He Met the Challenge of Technology Transfer

H. S. Pennypacker
University of Florida

Academic and professional organizations like ABA have annual conventions. The reasons for doing so are numerous and are largely irrelevant to our purpose. Suffice it to say that the practice must be reinforcing since this is the fifteenth consecutive year, without interruption, that ABA has engaged in the ritual. Whatever the specifics of the reinforcing contingencies, location is well down on the list; people attend regularly in spite of widespread objection to the meeting sites.

In order to stage a convention of this size, it is necessary to secure a large hotel and convention facility. This is an economic transaction of substantial magnitude, often involving revenue guarantees that could bankrupt an organization like ABA, which does not boast a membership of big spenders. We are not the Shriners or the Teamsters, but we are adaptable. We have found a way to let natural contingencies, prodded by deprivation in the form of late afternoon thirst, fill the hotel bars and lounges immediately prior to the annual banquet. This remarkable mechanism is called the Presidential Address. It is scheduled in a medium-sized room with nothing opposing it on the program. It occurs at an hour which is too late to accommodate leaving the hotel without running the risk of missing the banquet. Consequently, the bars and lounges fill up during the Presidential Address and the organization meets its financial obligation to the Hyatt Regency, Opryland, or the Hyatt Regency.

I mention all this by way of subtly reminding you that, in 1986, I had the honor of delivering the Presidential Address.

My topic was The Challenge of Technology Transfer. Some of you may have been in that audience. The man whose 90th birthday we are gathered to commemorate was not. For that matter, neither was his friend Burrhus. I later confirmed that both were seen loitering in the vicinity of the mezzanine cash bar, immediately outside the banquet room.

At first, I was a little hurt by this affront. After all, I was taking something of a risk discussing a topic that is still considered crass in most academic circles. I had secretly hoped to be able to look up from my text and spot that twinkling smile and gentle affirmative nod that would tell me that at least one person understood. Sigmund Koch taught me that a language community of two is the minimum necessary to guarantee an epistemology of empiricism and thus maintain scientific credibility. If the language community falls below two, one is, by definition, talking to oneself. That raises the distinct possibility that one has become schizophrenic. Without Fred in the audience, I faced the potential embarrassment of using the forum of the Presidential Address for the purpose of informing the membership that they had elected a disturbed person to their highest office.

Since that time, I have forgiven Fred. I have come to realize that Fred was merely behaving as a great teacher should. Let the student believe that he has discovered for himself that which the teacher has patiently shaped, prompted, and reinforced. I am reminded of my first flight instructor. The day I soloed, we had been practicing landings. After about the fifth, he said, "OK, let's do a full stop. I'm getting out!" I knew this was it. As I cleared the runway on my first solo take-off, I glanced down to see if he was watching. He wasn't. He was walking back to the hangar with his back to the runway.

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When I landed, he handed me one of the *two* cups of coffee he had poured.

Great teachers know when the student's behavior is under full control of the natural contingencies. I now realize that, by not showing up that day, Fred was properly paying himself, and indirectly me, the ultimate compliment. Like my flight instructor, he was saying, "You're on your own, kid. See you on the ground."

After the presidential address, when I entered the banquet hall, guess who was waiting to hand me a drink—Fred Keller!

Fred had another reason not to waste time listening to an address on technology transfer. He wrote the book. His entire career has, in one way or another, been devoted to the problem of realizing the technological benefits inherent in a natural science of behavior. We may agree that it was a fortunate accident that he met Burrhus while both were graduate students at Harvard. It was no accident, however, that Fred Keller was the first to see the enormous potential for humanitarian benefit that would flow from a legitimate experimental analysis of behavior. Such an insight must have required unique perspective and vision, for it escaped the great thinkers then assembled at Harvard, even as it continues to escape the majority of their intellectual descendants.

There is more to technology transfer than great vision, however. Edison captured a portion of the requirement in his famous remark, "Genius is one per cent inspiration and 99 per cent perspiration." In typically modest fashion, Fred says it another way: "I was a promoter." Perhaps, but Don King is a promoter as is Sylvester Stallone, and neither will leave the mark on civilization that history will accord to Fred Keller. What is the difference? In the time remaining, I would like to list a few of the attributes and accomplishments that Fred, by example, has taught us are prerequisite to success in the demanding arena of technology transfer.

First, to be sure, one must be a promoter. In fact, one must be a zealot, in the best sense of the word. Ignaz Sem-

melweiss was a zealot in his conviction that sterile procedures could reduce the incidence of infection in labor and delivery. Coming as he did 30 years before Pasteur and operating within a profession not known for its tolerance of innovation, Semmelweiss paid dearly for his zealotry, losing first his professional standing, then his sanity, and finally his life. Fred has been more fortunate, but he has not escaped the despair that accompanies the discovery that one is virtually alone when one attempts to improve upon established practice in some area of human endeavor.

Fred captures the essence of this experience when he writes of his initial efforts to improve the training methods of the Signal Corps with respect to transmission and reception of Morse Code: "In this environment, basic research dropped off and we coped with problems that we hadn't met before. We learned that sanction from above doesn't guarantee cooperation from below. We found that public relations are sometimes more important than incontrovertible data in getting changes made. We discovered that a vested interest in an old procedure can block acceptance of any new departure; and that nothing can be assured to last when one is gone, unless it is in a training manual!"

Fred's efforts with military training were eventually successful, both from the standpoint of a permanent contribution to practice and with respect to what Fred learned. Specifically, when time and money are on the line, training technologies that maximize both efficiency and effectiveness can and will evolve. Such is not the case in the University environment, as Fred later discovered. So have a number of others of us.

This brings me to my second point—perseverance. I vividly recall a presentation Fred made to the Fourth Conference on Behavioral Innovation in Higher Education, held in Pittsburgh in 1977. In that presentation, Fred lamented the fact that after a decade of demonstrated effectiveness of PSI and similar technologies which it had spawned, the powers that be were again attempting to solve

the problems of higher education by appointing committees to reform the curriculum. He noted the difficulties some of us were having sustaining these technologies in impervious academic environments. Most importantly, he left us with a stern (for him) directive: Don't give up! Fred may well be the originator of the motto *non carborandum illegitimi* (don't let the bastards wear you down).

A third essential for becoming a successful transferor of technology is adaptability. Often, this means learning a foreign language. Fred learned Portuguese, the better to function in Brazil. I have had to learn to speak accounting, which I believe has fewer English cognates than does Portuguese. Others have learned to speak 'Medicinese,' computerese, etc. Why do we do this? Bacon observed that nature, to be commanded, must first be obeyed. Fred said it better: "The student is always right." It is impossible to analyze and alter a repertoire unless you can understand its function. If that function is defined by the contingencies of an alien culture, there is no alternative but to assimilate! This may be the most important lesson Fred Keller has taught us.

Fourth, it certainly helps to have a loving, devoted, and understanding mate. I am speaking of a spouse like Frances for whom marriage to a zealot has been, at worst, an inconvenience and, at best, an exciting adventure to be shared. I could elaborate on this point at length, but will

simply say that a career like Fred Keller's could not have been managed alone. When pressed, Fred acknowledges this.

Finally—and this is the one that is quintessential Fred Keller—one must have a sense of humor. This is a major determinant of both Fred's achievement and his longevity. Og Lindsley and Charlie Catania have argued for years over which of them was the second funniest member of the ABA. That may be a legitimate controversy, but there is no controversy as to who the funniest member is. Nor is there any doubt concerning the quality of Fred's humor. As Kipling says in *The Children's Song*, "Teach us delight in simple things. And mirth that has no bitter springs." At four score and ten, Fred Keller lives as he always has, in absolute adherence to Kipling's couplet. You can analyze Fred's repertoire indefinitely and you will find no bitter springs.

Fred continues to model for us this secret of successful technology transfer: there is no situation, no matter how desperate, that laughter cannot improve. Repeat that formula often enough and, by successive approximations, two marvelous things will happen: the impossible will be achieved and you will live long enough to witness the achievement.

But don't take my word for that. Ask that other distinguished nonagenarian, George Burns. Better yet . . . ask Fred Keller. You'll find him in the bar.