

thought leader

Preparing Surveyors for the Future

The decline in the number of individuals seeking licensure has raised concerns about the future of the profession. A logical solution to this problem is to find ways to make more surveyors. Some say the requirement for a BS in Surveying should be dropped. After all, there are few colleges offering this degree. Others suggest the number years and type of experience could be eased. Some have proposed a national license or simpler ways for surveyors to work across state boundaries. Alongside these logistical proposals are economic incentive arguments related to fees and compensation. While I am all for fostering conditions that will help the profession flourish now and in the future, I am a bit wary of ideas that imply professional work has somehow gotten simpler with the passage of time or advances in technology.

Advances in technology have given the day to day service provider the ability to do work that just a few decades ago was either too time consuming or in some instances, impossible to do. While technology has delivered ease of use in accomplishing complex tasks, this does not equate with being safe to use. A surveyor needs to understand the inherent strengths and weakness of a given technology. This understanding is gained by learning a certain amount of advanced math, science and other types of knowledge that are embedded in the technology. Further, some of the anecdotal evidence being presented in various forums point to the rise of questionable practices. Perhaps modern technology is simply exposing poor practices or disrupting standard practices in such a way that quality is being compromised. There are ample reasons to believe technological progress requires surveyors to continually engage in advancing their level of competence. The career of a typical professional spans at least 40 years. There is some expectation that a professional will continue to learn after licensure for reasons of self-interest and public need. Under these circumstances, proposals which aim at making more surveyors ought to consider the here and now, as well as, the distant future. In many respects this has always been the case, but now we have to take into account rapid rates of change.

Of all the knowledge that a technical professional learns over a career, the knowledge of technology and its related techniques is perhaps the least durable. It tends to have a short shelf life because it is steadily being updated and replaced. For example: many years ago I took a drafting class in high school. A few years later I took a similar class in college called engineering graphics. The drafting class largely focused on techniques related to geometric drawing tools while the other class included content on technical communication. The drafting skills were marketable until CAD came along. Communication abilities have remained relevant throughout my career. As the technical work became more complex, the ability to understand and communicate technical matters became more important. The same can be said for the difference between learning how to measure with a steel tape and learning measurement science. I learned both about the same time, but only one of these has proven helpful when it comes to working around GPS, LIDAR and UAS digital photogram-

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metry. These and other examples from less technical subjects reveal certain types of knowledge are more helpful than others over the length of a career especially when the future is a bit unpredictable. *The knowledge of means taken will change frequently, while the knowledge of ends sought tend to persist over time.* For example, boundary location technology has changed a lot over the millennia, but the desire for stable and identifiable boundaries was as important in ancient civilizations as it is today.

Some say certain forms of knowledge cannot be taught but they can be learned. This notion is partially correct in that certain learning opportunities require the student to take on more responsibility for getting results. A coach or a mentor can provide favorable learning conditions and insightful feedback, but the student has to want to learn what needs to be learned. Helping a person while they reason through an ill-defined problem takes some patience. Supporting a person while they wrestle through the complexities of exercising independent judgment takes mutual trust. There are few shortcuts when it comes to

developing the performance-based knowledge which is at the core of professional practice. These learning opportunities are better characterized as helping a surveyor to mature in the professional role. The qualities of maturity can be difficult to describe, but the absence of these qualities is apparent. Given the nature of professional work, I suspect a licensed practitioner benefits from collegial relationships that serve as sounding boards when unique problems arise during the course of a career.

The preparation of every surveyor eventually comes to a moment of truth—will they voluntarily accept personal responsibility. The age of complex technology has produced a rhetoric of responsibility which puts some distance between a user's actions and the eventual outcome: mistakes happen, but what could I do about it? Overcoming this rhetoric involves a paradox. A professional can be confident in their competence and at the same time accept that their understanding is incomplete and their actions imperfect. Mastering this paradox allows the surveyor to internalize the ethical imperative of personal

responsibility and develop the capacity to work beyond the confines of some technical recipe. Applying this imperative in real time requires judgement to assess what are often ill defined benefits and risks. A surveyor has to recognize and accept their role in learning from situations where good and harm can be done. This allows the mentor to make their understanding of these situations available as a resource for learning. I wish that I could report these moments of truth always go well. Some mentees are reluctant to admit they lack knowledge or make mistakes. Some admit these things, but place the responsibility elsewhere. Others want pseudo mentoring—Can't you just tell me what I need to know and save me the trouble. I am a busy person. A few will commit to engaging in a mentorship. These are the folks who are prepared to do professional work now and in the future. ■

Lee Lovell is a registered land surveyor in Colorado and Nebraska and has accumulated 34 years of professional experience. He resides in Parker, Colorado where he was part of Western States Surveying for 20+ years.

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