fostering international comparability of data and for promoting the development of sound national statistical systems. ISIC is used in a wide range of statistics, including demographic and social statistics for labour and employment analysis, which need detailed data classified by the kind of activity involved. It is hard to identify clearly those categories in which the activities of surveyors should most appropriately appear. Since all of these "economic activities" require the use of land and buildings, it could be argued that surveying should underpin them all.

It is vital for the future of the profession that its expertise is appropriately presented at this level. Failure to achieve this will result in the surveying profession being seen as increasingly irrelevant to the major issues facing society; its expertise will be overlooked at an international level and, unless it is protected within national legislation, surveying work could be awarded to professions with inappropriate expertise. It is also likely tat the profession's role as influencers of policy will be eroded and the risks of significant and damaging errors hugely increased.

The surveying profession has, therefore, a major identity crisis – at least as far as the rest of the world is concerned, because, when viewed from a global perspective, the surveying profession not only has a wide range of competencies, but also significant variations both in how these specialisms are grouped as a profession and within professional practice. It could be argued that the current FIG definition of a "surveyor", if taken in its totality, is probably not appropriate in any one country. On top of this, we tend not to exploit our ability to act as 'professional facilitators'. Ultimately our success lies in our ability to exploit our professional abilities and secure their recognition on the national and international stage.

If this is the case, how can the profession possibly present the globally coherent marketing message necessary to attract international clients

and also young people into an increasingly aged and apparently fragmented profession?

Indeed, its failure to do just this, may be the root cause of a number of other problems such as, poor public recognition, poor student numbers, poor understanding of the surveyor's skills and expertise and, in some cases poor remuneration, resulting in a vicious circle of decline. While there may be international standards in professional practice, national professional associations that regulate professional education and qualifications operate largely in isolation from one another, or achieve a limited degree of co-operation at regional level, though it can be argued that it is only through the global influence of an organisation such as FIG that the forum to discuss and share ideas and experience can be effective.

4. Societal Changes

The traditional professional whose position in society was secured by the implicit integrity and trust no longer exists. The increase in general education and consumer legislation, mandatory Professional Indemnity Insurance (PII) cover and an increasing litigious culture are combining to erode the traditional status of the professional. (Dabson, et al. 2007)

Professionals are emerging into facilitators who rely not only on their own knowledge base, but also on the expert in-put from clients, who in their turn rely on the expert evaluation of the surveyor (Matzdorf et al., 1996). Until recently much of the surveying profession was based broadly upon high-end technology. Today, many in the profession are essentially working as part of the knowledge society, where careers are made through the provision of value added services.

Knowledge workers access their employment, specialism and social position through formal education, combining this with high manual skills. Different knowledge work will require different levels and kinds of formal knowledge, the source of which is institutional learning. Thus, the quality of traditional teaching and learning is fundamental. Increasingly new knowledge will be acquired later in life, through continuing life-long learning

According to Druker (1994) *'Knowledge workers . . . give the emerging knowledge society its character, its leadership, its central challenges and its social profile.*

A number of major changes within engineering, land administration, cadastral systems, GIS, and marine projects are occurring. Multi-professional groupings are being created to generate holistic complete life cycles solutions, of which the surveying profession can form an integral component. Land, marine and valuation surveyors have been freed by technology to provide value-added service. The surveying profession as a whole must embrace these opportunities. Collaborative working practices with other professions for the provision of value-added services need to become the norm or professional commercial competitors will take over

5. Possible Solutions

If, indeed, the surveying profession is to thrive, what solutions might exist?

5.1 Reviewing the Definition of "Surveyor"

FIG (1991) recognizes a range of skills as being within the competence of a 'surveyor'. In the UK, there are recognized educational and qualification routes for different surveying specialisms. In other countries, certain specialisms are considered to be separate professional activities. Is the complexity of the profession an advantage or a hindrance, both to the recruitment of students into universities and the public's perception what a surveyors does? Clearly a review is long overdue.

As a starting point for discussion, a set of core competencies might perhaps be:

- spatial measurement- land, engineering, buildings and marine
- geospatial information – remote sensing, GIS imagery, presentation
- Valuation
- land administration, – boundary demarcation, cadastre, land tenure arrangements
- planning and development
- project management and professional studies – ethics, basic business practice, multi-professional projects

This core should be defined as soon as possible to enable the profession to change its marketing strategy. Whatever core competencies are identified, it then becomes important to decide whether, regardless of history, this is an appropriate competency or set of competencies for the future. Within individual countries, the surveyors' expertise would then be defined by these core competencies plus any other necessary competencies that might be country or region specific.

5.2 Identifying Successes and Failures

Within the FIG surveying community, some have taken initiatives which have led to real success in gaining public recognition, in attracting students, in improving incomes. Equally, some initiatives have proven to be failures. The following observations can be made.

5.2.1 Changing Names is not a Solution

In the early-1990s it became fashionable to change names, for example from "surveying" to "Geomatics", in an attempt to provide a more integrating title for a profession that was subject to significant technological change. It was to be a new name that reflected the breadth of subject matter encompassed in the profession, that had greater appeal than the old word "surveying" and that would attract students into a profession whose new vision had become one of producing and managing spatial data (Gagnon and Bedard, 1996).

"Geomatics" has had a chequered history for such a young term. In Australia, in recent years, at least one major university programme has dropped the name, "Geomatics", in favour of a return to "surveying". In China, the central mapping and surveying institutions have changed their English translation to "Geomatics". In the UK, Geomatics gains some ground but mainly at corporate level. Individuals tend to call themselves Land or Hydrographic Surveyors, not geometricians!

5.2.2 Focused Marketing is Essential

Anecdotal evidence from the UK indicates that a relatively high proportion of surveying students are encouraged into the profession by personal contact with a practising surveyor who is either a member of the family or a close family friend. Hannah (2006) opines that the primary culprit responsible for the skills crisis facing the surveying profession in Australia is the lack of public profile associated with the surveying profession. In reviewing the success of the surveying programme at the University of Otago in attracting students, versus the difficulties experienced by the Australian universities, he concludes firstly, that it is essential to build marketing momentum; secondly, that a simple and attractive marketing message is essential; thirdly, that it is important to use good communication tools; and, finally, that target audiences must be identified and reached. Surveying recruitment needs to be more focused in both its message and its target audience, and professional associations need to respond by ensuring that the very best students are attracted to professional membership.

5.2.3 Coordinated Marketing is Essential

Typically, when it comes to marketing the profession, there are at least two major interest groups, i.e., the professional bodies and the educational institutions. In the first instance, it is in the interest of the professional bodies to raise their profile thus attracting both work and members. They need an ongoing inflow of members to survive. Equally, the educational institutions need students if they are to survive. In the longer term, the aim should be for graduates to join the professional body.

The New Zealand experience is instructive. Prior to 2002, all Registered Surveyors were required by law to be members of the NZ Institute of Surveyors (NZIS). The links between the tertiary education courses and the NZIS were close, with a high level of coordination and shared marketing. New legislation passed in 2002 eliminated the name "Registered Surveyor" and introduced the new name, "Licensed Cadastral Surveyor" for those with appropriate education and experience. At the same time membership of the NZIS became voluntary. Immediately, a small splinter group of former NZIS members (less than 5%) formed a new Institute known as the Institute of Licensed Cadastral Surveyors (ILCS). Effective marketing can only be done through a strong professional organizations and structures.

The recent careers brochures from RICS demonstrated a new approach to a more integrated careers drive. The Land Group has recently designed and produced five new brochures, similar in brand, format and layout which highlight the areas of:

- Environment;
- Geomatics;
- Minerals and waste;
- Rural;
- Planning and development.

But reaching new recruits is just one of the criteria that this information needs to address.

5.2.4 High Levels of Remuneration are Attractive

One of the very clear benefits of the skills shortage in Australasia has been the marked increase in remuneration paid to surveyors at all levels. Average salaries paid to four-year BSurv gradu-

ates from the University of Otago increased from approximately $NZ 30,000 in 2001 to $NZ 46,000 in 2006. Typically, a surveyors' expertise adds value to clients' project far beyond that which they have traditionally charged. High levels of remuneration are one important factor leading towards higher levels of public recognition and in New Zealand have helped lead to higher levels of recruitment.

6. Conclusions

According to Williamson, (1997) *". . . the surveying profession is fortunate [in] that it has a well developed sense of history, [and that] one of the important lessons that this historical perspective provides is that change in the profession is constant and inevitable."* The solutions facing the profession need radical, dynamic, technological, managerial and procedural solutions or the current situation will remain unchanged. However, we need to reflect on who we are, what we do, how to market the profession to recruit future generations of surveyors, how to raise our profile to potential clients, and to adapt to the evolving marketplace for our services, before others take over traditional markets.

While a unification of our profession would seem to be an overly ambitious goal, at this time, we do advocate a rapprochement which should begin with a review of the core competencies that one might expect of a surveyor.

If we could reach agreement, this would at least allow a measure of coherency in marketing our message to national and international agencies, clients and potential recruits. We need to establish mechanisms to overcome the relative ignorance about the nature, structure, education and regulation which occurs in the profession in different countries. National professional associations operate largely in isolation from one another, and it is only through the global influence of an organisation such as FIG that the forum to discuss and share ideas is available. The important thing is to show the world – politicians, other NGOs, and stakeholders that our professional offerings are fundamental to the survival and well being of society.

Given that professional recognition is a major issue and that improved marketing of the profession is fundamental, the sharing of marketing resources, or indeed the development of a new core set of resources may well prove to be crucial. This would certainly be true for educational institutions whose ability to attract quality students is essential to the long-term health and future of our professional institutions.

For younger people, remuneration and life style is an influence on the attractiveness of a particular career option. It is clear that professional recognition and remuneration will only come about with a radical change in perception of the surveyor's worth. In many countries, the existing demand for those with measurement science skills and associated skills is driving remuneration higher, thus presenting the profession with a unique opportunity to invest out of its abundance.

Anecdotal evidence suggests that in the economic downturn those surveyors who operate in niche areas with good client relations and core skills are those likely to emerge the strongest. The anticipated upturn in many economies should herald a time for the profession to move from technical tasks to those that offer higher returns, and thereby secure its future.

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John Hannah BSc, DipSci, MSc, PhD, MNZIS, RPSurv, completed his first two degrees at the University of Otago, New Zealand. In 1976 he began study at The Ohio State University, completing an MSc and a PhD, both in Geodetic Science. From 1982 until 1988 he was Geodetic Scientist, and then subsequently, Chief Geodesist/Chief Research Officer with the Department of Lands and Survey, New Zealand. After a 17 month appointment to the Chair in Mapping, Charting and Geodesy at the US Naval Postgraduate School, California, he returned to New Zealand as Director of Geodesy and subsequently, Director of Photogrammetry for the Dept. of Survey and Land Information. In 1993 he joined the School of Surveying, as Professor and Head of Department, becoming its Dean in 2001. He relinquished this administrative role at the end of 2004 in favour of more teaching and research. He is a Registered Professional surveyor is on the Council of Standards New Zealand and is a Past_ President of the NZ Institute of Surveyors.

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