Redefining the Profession of Land Surveying

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SUMMARY

This paper gives consideration to establishing a new definition for the profession of land surveying. In doing so it works from first principles in examining firstly the criteria necessary to claim the status of "profession" and then proceeds to consider the meaning of the word "surveying" and how this is then constrained by the prefix "land". It then compares the land surveying discipline against the criteria established for defining a discipline as a profession. The paper represents a further step towards a common agenda item between Commission 1 and Commission 2 in the clarification of the meaning and role of the land surveying profession in the 21st century.

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A first step

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1. A MATTER OF SEMANTICS

Profession, professional and professionalism are much overused words in modern parlance. The degree of their overuse is such that any consideration of "the Professions" must begin with some definitions that focus the discussion and clarify the way in which these terms are used. While this may be considered a pedantic approach, without clarity of the meanings we are applying to words will only lead to confusion, misinterpretation and misunderstandings.

The word "professionalism" is a noun and can be used to describe "the standards, views, and behavior of one who engages in an activity . . ." (The Free Dictionary by Fairfax, www.thefreedictionary.com/professionalism). In this context the word can be used in connection with a person undertaking any sort of activity, albeit an occupation, a sporting activity or a project. It therefore refers to a state of mind in approaching the particular activity, rather than any predetermined abilities, responsibilities or skills, that subsequently translates into particular standards of behavior or practice.

The word "professional" is currently used in several contexts. It can be used to broadly distinguish those who are paid for an activity and those who are not, as in the context of professional sport. In this sense it indicates a distinction between those who are not paid for their participation, and are therefore determined to be "amateur", and those who are, the "professionals". It can also be used quite broadly in the context of the above consideration of "professionalism", as in describing those who demonstrate the application of a high level of attributes to a task or calling. Finally, it can be used more narrowly to describe a person who is the member of a "profession". In this sense, however, it then begs the question "What is a profession?".

2. THE PROFESSIONS

From the time of the Middle Ages there were three accepted or recognised "learned" professions, namely the Church, the Law and Medicine (O'Day, 2000). The Free Dictionary defines the learned professions as "one of the three professions traditionally believed to require advanced learning and high principles"(The Free Dictionary by Fairfax (www.thefreedictionary.com/learned+professions) and identifies these as law, medicine and theology. Over time the number of occupations falling under, or claiming, the status of a learned profession has grown steadily. O'Day (2000) suggests "the development of an educated class between the non-working leisured classes and the merchants, traders, craftsmen and labourers who comprised the working population of [England]". She further proffers "that during this period there was a growth of groups of men in the law, the church, and medicine with a common educational background and steeped in the ideology of service

to the 'commonweal'". The period identified (1450-1800 AD) represents the end of the Medieval Period, and embraces the Renaissance, the Age of Enlightenment and the rise of science. This elicits the first clue as to the fundamental requisites of a profession, namely education and service. It is no surprise that the range of new occupations desirous of claiming the status of a profession begins to enlarge as education spreads though Western civilisation.

More recent literature has suggested more comprehensive requirements for an occupation to qualify for the status of a profession. Numerous lists of the requirements for a profession are available, some with quite extensive lists of proposed necessary characteristics (Rutledge, 2011). However, there are much more considered, cogent and brief lists of requirements. Luthens (1976:18), cited in Murtello (1981), states that " . . . a more widely recognised criteria for a profession would include the following:

1. A body of specialized knowledge or techniques.
2. Formal, standardized education, training and experience.
3. A representative organization with the purpose of professionalization.
4. Fees based on services to clients or customers with priority given to service rather than financial return.
5. An ethical code of conduct and broad-based responsibility."

These appear to sit very comfortably with the ideals expressed by O'Day when she refers to education and service. Items 1 and 2 conform to the idea of education, while items 3, 4 and 5 those of service. Also, Luthans, 1976 quotes a statement by Barbers (1965:18) in which similar sentiments are expressed but reduces the number to four, encapsulating ethics and the professional body into one. These may be summerised as knowledge; community interest; self imposed ethics through a professional body; rewards based on achievement as ends in themselves.

The five principles, as Luthens states them, appear to meet with general approval in a broad range of literature. While some have longer lists and others have combined some of these to create shorter ones, these five elements seem to represent the core attributes that none will denounce, though they may be expressed in different terms.

3. LAND SURVEYING

It is unlikely that it is possible to create a definition of land surveying that will stand up to scrutiny, and be agreed to, by the international surveying community, given the way land surveying has evolved in some countries. However, it is possible to identify what lies at the heart of the discipline and that makes it exclusively identifiable from any other discipline or from any other body of knowledge, to which other applications or specialities may be added? It has been suggested that the core of land surveying is measurement, sometimes referred to as measurement science. Is this justifiable and can it sustain contrary arguments? Measurement is used widely in a broad range of disciplines and for a myriad of purposes, so the definition must be about more than measurement alone.

The beginnings may lie in a definition of "surveying" itself, before "land" is used to qualify it. The Free Online Dictionary defines surveying as "The measurement of dimensional relationships, as of horizontal distances, elevations, directions, and angles, on the earth's surface especially for use in locating property boundaries, construction layout and mapmaking" (http://www.thefreedictionary.com/surveying). This appears to be specifically related to *land* surveying. If one uses Wikipedia, its opening statement on Surveying is "Surveying or land surveying is . . . ". (http://en.wikipedia.org/wiki/Surveying). Hence, some at least see "surveying" as simply an abbreviation for, or synonymous with, "land surveying".

One of the words used frequently in this context is "position". Some prefer to use the term "location". The Concise Oxford English Dictionary (COED, 2004. p.1119), under *position*, yields "a place where someone or something is located . . .". For *location* the COED (2004. P.836) yields "a particular place or position". At first this mutual or cross referencing appears to lead to a circular and semantic end only! However, both definitions have the common use of the word "place". The COED (2004 p.1451) further reveals in the definition of *survey* "1. look carefully and thoroughly at " which clearly provides a basis of a definition much broader than the land surveying, but is a worthwhile start. The second definition given under *survey* is "2. examine and record the area and features of (an area of land) so as to construct a map, plan, or description". This second definition reveals a parenthetic reference to land that is consistent with the numerous of definitions that make an implicit connection between "surveying" and "land surveying" as if the two were synonymous, as in some contexts their use seems to be.

If we then combine parts of these definitions, we can achieve the following non-contextual definition of surveying as "to look carefully and thoroughly at . . . and examine and record . . . features . . . so as to construct a . . . description". It is then possible to add in the context of "land", and add in the appropriate words, using the common term "place". The broad definition of land surveying then becomes "***to look carefully and thoroughly at a place in order to examine and record its features so as to construct a representation or description of it***". The words "location" or "position" could be used to replace "place" if preferred, and the "description" could be interpreted to be a written description, a plan, a map, or even a dataset.

This definition is deliberately broad in order to be as embracing and as timeless as possible, and to remain true despite changes in aspects such as technology, education, society or developments in the professional environment. It therefore should be able to apply equally to the past, the present or any future description of the discipline. It is recognised, however, that to address the comprehensive nature of the discipline of surveying, that an expanded and detailed definition is required when it comes to the necessity of addressing, say curriculum matters for education and training courses in land surveying.

The question that arises is then related to what role the fully qualified land surveyor plays in the process of the "doing" of the land surveying and what might be a "professional" role, if indeed land surveying is a profession, in contrast to others who may operate at some different level within the discipline. The advent of significant technological advances, in data

collection, analysis, interpretation and representation of place, has undoubtedly changed the role of the fully qualified practitioner. Has it also changed the discipline itself into something different from what it has been for several millennia? Hence, the question of whether this require a re-definition of the discipline at a fundamental level is worthy of investigation.

4. LAND SURVEYING AS A PROFESSION

Having provided a basis for considering whether or not a discipline can be considered a profession, and established a generic definition for the discipline, the question can now be addressed "Does land surveying meet the criteria for the status of a profession?"

4.1 Does land surveying have a body of specialised knowledge or techniques?

There is no doubt that there is a long-standing history of specialised knowledge and techniques that that are required to carry out land surveying at an advanced level. This specialised knowledge was traditionally handed down through apprenticeship or articled cadetship from skilled practitioners to trainee surveyors prior to and during the early 20th century. In more recent times, and particularly since about 1950, specialised knowledge has increasingly been transferred through the medium of university and polytechnic courses, depending on the level of attainment required by or expected of the trainee. As a result of the movement of land surveying education to tertiary institutions, the specialised knowledge and techniques taught to student surveyors have developed into a codified body of knowledge. Greenfeld (2012), for example, has done considerable specific work identifying surveying the body of knowledge in the context of the United States of America. However, given the number of tertiary courses throughout the world, for land surveying at large, the answer to the question is in the affirmative.

4.2 Does land surveying have a formal, standardised education, training and experience?

Extending from the above, while there may not be an international level of agreement on a standardised education experience, there are many countries which do have formal, standardised programmes that require education, training and experience for potential practitioners to complete in order to achieve the status of fully qualified and recognised practitioners. Clear examples are available in the United Kingdom, New Zealand, Australia, Canada, South Africa, the United States, Fiji and Hong Kong within the author's experience. There are many other countries on all continents of the globe, as exhibited in the membership of the International Federation of Surveyors (FIG), that also require such standards. While not all countries may have such requirements in place there are sufficient to answer this question also in the affirmative.

4.3 Does land surveying have a representative organisation with the purpose of professionalisation?

Land surveying has many national representative organisations with the purpose of professionalisation or the promotion of land surveying as a profession. All of the countries listed in section 4.2 above (the United States of America has state-based organisations while Canada and Australia have state/ territory or provincial-based associations as well as federal ones. In contrast, the United Kingdom has such an association that provides not only for its own nationals, but also endeavours to provide a "gold standard" for the entire world. Furthermore, there is the FIG that also promotes the professional nature of the discipline globally, and for surveying of all forms, and has member institutions from a significant proportion of the world's countries. Of the 104 members of the FIG, 50 can be clearly identified as including land surveying in their areas of interest, though it is not clear from some (because of language difficulties) whether they represent solely land surveying. Some are known to have internal interest groups that represent surveyors more than land surveyors (e.g. quantity surveyors) such as the Royal Institution of Chartered Surveyors (RICS) of the United Kingdom. As for Sections 4.1 and 4.2 above, this question also can be answered in the affirmative.

4.4 Fees based on services to clients or customers with priority given to service rather than financial return?

A professional service, from the definition adopted in section 2, encompasses a dimension of service to the public, to the "greater good" or to society in general. A person claiming, or having been bestowed with, professional status has a number of clients. Firstly, there is the "customer" who pays for the service, and clearly whose needs the practitioner is attempting to meet. Secondly, there is a responsibility to give advice or carry out a service in a way that would give the same result irrespective of who might be paying for the service. In a judicial context, this relates to giving evidence as an expert and being an adviser to the Court rather than an advocate for a client. It can also be interpreted as giving professional advice that not only meets the needs of the client, but also protects any public interest. This is the "service" aspect of professional status as described by O'Day (2000), implying that the professional advice given maintains its integrity irrespective of the context in which it is given. In some cases it may mean supplying advice or information that is contrary to the client's needs, but which is necessary to maintain the integrity of the practitioner and the discipline with which he or she works. Does land surveying meet such a criterion? It certainly meets situations when such issues arise and that may cause conflicts of interest, and this is closely related to the code of ethics discussed in the following section. While this requirement exists as a prerequisite for professional status, it can only be assessed on an individual basis. From the adopted definition, representative associations should expound such conduct if they are truly to represent a profession, but answering the question in the global, or even national, context is not possible without close examination of individual bodies. There is, therefore, a *prima facie* case for an affirmative answer. The response is more likely to be based on individual responsibility, and there is a clear need for it in the public practice of the discipline.

4.5 An ethical code of conduct and broad-based responsibility?

At this point it is not possible to state generally, or on a global scale, that land surveyors have

an ethical code of conduct upon which they are obliged to act. It is true that there are bodies of land surveyors that do have such codes, and that they have the power within their representative associations to discipline members for unethical or unprofessional conduct. The FIG has an interest in ethical codes for its member associations, which is a topic among the activities of its Commission 1 (Professional Practice). However, while there is no general or global code defined by the FIG, the issue is one of concern at the global level. In order to establish an answer to this question, it would be necessary to examine the constitutions of the individual bodies identified in Section 4.3. The answer would then be applicable to individual countries or bodies. While the answer is in the affirmative for some of those bodies, it cannot be confirmed for all. Indeed, some bodies are oriented particularly towards the development of their discipline and may as such have no need for an ethical code as they are not representative of all practitioners within their jurisdictions who are serving the public. The conclusion, therefore, is that there are professional bodies in land surveying with ethical codes, but it is indeterminate whether this is universal. It is proposed that there are sufficient to satisfy the criteria for specific cases meeting the criteria for recognition of a profession, but not necessarily in the global sense. Again, there is therefore, a *prima facie* case, rather than an absolute affirmation for a positive answer to the question.

5. DISCUSSION

It is concluded from the discussion in Section 4, and based on the criteria for a profession promoted by Luthens (1976), as discussed in Section 3, that there is sufficient evidence to substantiate the claim that land surveying is a profession in the traditional sense of the word. While ***land*** surveying may claim the status of a profession, the unqualified term "surveying" in general, may be considered to apply to a discipline rather than a profession in itself. Within the discipline of surveying it is expected that other areas of interest, or sub-disciplines, would also qualify for professional status, for example, quantity surveying.

This view of surveying as a discipline is consistent with other areas of activity that may be considered to be disciplines. For example, medicine may be now considered a discipline rather than a profession in itself, as it has been described in literature of the past. However, the specializations of medicine, which now might also include nursing, are likely to be qualified to make the case for professional status. The difficulty of using the generic term "medicine" to describe a profession revolves around the issue of a body of knowledge. The body of knowledge required, while likely to have a common basis, will be different for a neurosurgeon than it would be for an anesthetist, for example, while both are part of the medical discipline. Specialist colleges exist for such sub-disciplines to prove their competence in the body of knowledge required within the various specialist disciplines.

As a further and more closely related example, engineering is a broad term that can encompass a range of potential professions and trades, while the generic term refers to a discipline. Among the engineering "professions" are civil engineering, chemical engineering and mechanical engineering among others. It is not the purpose of this paper to make the case for any engineering sub-discipline to have the status of a profession, but it is suggested, intuitively, that such a case would be similar to that presented above for land surveying.

Furthermore, it remains possible that land surveying could be claimed as a sub-discipline of engineering. The opening statement by Loeffel (2007) in his history of the of the Australian surveying course at the University of New South Wales is "Surveying is an engineering discipline . . . ". However the validity of this statement will depend on an appropriate definition of "engineering". Whether this claim is acceptable to professional land surveyors is an entirely different matter.

While the words "professional" and "professionalism" are now be in common use, they are used indiscriminately to apply either to people who are paid (as in not amateur) or who adopt a conscientious and responsible attitude to their work, and may well have their own ethical standards, but who are not necessarily members of a profession as now defined.

6. CONCLUSION

As a first step in redefining land surveying as a profession, it has been considered necessary to establish clearly that the discipline being considered does, in fact, have the status of a profession. The idea of the professions has grown from the three original occupations considered to have professional status (four if you included the sometimes debated "military" profession) and now embraces a considerable number of disciplines. It is concluded that land surveying is a profession.

In addressing the question of redefining the profession of land surveying, having confirmed the occupation of land surveying as a profession, it is necessary to investigate further and in more detail the body of knowledge that is inherent in the professional identity. That body of knowledge has undergone considerable change since the middle of the 20th century with the technological developments related to the gathering, processing, analysis and representation of geospatial data. With such developments as Geographic Information Systems (GIS), and Global Navigational Satellite Systems (GNSS), crowd-sourcing and open source software, the traditional methods and areas of land surveying have undergone dramatic change. The key to the future of the profession lies in ensuring that these developments do not overshadow the necessity for understanding the implications of the data gathered and the application of their processing to meet society's and client's needs.

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REFERENCES

Cogan, M. L. 1955. "The Problem of Defining a Profession". Annals of American Academy of Political and Social Science. 297:105-111

Barbers, B. 1965. 'Some problems in the Sociology of Professions" in K. S. Lynn (ed). The Professions in America. Boston: Houghton Mifflin Company.

Concise Oxford English Dictionary. 2004. 11th Edition. Oxford University Press. Oxford.
Greenfeld, J. 2012. Components of the Surveying body of knowledge. Presented at FIG Working Week 2012. Rome, Italy.
Haga, W. J. 1974 "Perils of Professionalism". Management Quarterly (September):3-10.
Loeffell, Robert. 2007. The History of the UNSW School of Surveying and Spatial Information Systems 1949-2007. The University of New South Wales. Sydney.
Luthens, F. 1976. Introduction to Management: A Contingency Approach. New York: McGraw-Hill.
Murtello, Frank. 1981. The Semantic Definition of a Profession. SRPA, Fall, 1981
O'Day, Rosemary. 2000. The Professions in Early Modern England: Servants of the Commonweal, Longman,
Rutledge, A. 2011. Design Professionalism. http//designprofessionalism.com/defining-design-professionaalism-1.php
The Free Online Dictionary. 2013. www.thefreedictionary.com. Accessed 8 March 2013
Wikipedia. 2013 http://en.wikipedia.org/wiki/Surveying. Accessed 8 March 2013.

BIOGRAPHICAL NOTES

Brian Coutts is Deputy Head (Undergraduate) of the National School of Surveying at the University of Otago in New Zealand and teaches introductory planning and New Zealand planning and resource management practice. His research interests include professional regulation, surveying education, mediation, and the definition of a surveyor in the 21st century. He has been president of the New Zealand Institute of Surveyors (NZIS), Chairman of the Cadastral Surveyors Licensing Board of New Zealand (CSLB), a member of the Geomatics International Faculty Board of the Royal Institution of Chartered Surveyors (RICS) and served as president of the Commonwealth Association of Surveyors and Land Economists (CASLE). He is presently a member of the RICS Constitution Board, and a Vice Chair and Chair-elect of Commission 1 of FIG.

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