



APSA Presidential Address

The surgeon and the child

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ABSTRACT

For many reasons pediatric surgeons have been asked to do all general and thoracic procedures in children. The profession has responded by training more, but the core of special cases requiring pediatric surgical expertise has not changed, and there is concern that the many surgeons now in training will not each do enough cases to attain and maintain operative expertise. This presentation examines the psychological, educational, and surgical literature on the development of expertise, especially operative expertise. From this I conclude that individual surgeon volume when gained in deliberate practice with a coach and with effort is essential, and that several technologies hold promise for allowing deliberate practice in simulation environments. I propose that in order to avoid a decline in pediatric surgical operative expertise we must reorganize pediatric surgical training and practice to align with Optimal Resources for Children's Surgery and the evolution of training in general surgery.

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You are the best human beings that civilization has been able to produce. You have more knowledge, just more plain old memorized walking around knowledge of facts, drug doses, instrument names, anatomy, and on and on, than anyone with whom you graduated from high school. Every day you apply that knowledge to real life situations with real human beings making clinical judgements. That's quite a bit different from just writing down the facts you know. Every day that you are at work you must make important decisions, sometimes involving life and death, often at a moment's notice, and always with incomplete information. These are incredible intellectual attainments. Now let's add on that you can use your hands in a reliable and dexterous manner, demonstrating specific skills equivalent to those of most musicians and sportspeople. And here is the clincher. You could not do any of this without courage, the courage to be wrong and to keep going. No time to rest and consider in between. When the bleeding starts, you fix it. When the diagnosis is incorrect, you tell the family. And you go right back to work

promising yourself that you will do a better job next time. You cannot practice surgery without courage.

And whom are you serving with this incredible collection of positive attributes? Children, the most powerful engine for human progress. If you did not realize that before, I am sure Bob Block has convinced you. Whatever the question, the answer is children. The data is in. If we want better novels, economic progress, and better basketball players, we are more likely to achieve that goal by devoting resources to children than to anything else.

I am truly humbled by the honor you all have bestowed on me, by allowing me to represent you during the past year. As you will hear in this talk, I am certainly not gifted. Chance or providence had a lot to do with it, and there were people who made it possible, who inspired and motivated me. Those folks were of many sorts. Most were kind, many were loving, but some were strict, demanding, and insistent on discipline.

The first person I will name is my father, Barney Klein, who returned from service in the Pacific during WWII to transform his father's one person tailor shop into Penguin Professional Cleaners, and my mother who became the most successful travel agent on the east side of Cleveland, Ohio, who supported every one of my crazy endeavors from theater to ban the bomb marches.

My children whose influence on me will become clear in this talk, and my wife, Peggy. Doesn't she just take your breath away? Every day I got to work with her in the hospital. Almost every time I listened to her work stories, I learned so much about how to care for patients, how to speak with parents and nurses, how to be careful and accurate. All these are lessons I try to teach the residents, as these are the places so many doctors (including me) fall down. She is committed and compassionate and intelligent. Her nursing excellence made me a much better physician and surgeon.

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It did take me four colleges to get a bachelor's degree, but those last two years at the University of Chicago where I discovered the life of the mind were truly transformative. Lester Little was inspirational. He introduced me to the mysteries of Ibn Rushd and Peter Damian and to graduate school at Princeton to continue studies in medieval history.

At Princeton I had the good fortune to learn how to read old manuscripts from Gaines Post and the details of Tudor Stuart England from Larry Stone. But it was 1965, and the war in Vietnam was raging. In a crisis of relevance, I headed to medical school. I just wanted to be more like the people I was studying than to continue studying them.

This required a one year hiatus to take the pre-requisite courses, and a very special one man admission committee at Western Reserve by the name of Jack Caughey, who accepted me on the basis of an interview with no application whatsoever. At what we now call Case, I was inspired by many people. Larry Weed was one of the first to see the possibilities of an electronic health record even before there was such a thing as a personal computer, and he showed us how, using the problem oriented medical record, medical records can teach as well as provide better patient care [1].

Walter Pories was the new Chief of Surgery at the old Metropolitan General Hospital. One rotation on his service and there was no doubt but that I would choose surgery. As a student I never actually met Bob Izant, but I was one of those many medical students who crowded into the tiny auditorium at B&C to hear his Saturday morning rounds.

My last three months of medical school were spent in Serbia. After two weeks of lectures in Belgrade, carefully watched over by the image of Marshall Tito, I went off for six weeks, to the village of Petrovac na Mlavi to learn how to measure the level of health. I took part two of National Boards in Belgrade and later learned that I had matched to the University of Washington in Seattle.

Gene Strandness actually let me operate as an intern. D. Kay Clawson was Chair of Orthopedics and as severe a task master as there is. At the Children's Hospital I was awed by Lester Sauvage and Peter Mansfield, but probably most impressed by my Chief Resident, Bill Brennom. Still each of those rotations was only a month, and I was generally disappointed with the program – what an arrogant ass I could be. I transferred to the Harvard Surgical Service at Boston City Hospital where my arrogance was again demonstrated by my disappointment with those I was to learn from.

This time I dealt with the problem more maturely and signed up to spend two years at the Children's Hospital, one as a senior assistant resident and one in Dr. Folkman's lab. I was very proud to learn that several years later Dr. Folkman told the story of some of our work at an AAS meeting [2]. You have already heard about engineering inspiration in my introduction of Bob Langer. Ken Falterman was my resident associate in the lab, and what we really did was slit lamp examinations of rabbit eyes with TAF (tumor angiogenesis factor), tumor, or inhibitor implanted in the cornea. Every Monday, Wednesday, and Friday we worked on 60 rabbits with either Ken or I holding the rabbits, while the other measured vessel length through the slit lamp. We tried very hard for three days to get a picture that would earn the cover of Scientific American. We did not quite make it, but we did get a full page photo on the inside [3].

The clinical year was even more astounding. Tad Ballentine had been my Chief Resident at Boston City and was my Chief once more. He was a talented, generous, compassionate surgeon who died too young. Bob Filler, Arnold Colodny, and Sam Schuster were not only role models, but they let me operate! How could you not want to be there every other night and every other weekend?

When I returned to V Surg, we had been evicted from Boston City and were now headquartered at the New England Deaconess Hospital. I spent eight months on the service of Bill McDermott (Fig. 1) and Frank Wheelock (Fig. 2). Dr. McDermott let me do a lot of portal hypertension surgery, but Frank was the busy one. He had done the first Fem-Pop in Boston. Frank was a tall gaunt New Englander, a transatlantic sailor, a meticulous surgeon, and was feared wherever he went. He was also

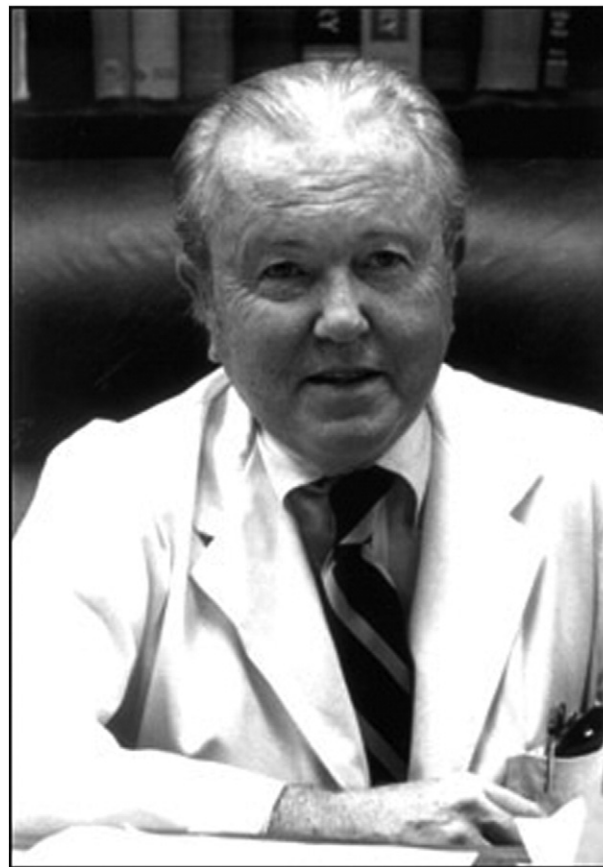


Fig. 1. Dr. William V. McDermott.

my foster father in surgery. I lived with him and Nancy in their home during my chief resident year.

When I was deciding to which of the 14 pediatric surgery training programs to apply (in the first year of the Brad Rodgers match), Dr. Colodny told me, "Jack Hertzler (Fig. 3) has done more Hirschsprung's disease than anyone else in the country, and now that Arvin Philippart (Fig. 4) is there, that's the place to go."

It was all true, and more. There was so much to learn from Pete Gibson, Fred Arcari, Pat Jewell, Hans Von Berg...and it was also the home of Cliff Benson who wrote the textbook. Arvin, as you all know, was the central figure.

In addition to operating, there were really important things going on at the Children's Hospital of Michigan, such as changing dressings in the burn unit with Peggy. We were to spend the next nearly 40 years as Children's Hospital people.

My first job after fellowship was in New Mexico, where I changed climate colors from gray and green to blue and brown. I also had the opportunity to know, love, and work with Ann Kosloske. She taught me many things which have stood me in great stead, including how to ligate a PDA.

But I still had academic aspirations. Arnie Coran called to offer me a job, a laboratory, and a chance for Peggy to be back with her family, I had to go. I arrived the same year as Bob Bartlett, who was to play such an important part in my career. A very important player was Bob Drongowski. Bob is a finisher. He can take a research project from beginning to end whether it is his or someone else's. He will be sure it happens. He is also a social activist and a very good fisherman.

When Jack Hertzler retired from operative surgery, Arvin called to see if I would be interested in returning. Arvin is a hard person to say no to, and he offered a lot....a lot of cases, a lab, a new ECMO program to get started. That part of my career is well known to many of you.

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