

Bill Shapton

An engine of change



Bill Shapton settles into the seat of a student-built Mini-Baja car. Almost forty years ago, he spearheaded the first collegiate design competition that required students to get their hands dirty.

by John Gagnon

A bumpy ride in the bush in an off-road vehicle has paved the way for the industrial readiness of engineering students nationwide.

It's called the Mini-Baja, and Bill Shapton, professor emeritus, has been a driving force behind this vehicle-design competition, which is sponsored by the Society of Automotive Engineers (SAE).

Shapton's involvement was so pivotal that today he is called "the father of Mini-Baja."

The program, which now has students building and operating an all-terrain vehicle, helped transform engineering education.

In the late 1960s and early 1970s, there were several collegiate automotive competitions. However, they all emphasized design at the expense of dirty hands. Shapton says, "Everybody designed vehicles. No one built them. They were missing a huge part of the industrial process."

Student interest in engineering was lagging, in part, Shapton believed, because universities were shedding that practical experience. "Mechanical engineering programs became very math-oriented and theoretical in the sixties and seventies as we entered the space program," he said. "Many universities dropped most of the labs and hands-on activity."

In response, Shapton, then at the University of Cincinnati, co-organized a series of competitions to design and build what he called "Recreational-Ecological Vehicles."

His aim: to familiarize students with how things are done in industry. Thus, the effort: duplicate the industrial model—design it, build it, test it, and compete with it.

The competitions began in 1973 and were held at Michigan Tech's Keweenaw Research Center. There were some potholes early on: two vehicles caught fire, a third ended up in the drink. (Those circumstances prompted Shapton to include the student competitors on his homeowner's policy.) But it was affordable; Briggs & Stratton donated free engines. That, plus the fun of it all, made the program popular among students. And, Shapton says, "It looked great on their résumé."

Meanwhile, Shapton lobbied the SAE Board of Directors to sponsor its own competitions. He was serving on the Student Activity Committee when the SAE launched its first collegiate design competitions, Mini-Baja and Formula SAE, in 1976.

Tech has participated in Mini-Baja (now simply Baja SAE) every year since, hosted it twice, and won it once. Shapton himself came to Tech in 1979 and co-advised University Mini-Baja teams in the 1980s.

The inaugural Mini-Baja began with six schools. Now there are three regional Baja SAE competitions held annually in the US involving 3,300 students each year. “It grew fast,” Shapton recalls, and it trained generations of students to translate classroom concepts to real-world engineering. “It had a huge effect on academics,” says Shapton.

The Mini-Baja so appealed to students that faculty were almost forced to get involved. Because SAE programs required students to build a vehicle, Senior Design expanded from a term project to a yearlong learning experience. At Tech, the competition has grown to four years of Enterprise, the Blizzard Baja SAE.

Mini-Baja and the ensuing SAE design competitions—Formula, Supermileage, Aero Design, and the Clean Snowmobile Challenge—have changed the lives of student engineers and their faculty advisors “in a major way,” Shapton says, and the effort has paid off in graduates that are better prepared for the workplace.

The SAE has also benefited; since the competitions began, he says, student membership in the society “has skyrocketed.”

Speaking is a man with extensive connections with the workaday world. Shapton has twice taken sabbaticals to work in industry. In one, he was involved in the development of the first industrial robots. In another, he helped develop groundbreaking tests for the measurement of vehicular noise and vibration. He also has been instrumental in educating automobile draftsmen to become design engineers.



JOHN HATCH

Shapton advises student engineers Greg Smiarowski, left, and Davin Peterson as they undertake last-minute fixes to their entry in the SAE Clean Snowmobile Challenge.

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He has served on eight committees at SAE and has received four of the organization’s awards. In 1989, Shapton was awarded the SAE Medal of Honor, largely for his involvement in Baja.

He also has received the SAE’s Excellence in Engineering Education Award for his efforts to bring engineering activities to public schools.

And, for his contributions, overall, to education, industry, and the society, Shapton was named an SAE Fellow in 2010.

John Leinonen, a former president of SAE, nominated Shapton to be an SAE Fellow. He says Shapton’s role in launching the Baja program was complemented by his stature in industry, his passion for teaching, and his concern for students.

William Predebon, chair of the Department of Mechanical Engineering–Engineering Mechanics, also nominated Shapton for SAE Fellow. He says Shapton receives “enormous respect” from students and colleagues and “esteem” from alumni. The fellowship, Predebon says, “is overdue.”

Shapton is modest about his pioneering role. It was circumstances—languishing interest in engineering and a decline in hands-on education—not vision, he says, that prompted his efforts. He’s just happy it’s all worked out so well.

“Students like the competition part,” Shapton says. “Unfortunately, just one team can win, so it’s largely a no-win game.” But, he adds, “It makes life a lot more interesting.”

The bottom line: all the student engineers, from the winners on down, leave with something far more valuable than a trophy, says Shapton. “They have acquired the tools to actually design and build something.” ■