Have You Ever Wondered About The Engineer's Mysterious "Feel" For A Problem?

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I first encountered the engineer's so-called "feel" for a technical problem when I started out as a graduate student. But, against all professorial advice, I instantly committed myself to a life-long study of computer-aided design and optimization technology, then widely considered (by engineers) contrary to both respectable mathematical theory and sound engineering practice. Now, almost half a century after my bachelor's degree, I find that I can explain the engineer's mysterious "feel" as well as the motivations of those who discouraged me. Luckily I persevered, with the encouragement of professionals and friends as well as co-workers more brilliant than I deserved. I have always been guided by two principles. The first is by H.J. Eysenck, ca. 1960s: "If we make up an ad hoc hypothesis for every new case . . . then we shall never go beyond the present position where we can explain everything and predict nothing." The second is my own: "Proceeding in a direction not sanctioned by my peers has always proved tough, but the results achieved have almost always been worth the effort." Thus, I caution against "experts" who claim to see no future in your proposed work; I recommend you not take that well-trodden path to be instantly understood and accepted. Instead, I encourage you to follow your pioneering instinct even if you find yourself initially ridiculed or rejected.

John W. Bandler (LFIEEE) is Professor Emeritus at McMaster University and President of Bandler Corporation. He is a Fellow of several societies including the Canadian Academy of Engineering and the Royal Society of Canada.

Based on his work, design with tolerances, yield-driven design, and electromagnetic optimization—once academic fantasies—are now taken for granted by microwave engineers. His implementations into major commercial design tools, including those from Compact Software (now Ansoft/Ansys) and Hewlett-Packard (now Agilent Technologies) have impacted high-frequency and microwave design initiatives world-wide.

John introduced space mapping in 1994. From automotive crashworthiness to magnetic systems, his concept has been adopted into design portfolios across the entire spectrum of engineering, making possible the high-fidelity design of devices and systems at a cost of only a few high-fidelity simulations.

John studied at Imperial College of Science and Technology and received his degrees from the University of London. He has served on editorial and review committees, and as guest editor of several special issues. He has published more than 470 technical papers. His company Optimization Systems Associates Inc. was acquired in 1997 by Hewlett-Packard.

He received the Automatic Radio Frequency Techniques Group (ARFTG) Automated Measurements Career Award in 1994. In 2004, the IEEE MTT Society honored him with their Application Award "For application of optimization technology, design with tolerances and yield-driven design to microwave devices, circuits and systems." This year a special retrospective session at the IEEE International Microwave Symposium pays tribute to his forty-five years of pioneering contributions. Also this year, he received the IEEE Canada A.G.L. McNaughton Gold Medal, which honors "outstanding Canadian engineers recognized for their important contributions to the engineering profession."

Active in artistic endeavors, John has written a novel, a screenplay, and several stage plays, two of which have been performed.

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