



Photo: PCI

## Wisdom and Experience: Striking a Balance

William N. Nickas, *Editor-in-Chief*

A few months ago, my friend Chester Henson passed away. He was a Missouri farm boy, a family man, a civil engineer, and a Vietnam veteran who flew a helicopter during his military service. Occasionally, he would share stories about his time in the military, and I would like to share one of them with you now. Shortly after he was deployed to Vietnam, Chester and his wingman were ordered to fly into a hostile area and pick up a stranded foot patrol. Before they carried out the order, an experienced warrant officer showed Chester a plate that could be added to the underside of the helicopter pilot's seat to provide an additional level of protection during combat. Because the old timer's seat design was unconventional, army mechanics would not make the modification. However, Chester decided to make his seat match the seasoned pilot's seat. This decision proved to be a fateful one. During the mission, his aircraft took on fire, and that plate stopped a bullet.

You may be wondering what this decades-old war story has to do with bridge engineering today. I want to suggest that Chester's choice illustrates the important distinction between wisdom and practical experience, and the value of using both when making decisions.

Since the days of the ancient Greeks, philosophers have classified different types of knowledge, including wisdom and experiential/practical intelligence. The latter type of knowledge has a narrow focus: choosing the means to a given end based on specific facts demonstrated through experience. In contrast, wisdom has a broad scope. The wise person does not neglect experiential knowledge, but his or her thoughts and actions are also informed by insight, common sense, and abstract reasoning. Wisdom may involve looking beyond how to resolve a particular question to explore whether that question is even the right one to ask.

Currently, massive amounts of money and human resources are being spent on engineering protocols, systems development, prototype data collection, high-tech robots, and the latest asset management tools. But I wonder: Are the engineers

who conceive of these programs too narrowly focused on precision and repeatability based on data samples collected from bridges built with existing technologies and materials? Is seeking a high degree of accuracy about trends from our past sufficient to successfully advance our newest bridge practices?

Certainly, there is value in gathering data, calculating actuarial trends, and using that knowledge to adjust deterioration models and provide life expectancy curves for existing bridge inventories. However, if we rely exclusively on what we know about past and present experiences, we may squander our stretched resources on options (such as expensive, single-purpose robots) that are not wise solutions for the future.

Now, back to my friend and his army aircraft. Chester had no personal experience with the modified seat that his comrade invented, and there was no accumulation of data to review. However, Chester valued the other pilot's experience and insights, thought the invention made sense, and decided to try it. Not everyone gets to create a lifesaving feature based on the experiences and innovations of others, but, if we catalog our collective experiences, we can leave enough understanding and insight behind to help others act wisely.

We all know that bridges and structures deteriorate. Most challenges can be avoided with robust concrete material selection, and others can be addressed with appropriate design/detailing practices. Let's be sure to teach the next generation of engineers how to be wise enough to move beyond an exclusively experiential focus. **A**

Congratulations to the young engineers from St. Martin University in Lacey, Wash., who won the Big Beam Contest cosponsored by ASPIRE®. Some members of the National Concrete Bridge Council (Alpa Swinger (left), PCA; Randy Cox (right), ASBI; Reid Castrodale (second from left), ESCSI; and William Nickas (second from right), PCI), who are proud sponsors of this student activity, are shown with the contest winners.



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