

# Teaching Property Law in Geomatics Degree Programmes: Innovations to Enhance Student Engagement and Learning

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**Key Words:** Property Law, Land Law, Pedagogy, Teaching, Modern Pragmatism,

## SUMMARY

Professional Land Surveyors the world over are required not only to obtain knowledge and skills in technical aspects of land surveying, but also in development and property law. The complexities of a continuously changing policy, practice and legal landscape, and the challenges of combining the natural and social sciences in this teaching domain provide a teaching space ripe for innovation. Furthermore, the topic of “land law” is now extended to include, not only land-based properties, but those below the seas and lakes, beyond sovereign state boundaries, into the airspace above, and perhaps even into space beyond our planet.

This contribution is a reflective critique of teaching and learning methods and experiences in the Geomatics programme at the University of Cape Town (UCT), in the Surveying specialization. This is set against a backdrop of literature on teaching and learning, especially in property law. The paper explores course planning fundamentals as well as reflecting on a number of more interactive and diverse learning methods that have been implemented over the last few years to enhance student engagement and learning.

## ABBREVIATIONS

LTIS	Land Tenure Information Systems
SA	South Africa
SDGs	Sustainable Development Goals
SGO	Surveyor-General’s Office
UCT	University of Cape Town
UNCLOS	United Nations Convention on Law of the Sea

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*“Teaching is a very noble profession that shapes the character, calibre, and future of an individual. If the people remember me as a good teacher, that will be the biggest honour for me.” A. P. J. Abdul Kalam*

## 1. INTRODUCTION

The Geomatics degree at the University of Cape Town (UCT) has a strong tradition of cadastral law practice, research, and commentary spanning the last 80 years. This tradition continues as a primary theme of teaching in the undergraduate programme, in research endeavour, and in professional leadership. The legal aspects of geomatics in South Africa (SA), which pertain mostly to surveying of real property, have also undergone many changes since the end of Apartheid 1994, but are built on the foundations of case law over more than 150 years. Besides black letter law and real rights, common and statutory law relating to lesser land rights such as occupation, permit and customary tenure also need to be included in a well-rounded education designed for practice in a country such as SA. Offshore and underground property rights have a long history, but there are discontinuities and ambiguities in the statutory environment and in practice. In addition, the environment of application of property law principles and practice is rapidly extending into the third dimension as space rights above and below ground and sea surface, while it may also be the time to start to conceptualise extra-terrestrial property rights such as orbiting satellites, the moon, perhaps through extending the principles of law of the sea.

There are both challenges and benefits to teaching a programme such as geomatics which includes highly technical and mathematical elements, as well as social systems and property law. The graduate needs to have an appreciation of the rights, restrictions and responsibilities in property. School leavers entering the programme generally lack exposure to a cross-section of social experience and have little understanding of land development challenges and the socio-political discourse of the day. Furthermore, their reading and writing skills are well-below those of their law student counterparts, and there are challenges associated with up-skilling students for reading and interpretation of statutes and case reports.

This paper seeks to reflect the responses to these challenges and also to reflect on using a range teaching and learning techniques used in the classroom.

## 2. PROPERTY LAW TEACHING PERSPECTIVES AND METHODS

Arnold (1999) advocates modern pragmatism as an approach to teaching property law along with

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methods of active and contextual learning, being cognisant of diverse learning styles. Modern pragmatism views reality in terms of its practical uses and successes, and understands this reality to be ever-changing. There are two aspects to the adoption of modern pragmatism in this paper. The first is the approach to course design. Reflection is a critical aspect of this approach and so reflection underpins the structure of the paper. The second application of modern pragmatism is in the approach to teaching.

Modern pragmatism in course design and reflection pairs well with the outcomes based approach – the successes or failures of curriculum design and delivery are measured by their outcomes and the course, including all aspects of design and delivery, is conceptualized through this lens. It is a rational approach allowing for empirical investigation along with human judgement in reviewing course outcomes. Modern pragmatism in terms of delivery of the course, promotes an understanding of the relationship between prior knowledge and course knowledge, promotes contextual and experiential learning, and promotes the linkage between the classroom and the world of work as a professional (Arnold,1999:891). These notions are further expanded below.

Contextual learning links to a problem solving approach. In this approach, learning is framed around a particular real-world situation or context. It avoids learning abstract theory, principles and concepts in favour of learning these through solving a problem situation. It is therefore application-based. Contextual learning pairs well with active learning either through simulation or real-world practice. The difference is that conceptual learning need not be active – it can consist of passive methods such as listening to a lecture on a case judgement.

Another word for active learning, as used by Arnold (1999), is experiential learning. Experiential learning implies learning through performing actions individually and/or collectively (as opposed to passive learning) and reflecting on these actions. Reflection is a critical aspect of experiential learning. Experiential learning is a key ingredient for moral development, is said to have been advocated by Aristotle - “one had to practice virtuous behaviour modelling oneself on the good, and then reflect on it for such behaviour to become part of one’s character” (Stuckey, 2007:111). This is in contrast to the passive student experience of the formal lecture. Bligh (2000), a formative thinker in higher education, advocates the formal lecture as a tool for conveying information, but identifies it as an inappropriate method to develop critical thinking and challenge attitudes. University education is about challenging the way we think and our views of society and not only about the acquisition of knowledge and skills. As such, and where appropriate, tools other than the traditional lecture should be explored to enhance learning experiences and outcomes. Experiential learning in property law is usually arranged around simulated or real negotiations, client interviews, oral arguments, courtroom proceedings (called moot court when simulated) etc.

Another method favoured by law schools is the Socratic dialogue method. This is a question and answer method traditionally used to teach case law. Students read a case judgement and should be prepared to answer lecturer’s questions in class on the principles of law exemplified in the case. In many cases, this method is overused at the expense of student learning and course outcomes. It is based on the premise of leading the respondent to acknowledge his/her ignorance, through the

course of a crafted argument. The respondent should, thereafter be more interested in exploring positions alternative to those originally held. This method suffers the risk of the respondent being left (as with Socrates' slave, Meno) helpless in his ignorance (Stuckey, 2007: 153-4). When using this method, the lecturer's aim is not only to lead the student to realize how little they know, but also to lead them forward into knowledge.

In contrast to the Socratic dialogue, Langdell expected students to read cases ahead of contact time, and then questioned them about these cases; this is termed the Langdell method (Stuckey, 2007: 154-5). It is premised on some different conditions than the Socratic dialogue – in the Landell method the lecturer is assumed to know the answers to the questions posed (law is understood to be a science with facts that can be known) and the students are assumed to be able to arrive at this knowledge through the process. In the teaching of case law in geomatics, the Langdell dialogue method is appropriate in part, since it can lead to a deep understanding of the facts of a case and the reasoning behind a judgement. Unlike law students, geomatics students do not need to be able to develop the formal reasoning and to be able to construct an argument to win in court, in which case the Socratic dialogue method may have more merit.

The innovative methods reported in this paper are all designed with the underlying premise of experiential learning, or “learning through doing”. Unlike the regular property law teaching and learning as part of a law degree, teaching property law in a course such as Geomatics requires the lecturer to understand the practice environment and construct experiential learning activities that simulate practice. Simulation in the class room is a powerful method of teaching and effective learning on multiple levels – cognitive skills (knowledge recall and application), performative skills (research, investigation, synthesis, etc.), and affective skills (relational competence, social interaction) (Stuckey, 2007:122). A critical aspect of a simulation is the debriefing with the whole class. The debriefing should reflect on the issues encountered, how they were handled, and to evaluate the conclusion of the process and the learning outcomes (Stuckey, 2007: 137). The debriefing follows the principle of reflection so core to a modern pragmatic approach.

Throughout the course, a range of assessment methods are advocated (Stuckey, 2007:190). Student learning styles lead to variation in performance depending on the method of engagement and assessment. It is therefore only fair to have a range of assessment methods so as not to bias the marks in favour of those whose learning style matches the assessment style. In addition, formative assessments have the added benefit of providing feedback to the student so as to enhance their learning. Summative assessments are used to assess whether course outcomes have been achieved. In the course in question in this paper, formative assessment is largely associated with the assignments and essay while summative assessment is in the form of five tests, although the tests also play a formative role since students receive their scripts and feedback for review. There is no final examination in this course since it partners with a property law course that has only lectures, tests and an examination. This course is designed to provide some new knowledge, but is very top-heavy with assignments.

### 3. COURSE DESIGN CONSIDERATIONS

The essential elements of planning a course carefully and assessing outcomes are highlighted in the quote below:

*A law school can best achieve excellence and have the most effective academic program when it possesses a clear mission, a plan to achieve that mission, and the capacity and willingness to measure its success or failure. Absent a defined mission and the identification of attendant student and institutional outcomes, a law school lacks focus and its curriculum becomes a collection of discrete activities without coherence. If a school does not assess its performance, it can easily be deluded about its success, the effectiveness of its pedagogical methods, the relevance of its curriculum, and the value of its services to its constituencies. A law school that fails to assess student performance or its performance as an institution, or that uses the wrong measures in doing so, has no real evidence that it is achieving any goals or objectives. A law school that lacks evidence of achievement invites demands for accountability.*

(Munro, 2000:3-4)

Although this quotation refers to law schools and their programmes, the advice pertains to those teaching property law in service courses and as but one component of another programme such as geomatics. The quote is well-aligned with a modern pragmatic approach.

#### 3.1. Desired Outcomes

It is extremely important to convey the aims, outcomes and methods used in a course to students upfront (Stuckey, 2007: 95). This speaks to the professionalism of the lecturer. Withholding core information from the students is a negative expression of the power and authority faculty may construct (Stuckey, 2007: 95). Conversely, clear and complete information assists in student motivation to engage with the course and modeling professionalism in the course can inspire students to act with integrity and behave in an ethical and professional manner themselves (Stuckey, 2007: 95). An intranet repository of organized course material is an invaluable resource. However, the materials should be limited and frequently reviewed so that information overload is avoided. Coupling this with an online calendar of events and due dates as well as course information and an up-to-date gradebook, greatly assists communication and transparency.

In order to convey the intended student outcomes, these need to be clearly planned and articulate by the lecturer. This communication does not stop at the course introduction but should permeate all aspects of the course. In the Land and Cadastral Survey Law (APG3033W) course discussed in this paper, aims and student learning outcomes are explicitly stated for the course as a whole, for each knowledge/theory module, and in each assignment. In line with the aim of good communication about aims and outcomes, each assignment begins with the “Aim: to develop knowledge and understanding in ...” followed by the “Outcomes: by the end of this assignment you should be able to ...” For assignments, students are expected to provide feedback as to whether the outcomes for the assignment have been met and to provide detail to back up their answer. The last question in each assignment is “Feedback: comment on whether the outcomes of this assignment have been

achieved.”

### 3.1.1. Aim

The aim of the suite of courses in cadastral systems, practice and law are to provide knowledge and understanding of land tenure, law and registration, cadastral survey law and practice and the role of the land surveyor as a custodian of land tenure security. Unlike many other programmes of instruction, knowledge taught at the University of Cape Town is geared at students whose practice environment is in Africa and hence spans the dualities of informal and formal practice, legal duality, and an often post-colonial, complex and even conflict-ridden environment. However, framing national policy, law and practice within the international policy, law and practice environment, is essential. Students are intended to gain knowledge and skills that provide them with the capacity to practice as professionals but also to critique policy and legislation and to drive change.

### 3.1.2. Broad range of knowledge and understanding to be gained

#### *Property law in the context of cadastral systems*

- The cadastral system and the need for skills and knowledge in property law
- Property law principles – black letter law
- Rights, boundaries, ownership, tenure
- Property transactions and registration
- Statutes
- Cases
- Professionalism, ethics, roles and responsibilities of a Professional Land Surveyor in relation to property law; the quasi-judicial role of the Land Surveyor
- Historical development of the SA cadastral system and introduction to the profession
- Institutions, organizations and processes (land tenure information systems (LTIS) see Barry and Roux, 2012; courts e.g. criminal v civil)

#### *Property law in a context of a challenging, dual, complex, and often extra-legal environment*

- Indigenous and customary perspectives
- Continuum of land rights and inclusive land objects, subjects, tenure and rights understanding
- Mixed legal system: Customary law in SA vs/and European legal traditions; statute vs/and case law e.g. in land claims
- Extra-legal access to land; informal settlements; the land “problem”
- Local LTIS

#### *Property law above/below the land and offshore*

- Mineral law
- The coastal zone
- Offshore property; international law and law of the sea (United Nations Convention on Law of the Sea: UNCLOS)

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- Property above and below the earth’s surface – 3D property objects and rights; space

*Property law and cadastral practice in context*

- International policy environment
  - Sustainable Development Goals (SDGs)
  - Good governance principles
  - Continuum of land rights and associated tenure
- National and Local policy and political context
  - Land reform
  - Housing and land policy in SA
- Context specific practice
  - Gender, power and politics of land access and landholding in South Africa and Africa
  - Conflict resolution in land administration

3.1.3. Skills to be acquired in whole or in part

A variety of skills are required for a leader in this field, who should, after some years of experience, be confident to develop and critique policy and legislation and to play a quasi-judicial role as an expert witness in court. The expected skills development includes:

- Legal literacy: identification of relevant statutes; efficient reading of statutes; understanding of statute law and skills of interpreting law from the perspective of a professional land surveyor.
- Ability to source law material through the physical and online library resources
- Legal analysis: identification of relevant case law; efficient reading of summary judgements of landmark cases; understanding of landmark cases and their role in informing practice, in driving legislative change, and in resolving conflicts over beacons and boundaries in the practice environment.
- Legal application: presentation of reasoned arguments in writing, verbally in a court room setting, in a practice meeting, and in a formal presentation.
- Critical thinking in relation to the limitations of the current land-based cadastral system and the need to expand knowledge, understanding and skills to the subterranean, offshore, extra-terrestrial and space domains.
- Synthesis: ability to construct a well-reasoned narrative/essay from diverse sources without plagiarizing.
- Professional perspective: developed professional identity and adoption of roles and responsibilities of professional practice.
- Conflict resolution and mediation appreciation of process and skills required.
- Ability to present orally both individually and as part of a group, with and without presentation software.
- Ability to keep diary entries and delivery interim progress reports as well as reflecting challenges faced and solutions found in an honest manner.
- Ability to compile information in a formal document with cross-referencing.

- Ability to interact in groups discussions on key land issues in South Africa today.
- Ability to motivate the need for professionals to have the above skills and knowledge.

#### 3.1.4. Horizontal and vertical integration

The property law courses are preceded by plane surveying and surveying data processing courses as well as the usual foundation courses in environmental science, mathematics and physical science. The suite of courses that teach this subject area are delivered in the third year of the four-year Honours-level BSc Geomatics programme specialising in Surveying. Graduates of this degree programme are most likely to register as Professional Land Surveyors.

The property law course that is the subject of this paper is Land and Cadastral Survey Law: APG3033W. This course pairs with theory taught in the course Property Law, CON2027F, also taken in the third year. That course does not include any assignments, and a number of aspects required as a registered professional land surveyor are not included, necessitating a paired course taught from within Geomatics. A sister course, Cadastral and Registration Projects, APG3027Z, provides practical skills and knowledge in cadastral surveying and land registration through a set of assignments simulating practical tasks of a Professional Land Surveyor. There are no lectures in that course and it is fully experiential learning with the final assignment consisting of a 7-day week of work away from campus in which students undertake a cadastral job from initial client brief to submission of a full set of survey records, as if to the SGO.

Other courses taught in parallel concentrate on advanced surveying and data processing as well as GIS and professional communications. The students in the property law suite of courses are required to undertake 25 days working outside of the University environment at the end of both their second and third years of study. The property law suite of courses is thus sandwiched between these periods of practice exposure. Students should be able to understand the necessity of the material from their first session of practical training and should value the knowledge and skills gained in the courses in preparation for their second session. In the fourth and final year, students concentrate on geodesy, statistical data processing, photogrammetry and remote sensing, professional and business practice and their final year research project. Students interested in the cadastral and property law aspects may pursue further knowledge through this 400-hour research project.

#### 3.1.5. Content and order of instruction

Decisions about what to include and what to exclude and the depth of coverage of various materials should be made after engagement with others teaching in the programme, with industry, and after some years of teaching experience. In addition, it is well-known that students understand new knowledge and acquire new skills when these can be linked to “pre-existing knowledge and experiences” (Arnold, 1999:895). Any assumptions about prior learning need to be tested so as to avoid unwittingly creating an unfamiliar and even hostile teaching and learning environment. Educators need to think clearly about the knowledge relationship within the course and also

between the course and those that precede it, follow it or run in parallel with it. This is critical in the course Land and Cadastral Survey Law (APG3033W) discussed here as it runs in parallel with the Property Law course (CON2017F) for half the year and in parallel with Cadastral and registration projects (APG3027Z), for the full year, as discussed in the preceding section.

In the first semester the Land and Cadastral Survey Law course includes the concept of the land parcel, cadastral surveying, the quasi-judicial role of the land surveyor, the Land Survey Act and Regulations, principal and non-principal legislation, practical surveying guidelines, ownership and the proprietary unit, land tenure systems, the historic development of the cadastral system and surveying law, the role of case law, servitudes, mining law, curvilinear and ambulatory boundaries and the coastal zone. In the second semester, international law and law of the sea is addressed, as well as land and housing policy, tenure reform and challenges of land delivery in the developing world. Although policy directs practice, it is more easily understood by students if taught later in a course once some practical examples have already been covered, as cautioned by Katz and O'Neill (2009:27). Similarly, relevant theoretical aspects need to be tackled later in the course rather than in the beginning.

### 3.1.6. Delivery methods and assessment

Presented in a “stand and deliver” lecturing manner, property law classes can be dry and uninspiring. This, compounded with lack of motivation, leads to poor engagement with the material, and runs the risk of leaving the students behind in understanding, knowledge acquisition of skills and leads to failed outcomes. Through a modern pragmatism lens, such a course can be categorized a failure. There are also particular aspects to teaching in property law in a geomatics programme in South Africa. Few students in each class are first-language English; there are 12 official languages in the country and students can speak any number of these. Furthermore, students who have chosen the geomatics field of work are generally mathematically-minded and less able in reading and writing than their peers in the law faculty. Also, within the student population there will be a diversity of learning styles (Arnold,1999:899). As such, there are significant hurdles to overcome in teaching and learning. This offers challenges but also opportunities.

Along with increasing access to information throughout the world and in Africa, the era of the professor as the sole repository of knowledge, drip-feeding this on to a willing and dependent student body, is gone.

*The law is not a mystery held by an academic elite, but a pragmatic and intellectual journey that students must undertake themselves” (Arnold,1999:891)*

Increasingly, students have equal access to the information as the lecturer. They need guidance as to what information should be acquired, in what order, and the logical organization of knowledge. But it is necessary to do more than provide knowledge - lecturers are facilitators of the learning process, rather than mere providers of information. Teaching methods in property law and cadastral studies can be highly varied. The author was inspired to explore different teaching and learning methods by

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hosting and attending a training workshop in good governance given by the UN Habitat in Cape Town, as well as attending FIG Regional Network for Africa workshops facilitated by Diane Dumashie (current FIG vice-president). A UN Habitat comprehensive training manual (UN Habitat, 2010) and resources have been used in the classroom for some years and the techniques have been adapted to new material. In addition, creative methods introduced to the course by the former lecturer (Prof R Fisher) have been modified over the years to enhance student interest and engagement with the subject. The innovative tools have mostly been used in the assignments and workshops in the course.

- *Pre-reading* – selected background reading, usually part of a book chapter or an article.
- *Lectures* – one hour per week – delivery of theory in modules. Comprehensive module notes are handed out in hard copy and are available on Vula, the intranet course resource, as well as presentation slides, sometimes with podcasts (voice recordings) embedded therein.
- *Seminars* – one hour per week – students are exposed to some more general material.
- *Set readings* – a topical article or section from published material which is considered examinable.
- *Tests* – there are four tests which account for 44% of the course mark. There is no final examination as the property law (CON2027F) course is entirely based on this mode of assessment, and this course is designed to be complementary. Recent past tests are available on Vula.
- *Field Trips* – site visit to the Navy’s Hydrographic Office of the Department of Defense in Silvermine in conjunction with the section on international law and law of the sea; site visit to the Surveyor-General’s Office (SGO) in Cape Town.
- *Assignments* - range from 1 hour to 4 hours per week and may include directed study, self-study, group-work, or oral presentation. All assignments contribute to the course mark and are weighted at 66% of the total.
- *Workshops* – interactive afternoon class in which a particular aspect is addressed. In the second semester a range of interactive workshops are planned.

### 3.1.7. The lecturer during contact time

Katz and O’Neill (2009:29) as well as Stuckey (2007) advocate modelling professional behaviour in all student interactions.

*The culture and environment of the law school community should foster professional conduct. .... A culture of professionalism is promoted when the faculty, staff, and administrators model professional values and attitudes. (Stuckey,2007:74)*

Students should be required to conduct themselves in a similarly professional manner, and where they do not know what this means in practice, it is the lecturer’s responsibility to provide respectful instruction. This has more impact if conveyed “pervasively and continuously” in the programme (Stuckey, 2007:74). An important aspect of delivery is linking continually to the professional practice environment. It is well-known that students are more likely to engage and “learn in an environment in which they are treated as future members of the ... profession” (Arnold, 1999:899). Modelling professional behaviour includes verbal and practical linkages, but also treating students

with respect and not undermining their self-confidence. Katz and O'Neill (2009:31-32) also advocate being authentic rather than aiming for a generic persona in teaching, and conveying the course outline and expectations to enhance transparency.

In order to encourage students to prepare for a lectured class by doing the “pre-readings”, Katz and O'Neill (2009: 37) discuss the benefits and pitfalls of random interrogation and the expert panel approach. When random interrogation is used, unprepared students are likely to be encountered. A technique used by the author in teaching is the “call a friend” option, also described as the “retain outside counsel” technique by Katz and O'Neill (2009: 37). This highlights the lack of preparedness of the student and the extra burden this puts on his/her classmates. With the expert panel method, a group of students are informed ahead of the class that they will be asked questions on the pre-reading. This does, however, allow the rest of the class to avoid completing the pre-reading task.

In terms of the assignments and workshops, the lecturer plays a facilitation role more than a lecturing role. Skills of effective facilitation can be invaluable.

### **3.2. Feedback**

Obtaining multiple types of feedback on the course design and delivery is critical in terms of university educational process and is a core component when viewing a course from a modern pragmatic approach. The student course review is undertaken via Vula providing detailed feedback on all aspects of the course and its activities. The student pass rate provides some measure of the course success if the assessments are well-aligned to the course outcomes. The external examiner has an overview of the course design, materials, tests and student submissions and can provide industry feedback. In addition, the lecturer is naturally reflective after each engagement, and each assignment has its own feedback question built in to the assignment submission. The next section describes and critically reflects on each of the experiential learning engagements.

## **4. REFLECTIVE CRITIQUE OF FIELD TRIPS, ASSIGNMENTS AND WORKSHOPS**

Teaching decisions should not be made in a vacuum, and where innovative techniques have been tried, these should be subjected to critical review (Stuckey, 2007: 97). The field trips, assignments and workshops are the areas in the course design that lend themselves to innovative techniques and experiential learning. It is on these types of engagement that this paper seeks to report and to provide a reflective critique. The conveyance of knowledge through a comprehensive set of notes, to be compiled in a book *in loco* with Prof Roger Fisher (ex-UCT and University of East London), is of less pedagogic interest than the more innovative aspects of engagement.

### **4.1. First Semester – more formal aspects of property law**

#### **4.1.1. Project 1: Finding the Law**

Various set tasks are designed to enable the students to become familiar with the resources of a law library: the books, journals and other publications. The students are given eight tasks to conduct over the course of an afternoon spent in the library. Assistance is provided by the library staff and

the lecturer and students are informed beforehand about the hurdles they may face and the knowledge and skills they will gain through facing these challenges.

#### *Feedback*

Students find the assignment challenging, but they learn a lot in terms of the range of resources in the law library and how to access them. They also gain confidence in asking law librarians for assistance and to use the law library as a resource in the rest of the course.

#### 4.1.2. Project 2: Legal Statutes

There are two manners in which students have engaged in statutes in recent years. The first is the production of a Statute Reference File and the second is the summary and presentation of statutes in Simulated Office Scenarios. The project duration is five weeks.

In both formulations of this assignment, the following are undertaken:

#### *Groups*

Groups of students are given a set of non-principal and principal statutes. In some years, student groups were formulated by the lecturer, which had the advantage of simulating the work environment in which we seldom choose with whom we would like to work. Students reflected that this also facilitated them getting to know other members of the class they would otherwise not have come to appreciate. In post-apartheid South Africa, it is critically important for people to learn to work across cultural and language barriers and engage with others who are not like them. Students are generally adept at this already with few exceptions since the current student population are “born frees” – those born after the end of the Apartheid regime. In some years, students were allowed to choose their own groups. The reflection section below reports on the positive aspect of this strategy.

#### *Choice of practice name and key areas of practice*

Each group considers itself to be a partnership such as would be formed by a group of land surveyors setting up a cadastral practice. They then decide on partnership name and core areas of work of their practice. This aspect leaves space for a bit of fun and creativity and assists in them developing their identity as a graduate of geomatics and as a future professional.

#### *Daily Diary*

Throughout the assignment, students keep a diary of reading and preparatory work they have done, and also of group meetings. The intent of the diary is to expose students to this form of recording that is required as part of the articles submissions to the professional council for registration purposes. This generation of students seldom keep diaries and are not familiar with the basics of recording in this manner. The diary entries also facilitate a process of student reflection on the pace of work and the problems they have encountered.

#### *Reflective paragraph and mini-essay*

In certain weeks of this assignment, students report back on the tasks in a variety of formats. These prompt the student to reflect on why they are undertaking this assignment – often students perform work because it secures course marks, rather than appreciating the educational value of the assignment to them.

- 1) Paragraph: students write a paragraph on the value to them, as a student and, in anticipation, as a future surveying professional, of an ability to read and summarise statute law that relates

- to their chosen field of work and responsibility
- 2) Reflection: Students relate their experience of perusing statutes, the difficulties experienced and how these difficulties have been overcome.
  - 3) Mini-essay: Students explore in more detail their views on the importance of a land surveyor maintaining a general knowledge of statute law beyond what we have termed the principal legislation.

*a) Statute Reference File*

This project critiques and extends a Statute Reference File prepared by previous students. An effective guide to national legislation and regulations that relate to landed property is produced by students working in a group. The Statute Reference File also contains notes and texts on topics of direct interest to the practitioner – a selection of the readings recommended in this course is included. The project demands that each student acquires the skills of reading legislation and distilling its essential elements. These are presented in a cross-referenced compendium following a standard format for entries. The final submission is the compendium accompanied by a group presentation to the class, using presentation software.

It is planned to publish the Statute Reference File using an online self-publisher. This was a motivating factor for the student group, but the quality of the File even after a number of iterations, is not yet at publishable stage. The publication could still be possible if the time and resources of editing the student submissions can be dedicated to the task. It would be a valuable reference text for practicing professionals and those sitting their professional examinations.

*b) Simulated Office Scenarios*

In this formulation, the idea of a simulated office environment is used (borrowed from teaching in architecture).

*Boardroom meeting – minor statutes allocated to the group*

In a mock-professional boardroom meeting, “practitioners” inform their colleagues round the table of “an interesting act” (actually one of the non-principal statutes) they have read up on and the relevance of the Act to their professional practice. They highlight some important sections for the rest of the team without summarizing the statute. In response, the others ask questions of clarity about the act and its relevance. The exposure to a meeting-style assessment situation may prove to give students confidence in the first few management meetings they will need to attend as graduate Professional Land Surveyors-in-Training.

*Moot court – principal statutes allocated to the group*

A moot court is a mock court at which law students argue imaginary cases for practice. This technique is reported in Katz and O’Neill (2009:39) who also praise this method in its usefulness in teaching the rules of evidence, making them “come to life”. Students have as many allocated principal statutes as people in their group. For each statute, the group must construct a situation of conflict which results in an imagined court case. For each statute there is a judge, prosecutor and a surveyor as an expert witness. Group members rotate through the roles of judge, prosecutor and Professional Land Surveyor for each case. Scenarios should be painted by the judge (2 min), the prosecutor interrogates expert witness (1 min), and the surveyor responds and references the Act in question (2 min).

*Feedback*

All students struggled with the language of statute law. They had access to a glossary and also online dictionaries which they used extensively. They reported that they developed their statute-reading skills in the course of reading and summarizing the statutes and they reflected on the value of being able to read statutes, to quickly find relevant sections, and scan over those that were not relevant. They see the value of this skill for professional work, and realised that it can only be acquired through struggling in the beginning and persevering. The value of the group in encouraging each member to persevere was critical. The group cohesion was an important part of this dynamic and relied on the students' choosing their own groups rather than being placed with other students not of their choice. The formats of the mock boardroom and moot court as presentation and assessment methods was appreciated as innovative and fun.

Most students paid attention to the presentations in these formats, although the level of engagement was less than the author would have liked. Students in the audience seemed disinterested in the content under discussion – perhaps they see the presentations as a form of assessment, ignoring their personal value as a form of learning. All presented material was examined in the upcoming test, yet this appeared a poor motivator for students in the class.

In terms of the role of the lecturer in the mock boardroom and moot court interactions, the author has unknowingly applied the principle of “stay back, then quick” as discussed by Katz and O’Neill (2009: 49). In this approach, the lecturer acts in a facilitator role, allowing student exploration and expression to run its course and only at the end stepping in and highlighting an important point or clarifying a vague concept. This enhances deep rather than superficial learning, as well as student-ownership of their learning.

#### 4.1.3. Project 3: Case law

Each student is allocated a case summary upon which to report. An oral presentation is prepared for delivery to the class. This should include the key points of the case in a brief narrative, a summary of the logic of judgement, and a link to any legislation impacted by the landmark case. Students prepare to answer questions of clarity as well as questions on the impact and currency of the case today and its influence on statute law. Presentations are seven minutes long and oral only (no computer presentation software is permitted). The white or green board are used to illustrate the case.

##### *Feedback*

Reading the case summaries was a challenge to all the students. Understanding the legal language and the logic of the arguments was a skill they felt that they developed during the course of the project. They found the case law summary documents available on the intranet to be invaluable in understanding the key points of each case.

As a lecturer, I noticed that many students did not pay attention to the speaker in the case presentations. The level of engagement of the rest of the class was minimal even though knowledge of these cases was assessed in a test thereafter. This leads credibility to the conclusion that students see the presentations as a form of assessment rather than also a form of learning.

#### 4.1.4. Field Trip

A trip to the Offices of the Surveyor-General (SGO) in the centre of town exposes students to the repository of cadastral diagrams and records and the processes of checking such documents before they are approved for registration. Furthermore, the relationship with the SGO in the digital age is considerably more remote than it was previously. Graduates need to be aware of the human face of the SGO so that they know it as a resource for help and guidance when required. Many recent UCT graduates work in the SGO so students meet individuals with whom they can identify. The benefits of field trips are well-summarized in Paez and Rubio (2015) – these corroborate the usefulness of the field trip in this course and in the sister course, Cadastral Survey and Registration Projects (APG3027Z), particularly the 7-day field project.

#### 4.1.5. Conference/professional CPD Presentation: Coastal rights and integrated coastal management

The author and principle lecturer in the course presents the recent critique and explanation of the recently enacted and amended integrated coastal management law. The presentation is available on the intranet for future reference. The presentation links the onshore property environment to that offshore, and which will be addressed at the start of the second semester.

##### *Feedback and reflection*

The students up to this point are unlikely to have attended a conference and so they value experiencing a different style. It is an opportunity to see the lecturer present in a very different style to the regular lecture style.

At the end of the first semester's teaching and assessment, and engagement with the sister courses of cadastral practice and real property law, students should be well-versed in the legal theory and practice relating to the more formal aspects of property rights, transactions and registration. In the second semester of work, reported in the next section, students are challenged by environments of practice that are less mainstream and predictable.

## **4.2. Second Semester – aspects of property law in more challenging environments**

In a recent analysis of the suitability of the Geomatics degree at UCT for entry into the Hydrographic Surveying environment (Whittal, 2015), it became evident that there are some significant teaching and knowledge gaps internationally in terms of the offshore property environment.

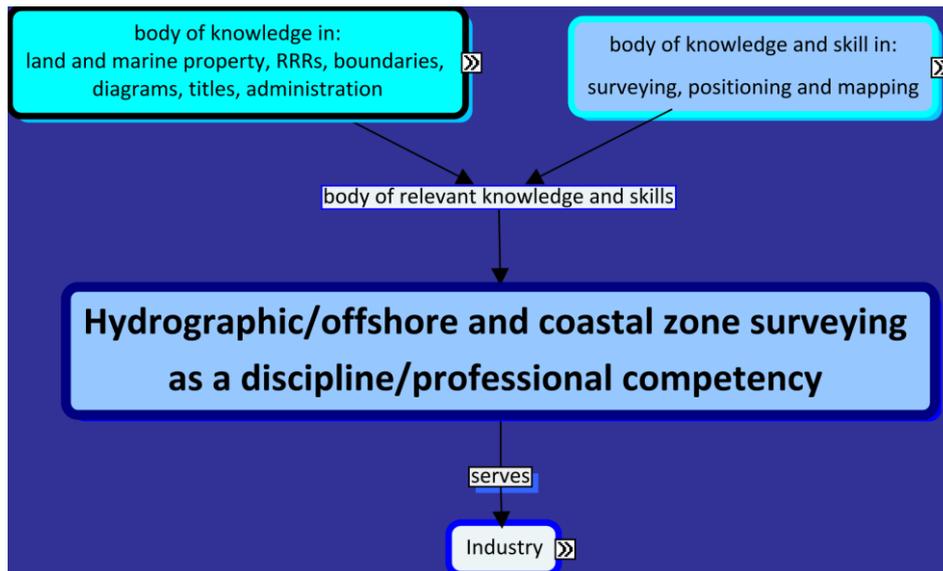


Figure 1: Overview concept map of the inputs in the BSc Geomatics to the hydrographic surveying industry (Whittal, 2015, 4)

Specific application of property and surveying legislation in the offshore environment needs to be addressed. There is also a lack of information on the marine cadastre to guide researchers, policy-makers, legislators and the geomatics community with regard to local issues of surveying and registration of offshore property. Some local research has been conducted (Reddy et al 2014), but does not address many of the issues while some research is in its infancy (Whittal and Duncan, 2015). There is a growing body of knowledge on marine cadastres internationally but this is still in its infancy and has not been developed or tested in a national context (e.g. Ng'ang'a et al 2004).

Research on the legislation and practice of professional land surveying in the offshore environment is required along with recommendations for legislative and regulatory amendments as well as institutional processes to progress towards an integrated land and marine cadastre (Whittal and Duncan, 2015, Whittal, 2015). The areas related to the above that require attention are highlighted in purple in the concept map in Figure 2. For the full concept map illustrating the hydrographic sector, see Whittal (2015). Without this knowledge, it is not possible to teach into these gaps in the programme of study. It is my view that this is an international gap in knowledge and hence in teaching and is consequently of importance beyond the programme in question. However, unusually in comparison to teaching curricula elsewhere, international law and law of the sea is covered in the course at UCT.

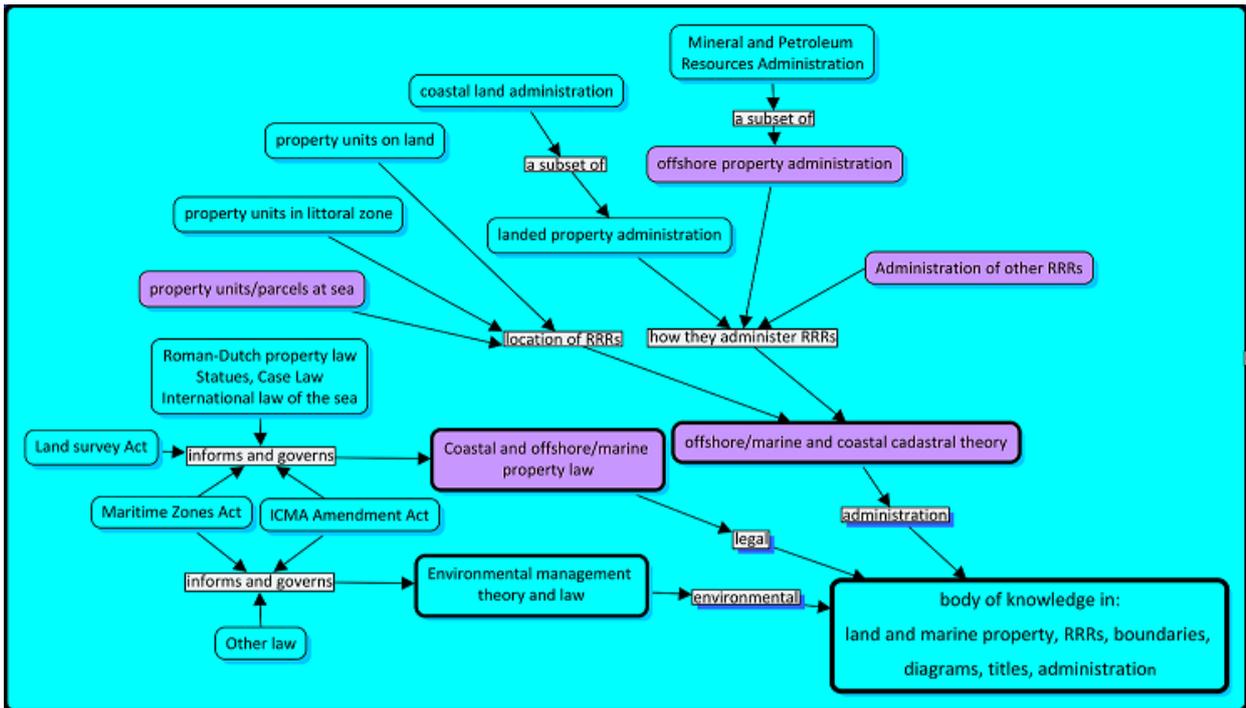


Figure 2. Areas requiring attention in property law are highlighted in purple (Whittal, 2015, 13)

The application of the principles of international law and law of the sea beyond that environment into earth's atmosphere, orbits, the moon, and beyond, is an area of possible future conceptualisation and research. The current extension of our known environment of application to cope with emerging technologies such as drone-based surveying demands that we have a firm foundation in current legal principles and applications. International law, privacy law and robot law are, amongst others, aspects that should be considered in a comprehensive research and teaching endeavour.

#### 4.2.1. Project 4: International Law and Law of the Sea

A section on international law and law of the sea has been taught in the programme for many years. The assignments associated with this material are in two parts:

##### *Part 1: Scenarios in International Law and Law of the Sea*

Four scenarios involving international law issues are presented. Students are to prepare answers to two of these using self-study. The assignment is made available prior to the mid-year vacation and prior to any lecturing on the subject. The aim is to facilitate interest in the topic prior to the formal delivery of the module. Assessment is based on engagement rather than correctness of the answers – acquisition of theoretical knowledge is formally tested.

##### *Part 2: – Contesting International Boundaries at Sea*

This assignment is conducted in an afternoon of contact time. Students are handed an offshore map portion covering the Mozambique Channel. They need to assess the scale of the map and denote the 200 nautical mile boundary around each nation, including Mozambique and the island nations of

Madagascar, France, Seychelles, and Comores. Overlapping claims are then evident. The method of equidistance is explained and is used to construct international boundaries at sea in contested areas. This result is a graphical illustration of offshore boundary determination in areas of contest.

#### *Feedback*

The tasks of Part 1 were a challenge to the students, but many accessed the notes on international law from the UCT intranet and used these in answering the questions. They became aware of the complexities of international law and law of the sea and so attendance at the lectures was of increased value to them. Students enjoy the practical task of understanding the map and then defining off-shore rights in the Mozambique Channel in the second part of the assignment. From the assignment they have a good grasp of the method of equidistance. These two assignments create enough introductory knowledge in international law and offshore boundaries for the knowledge conveyed in the lectures to be easily understood and remembered.

#### 4.2.2. Project 5: Land Reform Essay

This is a major essay of 2000 words scheduled over two weeks, but made available to the students prior to the mid-year vacation. The aim of the essay is to expose students to contemporary debates regarding land in South Africa, as well as to hone research and essay writing skills. The topics for the essay vary annually and there are not right or wrong answers, since the subject matter is always chosen to expose contentious issues. Key references are given and include articles in the press, government policy documents, books, and legislation.

#### *Reflection*

Often, students of geomatics have little practice in essay writing at university level. However, the skills of researching a topic, compiling a reasoned argument with good style, spelling and grammar, and attention to correct referencing, are fundamental to their research project write-up in their final year. Furthermore, some students who usually score poorly in the more technical and mathematical aspects of the course, which tend to dominate in assessment, have a chance to shine. These students, who were previously floundering without an anticipated professional identity, are able to see a future for themselves as professional land surveyors.

#### 4.2.3. Field trip

A field trip exposes students to the work of the Navy in mapping the sea bed and shoreline – essential for defining offshore boundaries. Students visit the Hydrographic Survey Office in Silvermine, and when possible also the SAS Protea, a hydrographic survey vessel.

#### *Reflection*

This field trip is a highlight - many students have not been to Simon's Town and many have never boarded an offshore vessel before. It exposes students to another branch of surveying.

#### 4.2.4. Workshop 1: Good Land Governance

In partnership with modules on the land question and land policy in South Africa, students learn about aspects of good governance in land administration. Many have State bursaries and will spend some years in the employ of the State, and so these principles are directly relevant to their future work and influence.

- **Questionnaire** - corruption in land administration – to judge what a student’s perceptions are on corruption and when/if it is justified (UN Habitat, 2010)
- **Reflection** on Questionnaire – why is corruption never acceptable and the long-term effects of corruption (lecturer reads aloud the summary from Chêne, 2014)
- **Activity** – Break into groups of two students. Each is given a similar but different aspect related to GG to research in 3 min and report in 1 min. The aspects given are listed here, and should be explained as they pertain to cadastral systems:
  - effectiveness v simplicity
  - governance v government
  - land management v land administration
  - transparency v accessibility
  - legality v legitimacy
  - fairness v equity
  - completeness v inclusivity
  - goals v standards
  - clarity v simplicity
  - security v access
  - accountability v democracy
  - flexible cadastre v dynamic cadastre
  - conflict management v dispute resolution
- **Notes and Presentation** of the GG framework (Whittal (2011) as well as framework of UN Habitat in Handout 2 (2010, p20)).

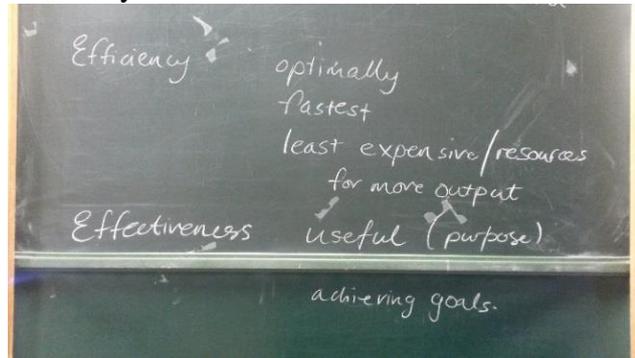


Figure 3: green board reflection of the exploration of good governance principles in student pairs

#### 4.2.5. Workshop 2: Sustainable Development Goals (SDGs)

This workshop is facilitated after Workshop 1.

- **SDGs** are introduced by the lecturer but without the detail of each SDG - just a slide of the infographic of the 17 SDGs.
- **Activity:** Students breakaway in groups of two to find the UN Habitat web page on SDGs. From the list of 17 SDGs, they compile a shortlist that they think geomatics professionals can influence. They order their shortlist so that the SDGs which could be most impacted by geomatics professionals, lead the list.
- **Discussion/reflection:** the lecturer facilitates a discussion on the SDGs. The class attempts to reach consensus on the top five SDGs, allowing each student pair to present why they feel their chosen SDG should hold that rank.
- **TV interview:** Four volunteers are called to represent the FIG Young Surveyors Network, the South African Geomatics Institute (SAGI) President, a private practicing PLS, and the TV host. The TV host poses this question to the panel: “Is the Geomatics profession fundamental to the realization of the SDGs globally” with a follow-up question of “what role can you or your organisation play in realizing the SDGs?”.

*Feedback and reflection on Workshops 1 and 2*

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Feedback on these seminars is that students appreciate the variety of activities in the classroom and the opportunity to engage in fast-pace activities and breakaways. The fact that these activities are not assessed allows students to participate in an uninhibited manner. The lecturer noticed that there was far greater engagement in these activities than in those conducted in the first half of the year in which students were presenting in different formats while others observed and while they were simultaneously assessed.

#### 4.2.6. Workshop 3: Conflict resolution

This workshop is facilitated after a seminar on land policy and takes about one hour. It is essential that the materials are photocopied and organized ahead of time and that individuals are allocated to the respect roles with some thought. Knowledge of the various personalities involved can help in this process.

- **Scenario role play** (UN Habitat, 2010, Session 4 Handout 7, p55): this conflict resolution scenario involves multiple land claims in a rural setting in Ghana. Each person has a handout and a role that they will act. There is a forum in which a judge presides and each claimant and official then has a chance to speak and state the basis of their claim. Many of the role-players have their own hidden agendas, including the judge. The extent to which the judge is able to control the situation and hear the various claims, while also listening in for the various hidden agendas and opportunities for compromise, decides the eventual success of the outcome for all.
- **Discussion/reflection:** after the role-play, the lecturer engages the students on issues of goal setting, contested goals, opportunities for compromise, hidden agendas (including corruption) and power (who should have held the power and did not; who held the power who should not have). Finally, the class discusses what could have been done differently in this situation that would have prevented the uncertainty that was shown to have developed over time in this land contest situation.

#### *Feedback and reflection*

This is a very active workshop. The students have such a lot of fun that in the past other students have asked to come in and participate! The workshop is very well designed and resourced and gives an excellent hands-on experience for the students. It allows the lecturer to expand on the meanings of conflict resolution, dispute resolution and mediation and the benefits of the latter. The lecturer can link this to the aspect of being a quasi-judicial practitioner taught in the first semester. It also parallels the experience of the formal moot court in the first semester to a customary land tenure community court situation. As a teacher and land rights and tenure academic, I advocate this as a very powerful tool for teaching and learning.

#### 4.2.7. Reflection on Gender:

This short reflection is conducted after the conflict resolution workshop and a short break.

- What is gender (v sexuality)?
- Are there specific gendered roles in your family and upbringing? How?
- Is UCT Geomatics gendered or gender neutral? Discuss.
- Why is gender consciousness important in geomatics and land surveying in practice?

- Were there any aspects of gender that affected the process or outcome of the conflict resolution role-play?
- Are there any links between good governance, SDGs and gender?

*Feedback and reflection*

Of all the activities, this is the one that causes the most heated debates while some students see it as pointless and very fringe to what they are studying and future practice. Inclusion of gender into some aspect of a degree programme is noted as important by the University of Cape Town, and with currently changing understandings of gender, it is important to build knowledge and sensitivity. Linking this back to land issues is critical in motivating its place in this course. This activity allows students to reflect on the prior workshop, their upbringing, their university experience, and finally to link this back to the good governance principles, SDGs and geomatics professional's responses to the SDGs (also linking back to that activity).

4.2.8. Invited Speaker: Local land rights and tenure mapping and records

A speaker from Violence Prevention through Urban Upgrading (VPUU) starts the afternoon's activities with an address about the challenges of land tenure in urban informal settlements and the benefits of a local land records. The speaker, Mr Chris Behrens, took the Geomatics degree up until the end of 3<sup>rd</sup> year before changing tack. He is very aware of the technologies in geomatics and uses GIS and mapping tools. As a past student of the degree he can identify with the challenges of the programme and inspire students. He also offers a completely different face of geomatics in pro-poor mapping and land administration.

*Feedback and reflection*

It is always good to have a different voice in the classroom. This invited speaker, Mr Chris Behrens, took the Geomatics degree up until the end of 3<sup>rd</sup> year before changing tack. He is very aware of the technologies in geomatics and uses GIS and mapping tools. As a past student of the degree he can identify with the challenges of the programme and inspire students. He also offers a completely different face of geomatics in pro-poor mapping and land administration. In the last two years of this presentation, individual students who were struggling to find their professional identity in geomatics were inspired and encouraged by this talk. Chris asks individual students what they want to do in practice and one student said "I want to do just what you are doing, with my GIS skills and land law knowledge".

4.2.9. Conference/professional CPD Presentation: Continuum of Land Rights

In order to round off the year with a different style of engagement, the author and principle lecturer in the course presents the land rights continuum in the format of a conference presentation. The presentation is available on the intranet for future reference. The presentation should not be on the same afternoon as the invited speaker.

*Feedback and reflection*

As with the presentation on the integrated coastal management law at the end of the first semester, this format of engagement allows for passive learning while experiencing a refreshing style of presentation.

#### 4.2.10. Workshop 4: Challenges to land reform

This workshop takes place after the conference presentation

- **Discussion** on the different meanings of land in SA today (heritage, home/ancestors, wealth, power, commodity, community, collateral, place, etc. (Williamson et al, 2010; Whittal, 2014)
- **Breakaway** into groups of four: organise the key challenges to land reform in order from most challenging (hardest to solve) to least challenging (easiest to solve). The notes on land policy and land reform in South Africa are used as a resource to inform the breakaway discussion.
- The lecturer facilitates a session of **discussion** on the results of the breakaway groups.

#### *Feedback and reflection*

This section provides the seal to a course that has taken student through a process of appreciation of the *de jure* to the *de facto*. The reflection on the land challenges facing our country is open-ended and promotes the graduate geomatician to use the tools of this course and the sister courses (property law and cadastral practice) to assist the nation through their profession.

### 5. MORE REFLECTION AND CONCLUSIONS

The adoption of experiential learning assignments and workshops with students in the structured contact times has proven an effective means of retaining student interest, enhancing engagement and deep learning of the identified aspects of property law for geomatics students, as well as instilling the virtues of professionalism and professional identity. A further observation is that when contact time involves 3-6 hours in the afternoon, even within each assignment or workshop, many aspects of the interaction need to vary in order to keep students actively engaged and interested. When considering these shifts, it is necessary to bear in mind the various human senses and to try to engage as many as possible and in different ways. Some aspects which have been identified for variation within one session and across different sessions are:

- **change of medium of instruction:** lecture, discussion, reflection, white/green board, video clip, hard copy, flip charts, internet, lecture notes, presentation slides, discussion in groups of four/two, individual learning, workshops and role-plays, expert panels.
- **change of social space:** lecturer/class, individual in a group of two or four, one-to-one, alone
- **change of language style:** formal, consultative, casual, intimate (Price et al, 2009)
- change of personal linkage: generic material, specific material, personal material - link to self (e.g. gender in general, gender in geomatics, impact of gender in my family)
- **change of action:** listening/watching, calculating, reading, discussing, convincing/explaining, researching, presenting, reviewing/analyzing, remembering/reflecting, predicting/planning.
- **change of pace:** mix of fast pace activities (e.g. good governance “rapid fire” 1 min presentations) with slower pace activities (e.g. offshore boundary determination)
- **change of sound:** volume of speaking, who is speaking, silence, small and larger group discussion, listening to a recording
- **change of visual interaction:** usual lecturer, reading a handout, surfing the internet, presentation projection screen, other’s faces in a group, visiting lecturer, individual/small group presenters, complete flip board pages then post them on the lecture room walls.

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- **change of responsibility:** group (4) pair (2) and individual work
- **change of assessment type and context:** report, diary, reflective text, mock boardroom, moot court, research report, mapping, essay.

The best-practice aspect of reflection in teaching property law is embedded in the design of the statute law assignment though the diary entries, reflective paragraphs and mini-essays. Although reflection is built into many assignments but not all, the author is prompted to consider including more reflective tasks in the future both at the end of an assignment or workshop but also during its course, now that she is aware that this is best practice in experiential learning courses.

The constitution of classes into groups as in the statute law assignment, and promoting them to conceptualize their group as a practicing firm with specific practice interests, is in line with the best practices in simulation (Stuckey, 2007:209) at third year level. Perhaps there is a way that the simulated group of professional practitioners can be an overarching theme in the delivery of this course – the author is prompted to give more credence to this seemingly simple idea now knowing it to be an important tool in of student learning and professional identity.

## ACKNOWLEDGEMENTS AND THANKS

The author would like to acknowledge and thank Prof Roger Fisher, past head of geomatics/surveying at the universities of Cape Town and East London. Prof Fisher is a life member of the South African Geomatics Council and much of the material and techniques used in this course originated from his original design and teaching. He demonstrated the art of professionalism in the classroom, inspiring his students to achieve and excel in their chosen profession.

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## **BIOGRAPHY**

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Jennifer Whittal is an Associate Professor in the Geomatics Division at the University of Cape Town. She obtained a B.Sc. (Surveying) and a M.Sc. (Engineering) specializing in global navigation satellite systems from the University of Cape Town. In 2008, Jenny obtained her Ph.D from the University of Calgary applying critical realism, systems theory and mixed methods to a case of fiscal cadastral systems reform. She is a Professional Land Surveyor and lectures advanced surveying and land law. Research interests are land tenure and cadastral systems with specific interest in sustainable development and resilience in land holding for the poor, historical property holding, and cadastral issues in the coastal zone.

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