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Licensure by Apprenticeship: Effects on the Surveying Profession

The image of land surveying as a technician/trade image is increasingly growing. I make a case for moving away from the apprenticeship system toward an educational standard.

A 1525 English document gives the word origin of *survey*, a French word of two parts—*sur* meaning “from above”, and *vey*, meaning “to see”—that is, any method of identifying and measuring ground features and displaying them to scale as if viewed from above. That’s a very broad discipline! The term includes field surveying, photogrammetry, GIS, geodesy, satellite imagery and other math- and science-based subjects that typical “apprenticed surveyor” would find difficult to master without formal training.

Professional Recognition

A 1992 Florida Supreme Court case declared that surveying was not a profession because the apprenticeship system was still in place. In 2002, Kentucky courts also declared surveying is not a profession because the apprenticeship system is allowed for licensure. The U.S. Department of Labor recently decided that Maine surveyors were not part of a learned profession because of the apprenticeship system still in place.

Our Old Educational Home

Civil Engineering (CE) was the traditional “educational home” of surveying, with each CE program having three to five surveying courses and a tenured full professor in surveying. Many CE grads identified surveying as their main interest area. The dual licensed PE/LS surveyors brought many educational

credentials to the surveying profession, but CE dropped significant surveying instruction beginning in the late 1950s.

A “Bootstrap” Profession

In the early 1970s, a Florida Board investigator described surveying as a “bootstrap profession,” meaning once surveying had been removed from Civil Engineering, the profession had to pull itself up by its own bootstraps. Surveyors could no longer ride the educational coattails of CE. In 1960/70s the surveying community faced the need to create its own educational future. However, the

Apprenticeship vs. Learned Profession

Engineering, architecture, medicine, law, finance, clergy, and the like are professions highly valued by society. Surveyors identify personal assets of perhaps the greatest monetary value—land ownership. They also produce general map data (GIS) for public reliance and use. A true learned professional must understand the mathematical, scientific, legal, environmental and societal framework within which the work takes place, speak confidently, write authoritatively, research published information and

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road to an educational future has been slow, and in the subsequent decades many surveyors became licensed through apprenticeship only. Apprenticeship, or on-the-job training without formal education, is *extremely* deep in surveying culture. Of each SIT (Fundamentals in Surveying/first day) surveying exam today, approximately 1,100 take it, but only ± 100 graduated from an accredited surveying program, and only ± 200 more have graduated from a four-year program of any type. Indeed, the apprenticeship system is still in place!

analyze related issues, skills that are beyond the realm of most “on the job” training or apprenticeship programs.

Limits of Licensure

Licensure does not necessarily convey professional status, just public protection. In the U.S., surveying has had a history of causing high profile public damages (such as the California 1890s Mining Claims, Florida’s 1920s Swamp Land plats, etc.) The profession was not getting the job done on its own.

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The states had to step in to protect the public through the regulation of many occupations that do not merit “professional” recognition. In Colorado recently, a state regulatory person talked to surveyors about legislation for mandatory continuing education. He said, “I just had a similar discussion with the plumbers. Yes, we reached an agreement with their union.”

Geomatics and Image

Many educators have had difficulty selling surveying as a college major. The replacement term “geomatics” was first used in North America by professors at Laval University, Quebec, Canada, to present a more positive image of the discipline which has grown increasingly high-tech. According to a Laval professor, “When I say the word

What’s the ratio of diamonds to lumps of coal? In the 1950s maybe one leader in each 10 apprenticed surveyors? College education was an “economic privilege” and not the standard of society at that time. Many high-quality people were seeking a job “off the street.” Today, who knows, but maybe one professional diamond in 100 employees off the street? Those with academic abilities now have opportunities to go to college, and do. Talented future leaders are not walking the streets these days in significant numbers compared to previous decades. Firms have been forced to start drug-testing policies for their employees hired off the street, etc. Many of our current professional leaders (owners of leadership firms, chapter/society leaders, Board members, national society leaders) were trained by apprenticeship 30/40/50 years

survey employees *not* to go to college. One student told his employer that he was going to leave the firm to attend university for a four-year degree. The next day, the employer approached the student with an offer of a big raise if the person did not leave. The student left, obtained the degree, and has had a stellar professional career in a high-profile position. Some employers hold to an apprenticeship system because a quality person off the street will work many years at relatively low wages “chasing the carrot.” This approach teaches, “If you work hard up through the ranks, you can become licensed, a supervisor, a professional surveyor, and owner of this firm someday,” with the employer viewing college as a negative for the firm.

The Narrow “Comfort Zone”

An apprenticed surveyor who learned on the job may have a narrow “comfort zone” of practice—only doing those things in the manner they were taught. Such a person may be extremely uncomfortable in today’s surveying world of new methods, new applications, and new tools, preferring to offer traditional services with traditional methods. When the profession in general is slow to react and embrace new technologies such as aerial mapping, GIS, etc., the door opens for competing groups to enter the field of surveying and mapping.

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surveying to potential students/parents, I see a veil of preconception lower in about three seconds. All communication stops. When I say the word *geomatics*, students often ask what it involves, and I then have about twenty seconds of an open mind to paint a good picture.” Geomatics better captures the breadth of the measurement/mapping profession.

Diamonds in the Rough

When a person walks off the street into an entry-level surveying job, we don’t know the person’s true inner character. Like a lump of coal—dark on the outside (from an educational viewpoint)—the person may have a “diamond” deep in their character. Life experiences “chip” off the exterior layers and eventually for some, a true “diamond” appears—a person with high professional abilities—a natural leader. Many society and Board leaders are in this category. However, for others, there is no diamond inside, and the person lives out a working life without having professional attributes.

ago. They naturally think, “If I did it, someone else can.” We all know and respect many professionals who did not go to college. But the 99 non-diamonds will determine the reputation, image, and future professional standing of surveying, not the one diamond.

The “Carrot and Stick”

Higher education, in today’s society, is a commonly accepted ticket to a career and a profession. Imagine a high school student today approaching his/her parents saying, “I’ve decided to go to college to become a professional,” and the parents responding, “No, don’t do that! You need to get out on the street, get a job, and work your way up through the ranks.” Some apprenticed surveyors are giving this advice (no college) for the surveying profession but the better advice (college) for their own kids.

Over the years as a surveying educator, however, I’ve learned that some employers actually tried to convince their

Same Ratio of Good/Bad

Some employers are great teachers of apprenticed surveyors—others are very poor teachers. Today, presume there is a ratio of 1:4—one great teaching firm for four not-so-great firms. If each firm prepares the same number of apprenticed surveyors, then the ratio of well prepared vs. not well prepared surveyors will be 1:4 thirty years from now—no change in professional recognition for surveyors.

The New Apprenticeship

With a college degree standard, apprenticeship will not go away—it will just shift to the years of internship after graduation, four years in most states. Employers will still have many chances to mold and teach the upcoming generation of professionals. Hopefully, the surveying profession will realize the negative consequences of continuing the apprenticeship system for future professionals and accelerate the movement to an educational base. *A*