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Presidential Address 2003

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I am truly grateful to the American Association for Thoracic Surgery for the opportunity to serve as your President. Working with the talented and dedicated officers, council and committee members, journal editors, and staff of our administrative organization, PRRI, all of whom work tirelessly for this organization, has made this past year very special for me. I wish also to thank my family and friends from Toronto, St Louis, and elsewhere who made a special effort to attend today's presentation.

Two events immediately preceded my preparation of this address: a delightful fishing trip to a remote part of Canada with 3 of our sons and the loss, too early in life, of a very dear cousin, a woman of great strength and compassion. As a result, my perspective when preparing these remarks was infused with an appreciation of life, of our particular careers and opportunities, and of our obligations to our profession, our predecessors, our society, and our successors.

My father, an orthodox Rabbi, named me Joel after a minor prophet of the Old Testament. Joel delivered a message of hope in a time of uncertainty and discouragement. He correctly prophesied an end to the crisis and a return to better days. My message, like his, is a simple one. It is a privilege and a responsibility to be a cardiothoracic surgeon at this point in history. We have at our disposal unprecedented resources that empower us as never before to perform miracles for our patients. We are obligated to inspire and encourage our successors.

We have a proud heritage: Hippocrates, the father of medicine, is credited with separating the art of healing from magic and superstition. The Roman Celsus noted 3 ways to treat a patient: "diet, medicine, and surgery, but only surgery works."[1] The 14th century English surgeon, John of Ardenne, advised that the surgeon should "hear many things but speak little," noting that it is "better to use the ears than the tongue."[1] The Renaissance surgeon Ambroise Paré, known as the father of modern surgery, became a military surgeon in 1536 and for the next 40 years followed the French army. He was a model of humility, as reflected in his oft-repeated clinical progress note, "I dressed him and God healed him."[1]

The 19th century saw the introduction of inhalation anesthesia, the development of surgical antisepsis by Joseph Lister, heat sterilization of instruments, and the wearing of sterile rubber gloves proposed by William Halstead in 1891. These developments provided great stimulus to surgical development in general, but progress in thoracic surgery was much delayed.

In an address to the French Surgical Congress in 1895, the surgeon Reclus noted that "the structure of the lung and its air passages, the part it plays in sustaining the life of the blood, its relations with the heart and the presence of a pleural cavity, all forbid great expectations and limit the power of the surgeon."[1] Resection of part of the lung for primary malignant disease, he said, is not even worth discussing. Billroth had previously noted that any surgeon who attempted to operate on the heart deserved to lose the respect of his colleagues. As the surgical historian Raymond

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Hurt has written, "The prophecies of surgeons are as unreliable as those of other prophets."[1]

At the American Medical Association meeting in June 1913, Dr Willie Meyer presented the first successful esophageal resection for cancer, performed by his associate Franz Torek. The announcement generated no interest and no discussion. Thoracic surgery elicited great indifference, perhaps because there was no hope of conquering the barriers to safe thoracic surgical procedures. Undaunted, Dr Meyer envisioned a national association to stimulate interest, development, and "the free exchange of views and experiences of such members of our profession who take active interest in the evolution of this chapter of medical science."[1] In February 1917, Dr Meyer organized the first meeting of the New York Society for Thoracic Surgery. It was a society *for* thoracic surgery rather than *of* thoracic surgeons and included specialties bordering on thoracic surgery, such as internal medicine, anesthesia, physiology, radiology, and pathology. A primary purpose of creating the New York society was the formation of a national organization, the American Association for Thoracic Surgery.

Four score and 7 years ago this spring, on June 17, 1917, the American Association for Thoracic Surgery was founded. Dr Samuel Meltzer, a noted internist and physiologist, was elected its first president. Dr Meltzer was born in Russia, and at an early age was considered a brilliant Talmudic scholar. Not wanting to pursue a rabbinic career, he ran away from home and struggled in poverty to obtain his medical education. He came to New York in 1883 as a poor immigrant. His wife and children remained with her family until Dr Meltzer could afford to send for them. He went on to enjoy a distinguished career as a physiologist at the Rockefeller Institute and practiced as an internist in New York City.

Our specialty has made amazing advances over the last hundred years. Von Mikulicz at Breslau University developed the negative pressure chamber, popularized by his student Sauerbrook. Our first president, Samuel Meltzer, and his son-in-law, John Auer, developed the intratracheal catheter to maintain lung ventilation during thoracotomy. This technique was first successfully used by Howard Lilienthal in 1910 for a lobectomy. In those days, lobectomy, done primarily for bronchiectasis, consisted of mass ligation of the hilar structures. The lobe was left in place to slough out through a partially closed chest wound. The mortality rate was 70%. In 1918, Harold Brun did the first modern closed lobectomy with ligation of the vessels, suturing of the hilar stump, and closure of the chest. He had only 1 death in his first 6 cases.

Tuberculosis provided much of the stimulus for the development of modern chest surgery. The decrease in tuberculosis surgery coincided with the increase in lung cancer. In 1933, Evarts Graham performed the first successful 1-stage pneumonectomy for lung cancer. His patient, James Gilmore, a physician from Pittsburgh, survived 30 years, outliving Graham, who himself died of lung cancer in 1957.

The development of modern anesthesia, measurement of arterial blood gases, and progress in imaging and technology transformed thoracic surgery. Taking lungs out, as well as putting new ones in, has become remarkably routine.

Progress in general thoracic surgery has been steady and ongoing, forming a continuum. Progress in cardiac surgery has been punctuated by dramatic milestones often associated with a particular surgeon and operation: 1938, Robert Gross and patent ductus ligation; 1944, Crawford's first resection of a coarctation and the first Blalock-Taussig shunt; 1947, Sir Thomas Holmes Sellors' closed pulmonary valvotomy; Lillehei's incredible success with parent-to-child cross-circulation procedures; 1953, the fruition of John Gibbon's 22-year successful quest to develop a heart-lung machine; Favalaro's development of coronary artery bypass grafting; heart and heart-lung transplantation, both developed at Stanford; and a host of remarkable and still-evolving procedures for treatment of congenital cardiac abnormalities.

Today we live in a truly magical era in terms of cardiothoracic surgery. Technology, science, and our knowledge base are expanding rapidly. Numerous resources have been placed at our command to assist us: modern operating rooms, specialized operating room nurses, incredibly advanced anesthesia, wondrous technology, and postoperative units with monitoring equipment, ventilators, and assist devices.

Technologic advancement can be a two-edged sword for the surgeon, increasing our performance and opportunities on one hand while eliminating the need for our services on the other. We cannot, however, selectively glorify advances, such as transesophageal echocardiography or minimally invasive surgery, and decry drug-eluting stents or percutaneous closure of atrial septal defects. Technology offers great potential but also great challenge. One must avoid unwarranted exploitation of the newest gadgets and unproved devices for promotional purposes at the expense of sacrificing the fundamental principles of our calling. To paraphrase Lillian Hellman, we cannot and we must not trim our conscience to suit this year's fashions.

My father, who had normal coronary arteries at age 85 years, had crescendo angina with a thread-like lumen in his proximal left anterior descending artery at age 90 years. An angioplasty, a stent, and 2 days in the hospital eliminated the problem without recurrence 5 years later. How can I not appreciate this technology?

We are entering a new era, building on advances in molecular and cellular biology, elucidation of the human genome, science fiction–like developments in imaging and technology, and overall resources that were unimaginable just 20 years ago. One does not have to be prophetic; one need only look backward at progress to see forward into the

future. Vascular disease will be stabilized, reversed, and ultimately prevented. Cardiac muscle viability will be restored by techniques that promote myocytic regrowth and vascular regeneration. Small-diameter synthetic vascular conduits will be developed, as will improved, rapid, and reliable anastomotic devices. Arrhythmia surgery will see a rebirth as innovative, off-pump, minimally invasive procedures are perfected. Mechanical assist devices, both temporary and permanent, will become safe, effective, and reliable. Mechanical implantable hearts will inevitably follow.

Lung cancer, the most frequent cause of cancer death in men and women in North America, is currently detected too late for cure in most patients. This situation will change with improved screening and imaging techniques, making lung cancer more amenable to surgical resection, just as has been done with the early detection of esophageal cancer by means of endoscopic screening. In one morning's follow-up clinic today, I see more long-term survivors after resection of esophageal cancer than I saw in a whole year of clinics at the beginning of my career. For those patients whose lung cancer is not contained at the time of discovery, surgical intervention will assume a greater role as more effective and more accurately targeted adjuvant therapies are developed.

The major obstacle to long-term success after lung and heart transplantation is chronic rejection. I have no doubt that induction of specific tolerance will be accomplished, reducing or eliminating this barrier, without the need for ongoing powerful immunosuppressants, with their attendant complications.

Tissue engineering with autologous layering of cells on absorbable scaffolds will lead to a new era in bioprostheses. Perhaps this approach will be the route for the development of artificial implantable lungs to overcome the problems of organ shortage and organ rejection.

My crystal ball is too opaque to speculate whether xenografting will indeed be possible or practical before artificial organ replacements are perfected. Someone attributed to Norman Shumway the canard that "xenografting is the future of organ transplantation and always will be."

In 1988, I returned to the United States after 16 years as a thoracic surgeon in Toronto and felt like Rip van Winkle. On joining the division of cardiothoracic surgery at Washington University in St Louis, I became reacquainted with the cardiac surgery arm of our specialty. In Canada cardiac and general thoracic surgery are often practiced as distinct specialties. Working once again as a partner to cardiac surgeons, sharing the same operating rooms and intensive care unit, I was truly overwhelmed at the advances that had occurred since I was last acquainted with the day-to-day activities of cardiac surgical practice.

When I finished my chief residency at the Massachusetts General Hospital, the use of the then-experimental intraaortic balloon pump required several engineers and many large banks of electronic equipment, virtually filling the room. When I arrived at Washington University, it took me a while to realize that those little portable carts cluttering up the intensive care units and operating room corridors were the descendants of those early devices and could be routinely operated by a skilled nurse. The oxygenators, the perfusion equipment, the talented perfusionists, the left ventricular assist devices, the right ventricular assist devices, the biventricular assist devices, and the extracorporeal membrane oxygenation circuits were unbelievable!

I once heard a miracle defined as an event that leaves one with an abiding sense of astonishment. Each time I see a patient of mine who was ventilator dependent and dying from emphysema but now, 10 years after his lung transplantation, still goes on his annual hiking trip to Switzerland, I feel like I have seen a miracle.

Clem Hiebert, whom I greatly admire for his wisdom and humanity, noted in his article, "Seldom come by. The worthwhileness of a career in surgery," that "the exaltation of pain relieved, life prolonged, and body restored is a celebration that goes on and on and is multiplied both by the quality of the new life and its duration. Decades later a patient may recall the very date of the operation especially if the surgeon has added caring to the curing."[2] The ancient rabbinic sages from my heritage said, "He who saves one life, it is as if he has saved the entire world." It applies to every one of you here.

I was once greatly encouraged by the words of a young porter in an elevator who was taking a cart of luggage to a guest's room. Seeing my name badge, he asked what type of doctor I was. I told him I was a chest surgeon and explained what that meant. He turned and said to me, "Thank you for being a doctor."

As a temporary steward of this distinguished academic association, I would like to share some of my thoughts on the particular privileges and responsibilities that accrue to those who have chosen an academic career in surgery.

We are in a rarified, stimulating environment surrounded by outstanding individuals from many disciplines. We have access to their knowledge and their skills, which we can call on in the service of our patients. We are kept up to date, with a minimum effort on our part, by the almost osmotic effect of being immersed in a rich and fertile intellectual broth.

We are teachers for our residents and fellows, for medical students, for other physicians, for nurses, for allied health professionals, and for many others at our institutions. We are professors in a global university without walls. Equally important, we ourselves are perennial students, learning from our colleagues and our pupils, the talented residents and fellows who enable us to be teachers and mentors. They, in turn, enhance the care of our patients and relieve us and our families from many of the time-consuming burdens that would otherwise fall on our shoulders.

We have early access to the latest technology and innovations, even as they are being developed. We work in an environment in which new techniques, approaches, and procedures can be developed, refined, and promulgated. We have the opportunity for conducting both laboratory and clinical research, which fosters intellectual satisfaction for ourselves and hopefully confers benefit on our patients and our specialty. We benefit from an accelerated professional learning curve by virtue of the unusual and complex cases referred to our institutions. We can provide ready entrée to medical experts for our family and our friends.

As members of the academic community, we enjoy the fellowship of an elite group of colleagues from other academic centers. We have the opportunity to travel widely and to participate in conferences, lectures, and seminars throughout the world. Our common interests transcend political, ideological, cultural, geographic, and economic differences. I consider it a priceless reward to participate in such international fellowship.

Those who are privileged to occupy leadership positions in academic centers have an obligation to maintain a supportive environment for their faculty in exchange for the extra demands and sacrifices required on their part: sacrifices in terms of income, administrative responsibilities, and the long hours associated with the nonclinical aspects of their practices. These include writing manuscripts and reviewing and editing the manuscripts of others; preparing grants; reviewing grants for various organizations; supervising research; teaching residents, nurses, and students; and contending with an ever-increasing mass of seemingly irrelevant paperwork and compliance issues. We must ensure that cardiothoracic surgeons in our institutions are accorded the consideration, the respect, and the gratitude they so richly deserve. We must not allow them to be treated either like cash cows or schoolboys in need of petty discipline. We must see to it that our faculty is not overtaxed, overburdened, or overwhelmed by nonproductive activities having nothing to do with patient care, teaching, research, or self-fulfillment. We must try to maintain the highest standards of ethical practice and resist the economic and political pressures to which we are constantly exposed.

We also have an obligation to support, encourage, and partner with the cardiothoracic surgeons in our communities not at academic centers, who provide an essential component in the delivery of quality care to our overall population. We trained these surgeons, and when they were our trainees, we took pride in their abilities and their accomplishments. We must continue to help them in any way we can with their growth, their education, and their development as cardiothoracic surgeons. We have a lot to learn from them in terms of efficiency, organization, and the practical aspects of delivering care as economically as possible. We should not seek to disenfranchise our community colleagues merely because we might be competitors for patients. They, in turn, have an obligation not to weaken the institutions that trained them and that will, for the foreseeable future, play an essential role in the education and training of future surgeons. We must all work together to preserve and protect our common heritage and our future.

In the fall of 2001, several months after my mother's 90th birthday, she fell and broke her hip, requiring the third hip replacement on that side. She got through that relatively unscathed, despite her known aortic stenosis with a peak gradient of 120 mm Hg. But 3 weeks later, she went into florid congestive heart failure. It was apparent to all that the time had come to deal with the matter. Enter Donald Williams, bachelor of science from Cornell University, master of science in chemical engineering from Cornell, doctor of medicine from Jefferson Medical School, general surgical residency at Dartmouth, thoracic fellowship from the Mayo Clinic, and Chairman of Thoracic and Cardiovascular Surgery at Mount Sinai Medical Center in Miami. It took him only an hour and a half to replace her aortic valve, do a single vein graft to her right coronary artery, and restore her to better health than she has enjoyed in 10 years. It turns out that her activity slowdown and episodes of weakness were not signs of age but a reflection of her critical stenosis. I appreciate Dr Williams' talent and extend the gratitude of my family and myself not only to him but to those who trained him so well.

Each of us has our own heroes, teachers, mentors, associates, or partners who have inspired us, motivated us, encouraged us, and supported us. As a resident, mine included Ronald Belsy, Gordon Scannell, Gerry Austin, Claude Welch, David Skinner, Earl Wilkins and, above all, Dr Hermes Grillo, who, more than anyone else, is responsible for my wanting to be a thoracic surgeon. He was a great teacher and innovator, a master surgeon, and a devoted physician with uncompromising standards and unimpeachable intellectual honesty.

On completing my residency, I was fortunate to obtain a faculty position at the University of Toronto. Like so many others, I fell under the spell of Dr F. Griffith Pearson, who encouraged my research, fostered my clinical development, promoted my career, and tolerated my idiosyncrasies with quiet resignation. I will always be grateful to him. I am also indebted to Dr James Cox, whose faith in me never wavered and whose vision created the much acclaimed Cardiothoracic Division at Washington University in St Louis.

Indeed, all of my partners in Toronto and in St Louis have been extremely generous to me. I have been privileged, throughout my career, to have enjoyed a wonderful relationship with my associates.

I acknowledge my gratitude to another very special individual, the late Robert Ginsberg, for 16 years my colleague, partner, and friend, who brought such luster, energy, and talent to our group in Toronto. He was rough on the

outside, soft on the inside, and more utterly committed to surgical education and training than anyone I have ever known. I learned years later that Bob Ginsberg encouraged Griff Pearson to name me, rather than himself, as Griff's successor to head the Division of Thoracic Surgery in Toronto.

We all indulge in ancestor worship from time to time, but it is probably rare for a thoracic surgeon to be as indebted to a junior colleague as I am to Alec Patterson. Seeing him develop into an international figure is in itself a great reward. But in fact, he has been a driving force in the development of my own career for almost 25 years. He has supported and encouraged me; he has protected me, often from myself; and he has been a wonderful partner, friend, confidant, and advisor. I am forever in his debt.

All of us in this room owe a great deal to so many people, but none so much as to our families: our parents, for encouraging us, stimulating us, educating us, and showering us with love and support, and our immediate families for the sacrifices they make, dealing with our stresses, our perennial tardiness, our absence from important family events, our commitment to our career, and our insensitivity to their concerns, often perhaps perceived as unimportant compared with the life-and-death struggles we deal with on a regular basis.

We can try to repay them in part by bringing honor to our endeavors, by making them proud of our service to others, by achieving satisfaction in our career, by conveying gratitude for the opportunities they have allowed us, and by letting them and everyone else know how much we and our patients owe to their support. Mostly, however, we need to express to them our love, our understanding, and our regret for so often being unavailable, distant, or seemingly detached by our preoccupation with our professional activities. We are, after all, professionals in the best sense of the word, namely individuals who put the interests of others ahead of our own, and that sometimes means ahead of our families' interests as well. Our families must know that they are essential members of our team.

Nothing I could ever say or do would adequately express the gratitude, love, and appreciation I have for my wife, Janet. She was a fabulous teacher, both by profession and by natural talent, who changed her venue from the classroom to the home when the first of our 4 sons was born. Janet has been a fabulous daughter-in-law to my parents, a role that requires patience, character, and understanding. My wife has been my unwavering, supportive silent partner. Truly, she has been the wind beneath my wings, a true *ashet chaiyil*, the Hebrew description of the ideal wife, a woman of valor. And each of our 4 sons is unique, talented, and honorable and has brought great joy into our lives.

For the cardiothoracic surgeon, taking care of patients in today's environment is increasingly associated with tremendous hassle, frustration, and irritation over matters having nothing to do with actual patient care. The morass of paperwork, regulations, compliance issues, length-of-stay justification, and so many others affect us all. It would be a tragedy if we begin to see each new patient as a burden rather than as a privilege. Just as our pupils make it possible for us to be teachers, so do our patients allow us to be surgeons. We must never forget the observation of Frances Weld Peabody that the secret of patient care is truly in caring for the patient.[1]

As we enter the golden era of medicine, we must not let the socioeconomic and political aspects of medical practice overshadow our vision of the future and discourage us and our potential successors, the bright talented youth whom we most want to recruit. When the children of Israel, having been freed from their bondage in Egypt, were about to enter the promised land, Moses sent a delegation of leaders to spy out the land and to report back on the fertility of the fields, the nature of the population, and the prospects for settlement there. All of the spies except 2, Joshua and Caleb, were fearful and reported that the dwellers of the land were fierce, that the chances of success were poor, that the land was inhabited by giants. And the spies said to Moses, "And we were in our own sight as grasshoppers, and so we must have appeared to them." The rabbinic commentary on this passage notes that those who are in their own eyes as grasshoppers, namely tiny, weak, defenseless, and inadequate, assume, and rightly so, that others must have a similar estimate of them. Eleanor Roosevelt expressed it more succinctly. "No one," she said, "can make you feel inferior without your consent."[1]

So the Israelites, because of their lack of courage and faith in their future, accepted the majority report of the spies and ignored the more confident and reassuring prospects for success given by Joshua and Caleb. Because of their low self-esteem, they were consigned to wander in the desert for 40 more years until all the men over the age of 20, except for Joshua and Caleb, had died off and were replaced with a new generation, one with courage and without a slave mentality, who then proceeded to settle in the Promised Land.

Members of this Association, friends, and guests, I, for one, do not relish the prospect of wandering in the desert for 40 years. I am eager to move forward and face today's realities, challenges, and opportunities.

We must respect our traditions and the great accomplishments of our predecessors. We must maintain the highest standards of ethical and moral behavior and avoid the temptation of putting self-interest ahead of that of our patients and our profession.

One of Sir Winston Churchill's forbearers was allegedly once chided for his lack of distinguished lineage. He re-

sponded, "I may not be a descendant but I will be an ancestor."[1]

We here today are privileged to be descendants: descendants and beneficiaries of a long, proud, and distinguished tradition. How much more so then do we have an obligation to be ancestors to attract, motivate, and mentor the next generation of cardiothoracic surgeons. Thank you for bestowing on me the greatest honor of my professional life, and . . . thank you for being doctors.

References

1. Hurt R. The history of cardiothoracic surgery from early times. Lancashire, UK: Parthenon Publishing Group; 1996.
2. Hiebert CA. Seldom come by. The worthwhileness of a career in surgery. *Arch Surg*. 1989;124:530-4.