thought leader

NCEES Forum on the Future of Surveying

On June 10-11, 2016, the *Forum on the Future of Surveying* (*Forum*) under the auspices of the National Council of Examiners for Engineering and Surveying (NCEES) was hosted by the Louisiana Professional Engineers and Land Surveyors Board (LAPELS) offices in Baton Rouge, Louisiana. Ms. Donna Sentell, Executive Director and her staff. LAPELS proved to be excellent hosts evidenced by the fact that the *Forum* elected to return to Baton Rouge for their next face-to-face meeting.

I was asked to attend the meeting as a representative of the American Association of Geodetic Surveyors (AAGS). *American Surveyor* editor, Marc Cheves also asked me to cover the meeting for the magazine. Other participants are in the table below. The impetus for the *Forum* had its genesis in the observation of number of applicants to take the exams provided by NCEES had been falling since the path to become licensed was generally filtered by a 4-year undergraduate degree prerequisite. Inherent in this alarm is the implication that the profession of surveying is limited solely to those desiring/acquiring state licenses. One very positive product of the meeting is a recognition of how the very broad the area covered by the term surveying extends beyond the perceived need, by the public, for protection. Surveying is so much broader than boundary surveys alone.

There was a general understanding that the definition of surveying has been allowed to morph during the 20th century to include only boundary surveying, despite the obvious and frequent need to access other of the many specialties within the true realm of surveying, for example, geodesy, photogrammetry, construction/engineering, cartography/GIS, hydrography, &c.

An interesting component was the makeup of the *Forum* because if the signal of fewer surveyor is fewer registrant applications, one might wonder why organizations outside the definition requiring licensure are invited. In any case, the *Forum* is composed of members chosen from the diverse fields of surveying. The immediate benefit was a recognition and effort to develop a better, more useful to the public's understanding, definition of surveying.

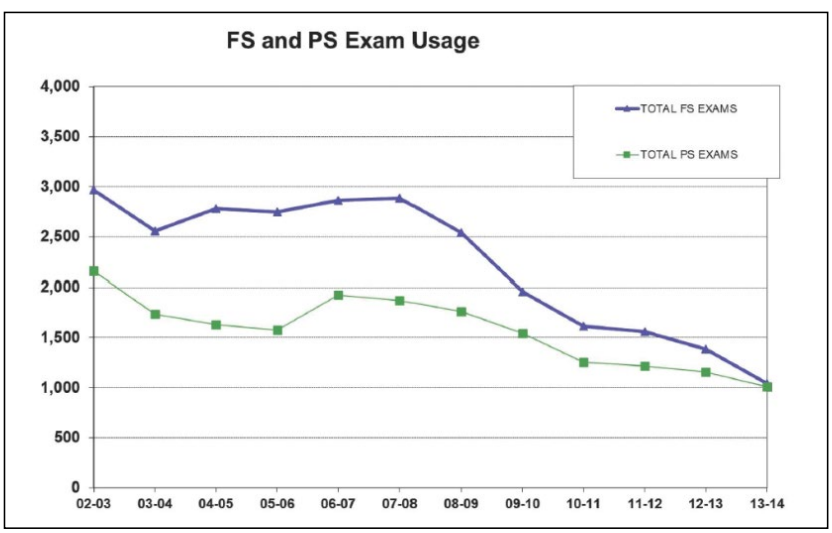

Figure 1: Graph used in the meeting to illustrate trend of fewer people sitting for the national Surveying exams from 2002-2014

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Table 1: Attendees/Participants

Facilitator		
Barbara Eljenholm	Byline7	
Examiners/Licensers		
Scott Bishop	National Council of Examiners for Engineering and Surveying	NCEES
Lisa Hanni		
Dave Widmer		
Bradley Roberts	National Council of Examiners for Engineering and Surveying, Emerging Engineers and Surveyors Group	EES
Donna Sentel	Louisiana Professional Engineers and Land Surveyors Board	LAPELS
Doyle Allen	Colonial States Boards of Surveyor Registration	CSBSR
Professional Associations		
Tony Cavell	American Association for Geodetic Surveying	AAGS
Frank Taylor	American Society for Photogrammetry and Remote Sensing	ASPRS
Ralph Guida	American Council of Engineering Companies, Council of Professional Surveyors	COPS
John Hohol	International Federation of Surveyors	FIG
Pam Nobles	Management Association for Private Photogrammetric Surveyors	MAPPS
Curt Sumner	National Society of Professional Surveyors	NSPS
Lina Neto	American Society of Civil Engineers, Utility Engineering and Surveying Institute	UESI
Nancy Almanzan	Western Federation of Professional Surveyors	WFPS
Government Surveyors		
Don Buhler	Bureau of Land Management	BLM
David Zenk	National Geodetic Survey	NGS
Educators		
Wallace Johnson	Surveying and Geomatics Educators Society	SaGES
Patti Williams		
Magazines/Publications		
Tony Cavell	The American Surveyor magazine	AmeriSurv
Valerie King	Point of Beginning magazine	POB
Amanda Askren	xyHt magazine	xyHt

This meeting tried to build on analysis from the previous meeting in January (see *The American Surveyor* Vol 13, No. 3). These meetings are of the sort that employ a hired moderator (Barbara Eljenholm from Byline7) to corral the herd and guide them to a desired solution. The drawback to these affairs is how this structure sometimes dampens original thinking in favor of timely consensus. Be that as it may, the participants in this group worked with very evident purpose to improve the recognition and visibility of the discipline of surveying by the public and Ms. Eljenholm proved very quick to pick up on nuance.

Three task groups were formed to work on identified elements of the overall task: Definition/Branding, Education, and Marketing. I was part of the Definition/Branding task group.

- **Definition/Branding:** Larger overarching definitions are being developed in general and a few sub-set definitions may be aimed at demographic groups, such as youngsters vs. teenagers vs. adults. Also the development of a symbol for surveying that would be universally recognized as exists for medicine and the law is a task.
- **Education:** Development of several so-called tool kits especially for use for pedagogy (teaching how to teach) integrating surveying examples into curricula.
- **Marketing:** Identifying means of communicating the message and using the tool kits and identifying the demographics of the targets of the message and tailoring the message to be appropriate to each.

Each of the three task groups worked on their assignments energetically and there was at least one common thread from them all, co-dependency. Every group had some facet that required, as input, a product from each other group. The definition group would get a general definition but needed identification of target groups and requirements from the education group. The education group needed input from the marketing group about modes of communication so as to properly style the toolkits. The communications group could work on venues but would need the core messages from definition and actual toolkits from education to complete their charge.

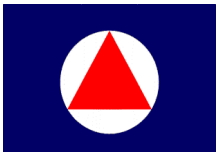
The members of the groups determined to continue working with mile posts derived at this meeting with a final target of early to mid-2017. Because of this necessary collaboration, it was further decided that it will be critical that the current group and its task groups should remain intact going forward, to the extent possible. That is the gist of the business covered during the meetings. The volume of work accomplished and tasks identifies are great in number but not germane to this overview.

Symbols

I was assigned to the Definition/Branding group. Among many things discusses, two rose to the top: a general definition and a universal symbol. I did a little looking around after the meeting and learned that symbols for professions are necessarily simple. Seals are often complex and artistic frequently employing the symbol within the seal (see USC&GS seal below). Logos, usually intended to represent a firm or subdivision of the group represented by the symbol, may not include the symbol. The Coast and Geodetic Survey is a good example.

The primary repeated symbol for Surveying agencies is the triangle. The NGS (formerly USC&GS) has as its symbol a triangle with the globe imposed within. The US C&GS flag is characteristically simple enough to recognize from a distance, a triangle superimposed on a circle over a blue field. The USGS use a triangle with crossed picks subtended by waves of water. The BLM is a bit more complex but maintains the triangle, inverted.

The Corps of Engineers with typical military flourish is a stylized fort or castle. The Masons use the square and compass. Medicine uses the rod of Asclepius The

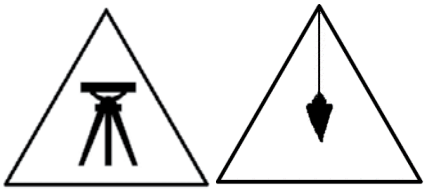


Figure 2: My personal favorites as symbol of surveying

caduceus or "herald's staff "has been used in the U.S. ever since it was, with the usual military flourish, mistakenly adopted by the Army Medical Corps. (Two snakes and wings instead of one snake on a rod.) Barbers use a pole with red, white and blue stripes representing bloody bandages drying from surgery. The legal profession typically employs the scales of justice. The mortar and pestle represents the compounding of ingredients by a pharmacist. Your reporter believes surveying should adopt something equally simple, like a tripod or plumb bob surrounded by a triangle.

Several texts are being considered to guide us toward a good universal definition of surveying. One is a short text composed for a conference of school counselors at which NSPS was presenting.

The highlight of the meetings may have actually been the local hospitality extended by LAPELS, particularly by hostess, Donna Sentell and master chef and story teller, Richard Savoie, supported by impromptu swamp guide, Bradly Roberts. Lunch was provided by LAPELS both days, cooked just outside the meeting room. Friday's main dish was a modified jambalaya made with pasta instead of the traditional rice renamed "pastalaya" and fried fish filets. The group was treated to boiled crayfish, boudain balls and bread pudding on Saturday.

Any gathering of surveyors includes telling of tall tales and several tall tales were exchanged but none topped the adventures of Brad Roberts and Scott Bishop. Brad and Scott had gone out to the swamp around Maurepas (just west of Lake Pontchartrain) to hunt bull frogs and provide fresh frog legs for Saturday's lunch. Some frogs were caught but not enough to feed this group. However, the tales of adventure were worth as much as any meal. Frogging with powerful headlamps, jumping in the water with "hundreds of spooky eyes all around us," "Cajun Reeboks", and even photos of Scott catching a small alligator by hand and learning why a roll of electrician's tape was important to have in the boat were spellbinding.

Perhaps it was the food, perhaps the tales, the accommodations, or the hospitality, maybe the productivity, but for whatever reason, the group decided to hold its next face-to-face back again in Baton Rouge. I, for one, am looking forward to it. ■

DEFINITION OF THE FUNCTIONS OF THE SURVEYOR*

Summary Responsibilities of a Surveyor
A surveyor is a professional human being with the academic qualifications, technical expertise, and where and when applicable a license to conduct one, any, or all of the following activities.

- Conduct research into, assemble and interpret land and geographically related information
- Measure, and represent land, three-dimensional objects, point-fields and trajectories usually, on, in or near the earth, making necessary mathematical, geodetic, or other adjustments to such measurements and to construct a specific two or three dimensional
- Following ethical and professionally accepted practices, provide expert analysis and representations or models of the empirical and reference data.
- Apply appropriate quasi-judicial analysis to determine boundaries of property based on the proper research of land records combined with measurements made, and weighing evidence of each, together, to formulate a professional opinion of the location of such boundaries under the authority of licensure by a governing jurisdiction.
- Determination of boundaries of public or private land, including national and international boundaries, and the registration of those lands with the appropriate authorities.

Extended functions of a surveyor.
Within the scope of the definition of the primary responsibilities of a surveyor outlined above, a surveyor's role in association with other geospatial professionals may include one or more of the following activities which may occur either on, above or below the surface of the land or the sea

1. The determination of the size and shape of the earth and the measurement of all data needed to define the size, position, shape and contour of any part of the earth and monitoring any change therein.
2. The positioning of objects in space and time as well as the positioning and monitoring of physical features, structures and engineering works on, above or below the surface of the earth.
3. The development, testing and calibration of sensors, instruments and systems for the above-mentioned purposes and for other surveying purposes.
4. The acquisition and use of spatial information from close range, aerial and satellite imagery and the automation of these processes.
5. The design, establishment and administration of geographic information systems (GIS) and the collection, storage, analysis, management, display and dissemination of data.
6. The analysis, interpretation and integration of spatial objects and phenomena in GIS, including the visualization and communication of such data in maps, models and mobile digital devices.
7. The study of the natural and social environment, the measurement of land and marine resources and the use of such data in the planning of development in urban, rural and regional areas.
8. The planning, development and redevelopment of property, whether urban or rural and whether land or buildings.
9. The assessment of value and the management of property, whether urban or rural and whether land or buildings.
10. The planning, measurement and management of construction works, including the estimation of costs.

In the application of the foregoing activities surveyors take into account the relevant legal, economic, environmental and social aspects affecting each project, within the professional and legal authority of the surveyor.

*Developed from similar materials published by F.I.G. and comments read or heard by J. Anthony Cavell, PLS, CFedS