

# Why Aren't There More Students Entering the Profession?

By Sunil Bisnath, Ph.D., P.Eng.

## INTRODUCTION

I was recently in to see my doctor for a regular check-up. He mentioned that one of his daughters is finishing high school this coming year and she is trying to decide on universities and programs. Knowing that I'm an Engineering professor at York University, he asked about my program – Geomatics Engineering. That is, in parents speak: What are the job prospects like for our graduates? I said that as far as I know, all of our students find jobs in their field upon graduation. If anything, we don't have enough students in our program to meet the workplace demand. His response was a simple and direct "Why?!"

The purpose of this article is to explore some of the facets of the following question: Why in these difficult economic times, when students, parents, politicians and society are demanding more marketable skills from their universities, when there are jobs for all of our Geomatics graduates, are we not enrolling a flood of students and, consequently, why are there not a pile of new articling land surveyors' files on the desks of the AOLS? I do not believe the answer is a simple one.

## DEFINITION OF THE PROBLEM

In Ontario, we currently have two Geomatics university programs: the fourth year Geomatics Engineering option in the Department of Civil Engineering at Ryerson University and the four year Geomatics Engineering program in the Department of Earth and Space Science and Engineering at York University. Each of these programs is sustained by a small number of undergraduate students; and, for the York program, with which I am familiar, there is actually a similar number of students carrying out graduate research in Geomatics Engineering as there are undergraduate students studying to be, amongst other things, land surveyors.

At the AOLS, work is on-going to maintain membership levels. Innovative approaches are being introduced, including competency-based rather than course-based assessment of potential candidates. As has been well-documented, the situation is similar in other jurisdictions in Canada, the U.S. and other developed countries; as well as in other professions, such as engineering in general, as baby boomers head into retirement.

So why aren't young people enrolling in Surveying / Geomatics programs? Well, the answer may lie in Biology, Psychology and Kinesiology. Every year, somewhere in the neighbourhood of one thousand young people enrol in these, and similar (not to pick on these fields), science and health programs just at York. We have known for many years that very few of these students will become practicing biol-

ogists, psychologists and kinesiologists. Yet they enrol none the less. My unsophisticated and concise view of the situation is that young adults (and to some extent, their parents) follow the crowd towards what they *think* they understand. There is nothing at all wrong with this behaviour – it's human nature – and to a large extent mirrors how many other important decisions are made – such as trading stocks.

## COMPLICATIONS TO THE PROBLEM

As with most problems (or "challenges") there are complications. The following come to mind: university, Geomatics and culture.

The surveying profession has always been one of apprenticeship; and, there has always existed a close link between the survey technician and the surveyor – some might say that the distinction is very blurry. After World War II, rapid technological advances and changes in North American culture, led to the formalization of many fields, including what was to become known as Surveying and Mapping or Surveying Engineering, set distinct from Civil Engineering. But the relationship between the profession and the university has not always been as strong as it might (or should) be, perhaps partially due to the apprenticeship tradition and the discontinuity brought by university formalism. Does the university train land surveyors, or does it provide for higher learning as a derivative of research? And how does the survey professional receive the requisite training in the art and science of the craft in a reasonable period of time?

Regardless of one's opinion on the use of the term Geomatics (and we all have one), or in some countries Geoinformatics or Geospatial, the genesis of such words is in the broadening of what was Surveying and Mapping by technology – mostly computers and sensors. Such an expansion would be the envy of many disciplines. While surveying still invokes tripods, Geomatics is still relatively unknown to many high school students (though that is slowly changing in Ontario) and mostly unknown to most parents. And, as I've come to know, the most difficult issues in "selling" Geomatics Engineering are two words: "Geomatics" and "Engineering" – the first because people aren't sure what it is, and the second because (young) people think that it's hard. What's somewhat funny here is that most people don't actually know what Biology, Psychology and even Kinesiology are, but they *think* they do.

And perhaps most importantly, students and student culture has changed, and continues to change. When I went to the Erindale program at the University of Toronto in the 1990s, nearly all of the students were involved with the surveying

industry in some way, except for a handful of us. Most people enjoyed the mix of technology and the great outdoors. And there were only a few women and visible minorities. A typical Geomatics class at York or Ryerson is now the polar opposite on all of these fronts – the students’ backgrounds and their interests are now very different. They are very technology-focused. Women and particularly visible minorities populate the classroom. And very few students have surveying experience. There hasn’t been some big change, but rather a steady transformation of the student body over the past two decades from a homogeneous to a heterogeneous one.

### POTENTIAL SOLUTIONS

The build it and they will come approach will not work in today’s competitive world. We must build it, advertise it to diverse markets, and keep updating it – much more work. In professional parlance, it’s like having a measurement problem with systematic errors; we are trying to treat these systematic errors as if they are outliers – one off solutions might work, but just once in a while. Or similarly, it’s like running a structural deficit – the result is long-term problems. This realization is part of the solution.

We need to talk with the students in their language, not only in our language. Dare I say, as I am not savvy with such things, we should embrace social media, Internet video, etc. And we need to work to attract students to the profession and to all of our programs. York has just formed the Lassonde School of Engineering, which houses the Geomatics Engineering program within the Department of Earth and Space Science and Engineering. The plan is to advertise this new school for “Renaissance Engineering” – a developing combination of skills in engineering, science, and entrepreneurship, supplied through the lens of experiential learning, with a global outlook. (How did education get so complicated?!) This is one attempt at speaking to young adults in an appealing fashion, while providing them with the skills we believe they need for their future careers.

But the solutions are not all related to communication with potential students/members – there is much that we can do. I recently wrote a short comment for the *Professional Surveyor Magazine* referring to the past when the surveyor was known as the master of the measurement. I was told 20 years ago that the technology would change the profession. I’m still waiting. From my perspective as an academic, the profession needs to be the master of these “new” technologies and not just a user of them. The current generation of students thinks big; and, as a result, they gravitate toward all of the technology that can make our businesses more successful and grow into wider profit-generating activities. Related to embracing the technology, I would be remiss not to mention continuing education. For example, the integrated surveys experience is telling: we should know all this



York University Geomatics Engineering students working in the computer lab.

“stuff” about GPS, geodesy and least-squares, but we need to apply this knowledge. If not, how would we know if our GPS measurements have reached the required accuracy for a particular survey? So three cheers for the AOLS’ continuing education initiatives – at least from this academic.

Finally, this whole discussion cannot just be about how to attract the future professional land surveyor. But also what do our current generation of surveyors want from their future employees? I believe you, the readers, are in a better position than me to answer this question. From conversations that I have had with some of you, you need people who are hardworking, responsible, and have a sound fundamental background with which to work. Many of you have worked very hard for a long time, and you are looking for people with these abilities to train, in order for them to take over your business. Perhaps none of this article’s ruminations enter in your decision-making process; however, in my opinion, they are impacting the quality and quantity of people that you are making decisions about.

### CONCLUSION

This article is by no means a complete treatise on causes and solutions of sustaining our programs and membership. Rather, it just touches upon a number of subjects, and is meant to further the discussion and place renewed emphasis on some of the actions that are being taken or ought to be taken. Thankfully we haven’t tried everything yet, so as the man said, “Don’t panic.” I always welcome comments, constructive criticism, and corrections. 

**Sunil Bisnath is an Associate Professor in the Department of Earth and Space Science and Engineering at York University. His research interests include geodesy and precise GNSS positioning and navigation. He holds an Honours B.Sc. and M.Sc. in Surveying Science from the University of Toronto and a Ph.D. in Geodesy and Geomatics Engineering from the University of New Brunswick. Professor Bisnath can be reached at [sbismath@yorku.ca](mailto:sbismath@yorku.ca) for further discussion.**