



Presidential Address

The uniqueness of American surgical education *and its preservation*

by Alexander J. Walt, MD, FACS, Detroit, MI

Editor's note: *This Presidential Address was delivered during the 78th Convocation of the College on October 13, 1994, in Chicago, IL.*

Ladies and gentlemen, Fellows of the College, and above all, Initiates of 1994. The first honor granted to all new Presidents is the privilege of welcoming our Initiates on behalf of the other 54,000 members of the College. At this moment, you and I have much in common—a shared excitement, pride in our new roles, and a sense of great occasion.

I stand here as the first foreign medical graduate (FMG) to be President of this College. Thirty-one years after my own induction, I feel re-challenged and stripped of my protective social skin, leaving me publicly exposed to transude private thoughts about Americans, North America, our surgical educational system, and the interrelationships among all of these elements. I had in fact never met an American until I encountered a soldier of the Fifth Army on a cold, dark night in the mountains of Italy north of Florence on the so-called Gothic Line of 1944. This sergeant stopped to offer me a ride in his jeep, and as we drove down a muddy track, he patiently listened to my complaints about the food, the mail, the snow, and the generals. When I had finished my litany, he turned and growled the words I have never forgotten, "Say, son, you've got to learn to compromise with the inevitable." Fifty years later, I pass this sage advice on to you with sympathy, recognizing that the inevitability with which you have to compromise is this Presidential Address from which you cannot escape.

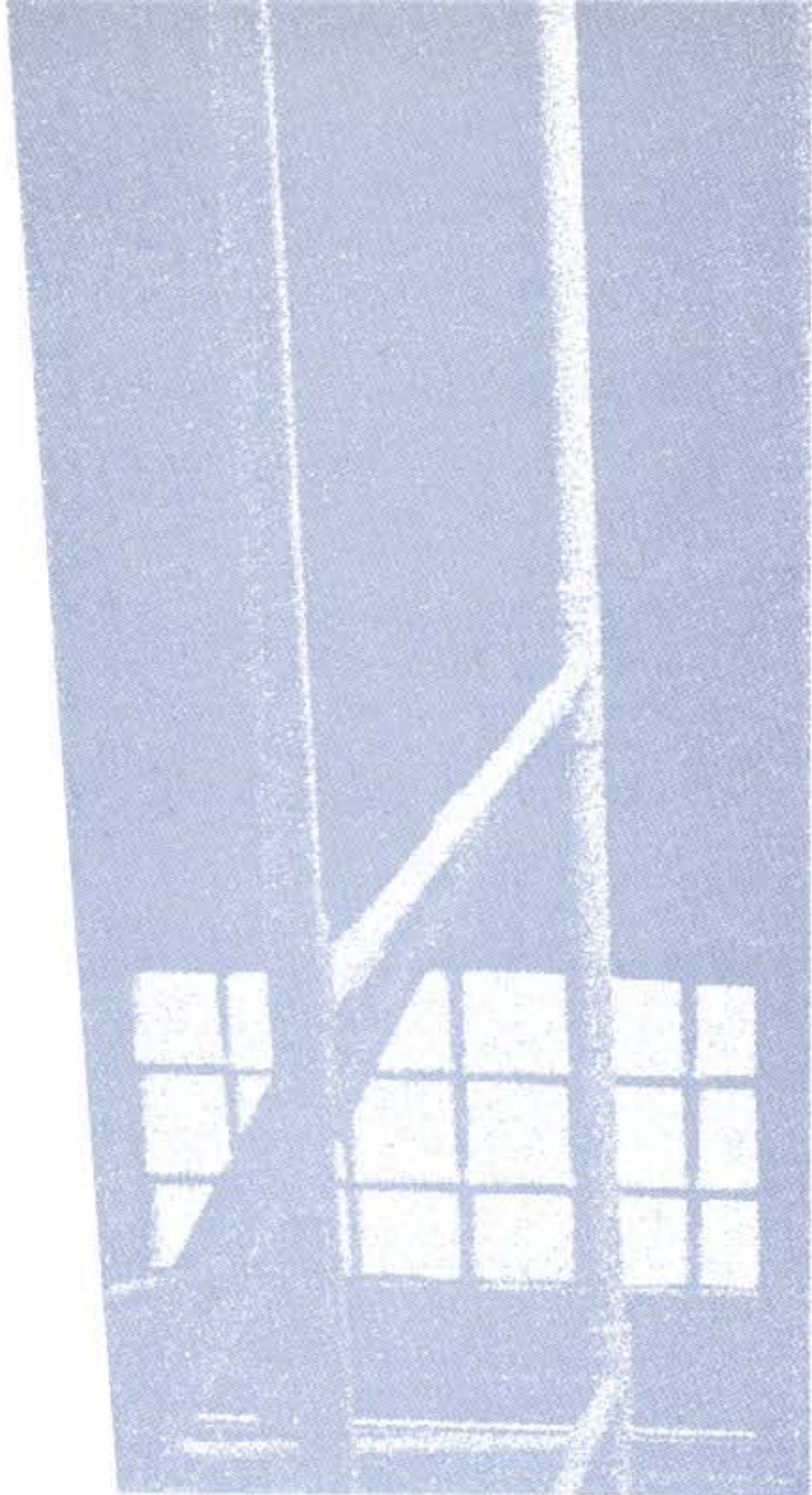
The election of an FMG testifies to the great generosity of our American society, to its warmth, tolerance, acceptance of strangers, willingness to experiment, and its disdain for artificial barriers. I stand here very proud, very grateful to the Fellows of this great College, and in very deep debt to the country that has made this honor possible. The debt can only be acknowledged—never fully repaid.

I cannot resist an analogy between the entry into Fellowship of this College and into citizenship of this nation. To the many Initiates here tonight who are immigrants like myself, I do not

have to explain the extraordinary sensation experienced on taking this country's oath of allegiance, a similar occasion of pride and dedication. The oath of allegiance picturesquely enjoins us to "renounce and abjure all allegiance and fidelity to any foreign prince, potentate, state, or sovereignty" and then instantaneously confers a warm sense of belonging to a new society with full rights and privileges. The elated new citizen is plunged immediately into American society with its incomparable energy, vigor, excitement, optimism, tolerance, hospitality, perennial renewal, and innate conviction that everything is possible. A native-born citizen may be puzzled by my frame of reference, regarding this transformation as natural and self-evident, but in reality the spirit and substance of instant complete citizenship is unique to the United States. Newcomers here are integrated directly into the interstices of the society and not layered on top or beneath it. We recognize that our newly acquired rights have not come by happenstance but have been earned, refined, and periodically reaffirmed by the likes of Washington, Jefferson, Lincoln, and countless anonymous others from Gettysburg to Guadalcanal. I do not believe I stretch the analogy of the oaths of new citizenship and new Fellowship too far. As Fellows, you are suddenly partners in the illustrious surgical heritage passed on to us by Martin, Mayo, Crile, Cushing, and Graham and past generations with great purpose, high principle, and keen foresight. Your 54,000 new colleagues in the College look forward to your energy, your ideas, and your intense involvement in the shaping of surgery now and over the early decades of the next millennium.

The title of this talk—The Uniqueness of American Surgical Education and Its Preservation—might appear immodest if selected by a native-born son or daughter, but the fervor, fierce pride, and beliefs of an immigrant, which often rival those of the converted or reformed, make me blithely unapologetic.

Paraphrasing a sometimes discredited imperialist, Rudyard Kipling, who wrote, "What should they know of England, who only England know?" to "What should they know of American surgery who only American surgery know?" I propose to speak unabashedly about the glory that is American surgery and the educational structure that



has been responsible for its preeminence in the 20th century. As I do so, however, I must offer the important caveat that glory is not spontaneously self-renewing, and we do well not to forget the same Kipling's admonition that "All our pomp of yesterday may be one with Nineveh and Tyre." And so as we prepare for the 21st century, it is vital that we review our current system dispassionately and, where appropriate, offer constructive suggestions, for complacency guarantees the deterioration of any enterprise. As I start, I must offer the time-honored disclaimer that the views expressed are my own and not necessarily those of the American College of Surgeons, and also my hope that no impeachment procedures will be set into motion.

Achievements of U.S. surgical education

The achievements of American surgery have been unparalleled over the course of this century

and now serve in many respects as the model for the Western world.

My own surgical training occurred during the post-World War II years when American graduate medical education (GME) had its magnificent flowering. For those surgeons who wanted to succeed in academic life, a BTA (been to America) degree was essential. What was so special? The answer will not impress you because, as products of the American system, you take for granted its emphasis on graduated personal responsibility, close faculty supervision, exposure to investigative work, impatience with dogma, constant straining after new ideas, and acceptance of brutal work schedules with almost religious dedication. These were—and are—not universal features of international surgical training.

With World War II over, a tremendous release of energy was directed toward the health sciences. Basic science investigators returned to their laboratories, and there was soon an unprecedented flow of new scientific breakthroughs and technical advances. These successes were typified in the early 1950s by the advent of cardiopulmonary bypass and open heart surgery, carotid and other vascular endarterectomies and substitutions, the development of highly sophisticated intensive care units, and the wonders of successful organ transplantation. It is ironic that these universally acclaimed technical triumphs and acknowledged marvels of American enterprise, designed to improve the health of patients, are now significant contributors to the cost of health care and the clamor for the attenuation of specialty training. Some cynics—or perhaps realists—may argue that we have succeeded too well. I would argue that it is not possible to train surgeons *too* well.

When comparing the performance and objectives of different educational systems, it is vital to keep in the foreground the cultural characteristics of the United States that have helped to mold the uniqueness of our current structure. The roots are deep in the skeptical American character and were typified by Thomas Jefferson in a letter he wrote in 1807 to the biologist Caspar Wistar in which he remarked of medical students in general, "His mind must be strong indeed, if, rising above juvenile credulity, it can maintain a wise infidelity against the authority

of his instructors, and the bewitching delusions of their theories." Distinctive American characteristics include self-sufficiency, a fierce pride in performance, a competitiveness that encourages continuing competition, the exercise and acceptance of monitored independence, suspicion of hierarchies, distrust of substantial bureaucratic interventions, enthusiasm, and a sense of mission. While some pessimism creeps around the edges of GME today, American surgery continues to be distinguished by its energy, open-mindedness, flexibility, initiative, encouragement of independent thinking, granting of graded responsibility, careful guidance by faculty, willingness to challenge old ideas, close scrutiny of new ideas with a bias toward acceptance rather than rejection (in contrast to many other countries), a practical hands-on approach, stressing of personal responsibility, and the recognition that a resident aged 25 to 30 years is a junior partner rather than an underling or inferior. Beyond all this, an often unspoken collegial covenant emerges, which assumes that certain professional and sometimes personal linkages between the faculty and its progeny will continue to exist over the decades. GME is a national resource that, since World War II, has won this country countless friends and admirers abroad and has ensured that our own citizens will have access to the services of extremely competent, well-honed physicians and surgeons.

Our system remains peculiarly American, free of the undemocratic *geheimrat* system that has permeated Europe or the unstructured *laissez faire* preceptorial system of the United Kingdom. Even more important, GME in this country has escaped the stultifying and potentially corrupting political influence of many central governments elsewhere. The intrusion of politics into GME here would be a recipe for disaster. Our success has in no small measure been due to our freedom to innovate, the unflagging commitment of physicians both in the universities and the larger community, and the sense among trainees that the process of education and examination is basically thoughtful, professional, and fair. Furthermore, after completion of a rigorous residency program, our graduates retain an unparalleled sensitivity to the need for continuing postgraduate education. This expectation, imprinted during the training years, is



later reinforced by a variety of quality assurance standards, peer pressure, competition, the requirement of recertification, and a sense of personal worth.

Is our GME an extravagant enterprise? Compared with GME in other countries, American surgical GME is given in a relatively short period of time. The design of our current programs that makes this possible also makes American GME relatively economical, a fact not sufficiently recognized by the federal government and others. For example, general surgeons are produced in five years, neurosurgeons in six or seven, and cardiothoracic surgeons in seven or eight, in contrast to other Western countries that have training periods extending from 10 to 15 years before the individual is deemed worthy of independent practice. Parenthetically, it is of interest that many of these countries are currently in the process of shortening and concentrating their periods of training so that they will more closely resemble ours. Most unappreciated of all is the fact that in addition to the reduced cost of the shorter period of training in this country, our residents contribute a huge and sometimes hazardous amount of direct frontline medical care in the course of their daily work. The productive integration of GME into the fabric of patient care, especially in the urban centers, is a monument to American practicality.

Background and questions

Success of this kind does not come accidentally. The seeds of this educational triumph were sown between 1890 and 1920, primarily by William Stewart Halsted and his disciples, and took 30 years to flower fully. My generation was the beneficiary of this great work, and we should seek to make partial repayment by pleading for thoughtful examination of the status and quality of our current and future educational system. The seeds for the education of surgeons of the 21st century are being sown today. Some hard questions we need to ask must include: (1) Is U.S. GME as preeminent as it was, or are we, like General Motors and IBM of the 1980s, complacent and on a plateau or even a slight decline? To this question I answer a qualified yes. (2) Have we, like the Japanese automakers of the 1970s and 1980s at least, examined our materials and

changed our methods of production to ensure a product fitted to the public's wants and needs for the future? Not really. (3) If we are still molding good surgeons—and I believe we are—are we doing it as well as we can? I submit we can do better. (4) Are there American Luddites who threaten our ability to maintain the excellence of our programs through their tentative flirtation with unscientific workforce mandates, unreasonable financial constraints, and antiintellectual attitudes? Obviously there are. (5) Have we devoted sufficient attention to issues of education in contrast to issues of training and service, remembering that education and training are not synonymous? Certainly not. (6) Have we analyzed the relevance of what we teach, and are there "black holes" in our curricula that hide neglected new and vital issues? There are.

Analysis of our current status

The admission of deficiencies and the willingness to discuss them openly is a sign of strength and confidence, not of weakness and failure. We need to reexamine the fundamental bases of GME in this country. Ineluctably, times and mores change, and we must know what to preserve, what to adjust, and what to guard against. In any survey, we need to question whether a sense of personal responsibility among physicians has been attenuated as practice has become more corporate in philosophy and in organization. The corporate diffusion of responsibility is a national phenomenon, but is much less likely to take hold among surgeons, if only because our egos, reputations, and results are so constantly on open display. If, however, patients become ciphers in large impersonal business-dominated groups and physicians become disposable employees, the traditional personal relationship between American patient and physician will be substantially eroded and, with this erosion, the structure and spirit of our training programs would suffer greatly. There are more tangible problems that have a relentless impact on our GME structure. The high level of supervision and interaction between resident and attending has become increasingly difficult to maintain, especially now that the faculty are increasingly forced to occupy themselves with burgeoning nonclinical activities such as hospital committees on utilization,

costs, quality assessment, various other management concerns, and a blizzard of paperwork. In the universities, the pressures of expanded clinical work to meet faculty practice targets, which may constitute a lifesaving 40 to 50 percent of the medical school general fund, devours the time available to teach residents and students and to pursue investigative interests. In addition and unhappily, as funding for laboratories and investigators has diminished, the exposure of residents to research has suffered. The critical thinking and discipline acquired by this exposure to research has been a potent factor in the molding of the American resident and an essential ingredient in the durable intellectual alloy we have produced. To compound these problems, innovation has been blunted in a world of increasingly stringent informed consent and often capricious medicolegal threats. Finally, the traditional unquestioning monastic dedication of residents to long hours, days, and weeks has been eroded by the siren call of new lifestyles and (correctly so) by the overdue recognition that trainees have an obligation to their families as well as to their patients. In short, times and expectations have changed—as they always do. The question to be asked is whether we the teachers have changed sufficiently with the times and in the right directions.

I propose to examine our current situation in four broad segments: (1) general philosophical observations, (2) the changing scene of surgical GME, (3) deficiencies in current training that I think can be repaired, and (4) possible remedies.

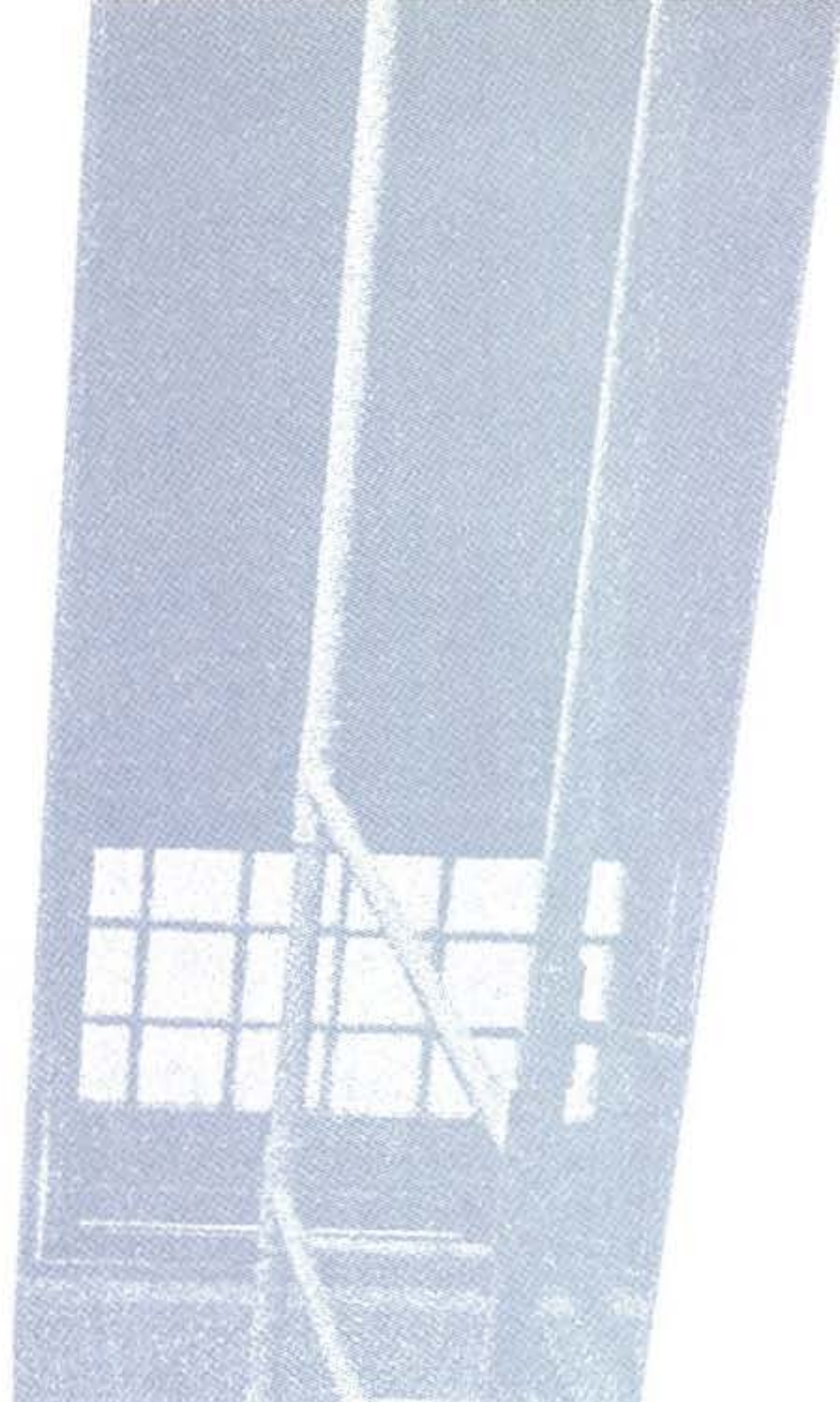
General philosophical observations

My central thesis is that education is not an incidental byproduct of service and that education is one of the great pillars of this republic. I start with the premise that medicine is a moral endeavor and, within it, surgery, by virtue of its intrinsic violence, has magnified visibility. We cannot escape the uniqueness of our obligations, which has to be matched by the cultivation of integrity, altruism, equanimity, patience, and unflagging attention to our patients. Our surgical educational process must therefore promote the training of heads as well as hands.

Education must have the position of primacy in any GME program, a fact not recognized by all

administrators and, less forgivably, neglected by some faculty who should know better. New things are being asked of us. Surgical training no longer occurs in an eleemosynary diverticulum isolated from the civic and political mainstreams. As long as the public continues to subsidize our education, our teaching services, and our laboratories (which include the operating rooms, the critical care units, and the wards), we are very much a part of the federal fiscal fabric with service as the woof and education as the warp. Nevertheless, although education and service are inextricably meshed, service cannot be allowed to swamp education.

At the risk of repetition, I need to reiterate that the critical and wonderful features that characterize U.S. surgical training include: the resident's personal involvement in the patient's care; an absolute insistence on graduated responsibility in parallel with increasing experience; the encouragement of intellectual curiosity, the



liberty to challenge established ideas, perhaps a residuum of frontier iconoclasm; a suspicion of entrenched hierarchies as befits a vigorous democracy in which the professor—or the president—is not always seen as being right; a nonpolitical system of accreditation of those hospitals that aspire to have training programs; the formal accreditation of training programs through a peer review process uncontaminated by political considerations; the fair evaluation of individuals by dedicated program directors and the various surgical boards recognized by the American Board of Medical Specialties; and the uniquely American purifying and constructive morbidity and mortality conference where public confession brings forgiveness if not absolution, and then reinstatement if not total resurrection. We take all these virtues for granted like we accept fresh air, clean water, and freedom of expression until there is a threat of losing them. These precious features of our system must be preserved, and it is our duty to defend them.

The changing scene of surgical GME

To understand how we got to where we are, we need to take a brief look at surgical history. Scientific surgery was born with John Hunter's contributions in the late 1700s. Even then, for the next half century a surgeon's main requirements were a stout heart, a strong stomach, and a knowledge of superficial anatomy. It was not until the introduction of general anesthesia in 1846 and the wide acceptance of Joseph Lister's views in the 1880s, 15 or so years after his classic papers, that the new surgeon versed in physiology, microbiology, and pathology began to evolve. Germany and Austria of the Theodor Billroth-Ernst von Bergmann era took the lead, and young talented Americans went to Europe to observe. Among them was Halsted.

By 1889, Halsted, despite drug addiction and a newly introverted personality, was ready to launch what was, in my view, the greatest of his contributions: the development of the surgical residency program. This system influenced our lives and the care of patients all over the world during the 20th century. Halsted wrote only one paper on surgical education, which was given as the Yale commencement address in 1904. He stated then, "We stand now at the threshold of

the 20th century in a vastly changed world." He continued, "The problems of education of our surgeons is still unsolved. Our present methods do not by any means suffice for their training. . . . The intern suffers not only from inexperience but also from overexperience. He has in his short term of service, responsibilities which are too great for him. [To intern, I would add junior surgical resident.] A trainee should have opportunities for special development." Halsted's statements are as fresh and challenging today as they were 90 years ago. Parenthetically, we ought to recognize that Halsted would have been adrift in today's world with its highly structured chairmanship. Administration and concern with human relationships were not talents that he cultivated. However, whereas his times permitted Halsted his foibles, our times are not as tolerant to his successors. Our chairmen and program directors very often do not have sufficient structural support to enable them to encompass the educational goals demanded of them in a complex fiscal, contractual, report-obsessed, and overcommitted world. Academic leaders need time and resources to lead academically.

Now, 90 years later, it is time to paraphrase Halsted's statement with "We stand at the threshold of the 21st century in a vastly changed world." How changed is this world? Today, the intern does the appendectomy—only recently described when Halsted arrived in Baltimore; the fourth-year resident does the aortic aneurysmectomy (first performed during my time as a resident). The senior resident may do the laparoscopic colectomy, unthinkable just three years ago. The chief resident does the Whipple operation. The transplantation fellow may do the hepatic transplant. The professor concentrates on intrauterine surgery or artificial heart replacement, or the conquest of immunological barriers. The prospects for surgery are more exciting than ever and demand scrutiny of our educational preparation and curricular content. Yesterday's rugged surgical frontier is today's surgical pasture, and the next generation will explore territories of which current leaders are largely ignorant. Our duty lies in outfitting the new expeditions and their young leaders, but the tools have changed.

Instruction in physiology, rudimentary prior to

World War II, is now geared to the understanding of intricate subtle pulmonary, renal, and cardiovascular disruptions and the technological support that is vital to appropriate care in the surgical intensive care unit. Microbiology is required for the understanding of microbial metabolism, the opportunistic infections and the actions of an ever-changing kaleidoscope of antimicrobials. Biochemistry and immunology are basic to an understanding of glutamine, growth hormone, cytokines, and rejection phenomena. The new applied pathology requires knowledge of angiogenesis and emerging strategies by which this phenomenon may be modified to influence metastatic disease. These types of new knowledge, which represent only a small segment of the fundamental information needed by today's residents in their quest to pursue the potential of modern surgery, have to be integrated into our curriculum as we deal with oncological, cardiovascular, and other illness. A major and troubling problem is that we have not agreed upon a prototypical curriculum, or indeed if there should be a broadly defined curriculum at all.

It is a truism that the increasing burden and accelerating torrent of new information threatens to overwhelm us. Consequently, we have to learn how we *best* learn so that we can sift and absorb new concepts even as we recognize and eject obsolescent practices and dogma. Today's clinical decisions have the capacity to produce miraculous recoveries, but they are also fraught with many more potentially lethal consequences than my generation of residents knew, and these decisions often have to be made with great speed.

Overshadowing all, a rapidly changing and informed society justifiably demands that we dis-



play a sensitivity to matters like truly informed consent, alternative algorithms of treatment, and clinical outcomes rigorously based on statistical data. Our patients are also asking that we understand and respond to their fears and the dilemmas of their families. These psychosocial dynamics were of less concern to past generations of surgeons and were, in fact, too often dismissed brusquely or with barely veiled impatience. Nowadays, these relationships are very much a part of the public's expectations, and we ignore them at our peril.

Our immersion during residency training has the most enduring influence on the way we practice surgery over the next 35 years. This seminal experience encodes our attitudes toward our responsibilities, learning habits, new tech-

niques, and adaptability to medico-societal changes.

Just as Halsted and his contemporaries planted the seeds for the great American GME era of 1945 through 1970, and the Alfred Blalocks, William Longmires, and Jonathan Rhoadses molded the programs of the next quarter-century, what *we* do now will determine the quality and professional performance of our surgeons during the first quarter of the 21st century. Consequently, we have to ask ourselves how we may do better, no matter how well we think we are doing.

Deficiencies in current training

I believe that we learn more from the study of our failures and deficiencies than from our perceived triumphs. What follows are 12 brief, selected, possibly idiosyncratic and undoubtedly controversial observations on areas that to me appear susceptible to improvement. Although each warrants considerable elaboration to mount a fair argument, time does not permit this luxury.

1. Our training programs are too rigid, with a lockstep approach to the residents as a group, partly for reasons of scheduling. We need to individualize more than we have been able to do.

2. We have tended to put service ahead of education with the result that residents have been outrageously exploited by hospitals at an hourly rate of about \$8. Their conditions of service should be improved.

3. We have accepted the many educational deficiencies of the hospital environment without sufficient protest or concerted action. The modern administrator is aware of the vital contribution made by a training program to the reputation or even renown of the hospital and to its functioning; if the chief executive officer or the board does not appreciate this contribution, we, as the responsible group, should provide the necessary education, strong persuasion, and conversion in this regard.

4. We have, at dusk, in a Cinderella-like manner, conferred upon our residents transient recognition of suddenly inflated clinical acumen and operative skill that we rescind with the dawn. With this attitude, we have sometimes failed to provide our residents with appropriate nocturnal support. Although political stimulation and

the deliberations of the Accreditation Council for Graduate Medical Education and the residency review committees are remedying such omissions, external prodding should not be necessary.

5. We have failed to invest sufficiently in educational techniques rooted in new technology that will help to improve technical skills, and we remain reluctant to measure technical competence, although we continue to insist on cognitive assessment. In a world of video technology and skills laboratories, we can learn much from methods successfully practiced in a number of countries overseas.

6. We have neglected the personal lives of our trainees, subjecting them to excessive fatigue and other stresses that serve to stunt their development and adversely affect the resident/patient relationship. Appropriate counseling for residents is too seldom provided.

7. We have not sufficiently sensitized our residents to our patients' unexpressed fears and to a range of ethical dilemmas, possibly because we, the seniors, feel insecure in these arenas, not having ourselves been sufficiently educated in them.

8. We have neglected the recruitment and training of minorities. While I recognize this may be interpreted as a self-serving politically correct statement to fit the times, I believe it is true that we still have not fully assumed our responsibility in this regard.

9. We have had a long history of prejudice toward the training of women surgeons for a wide variety of unfounded, unworthy, or unexamined reasons, and in the course of doing so we have denied ourselves a huge pool of talent. We are almost over this obstacle but not entirely so; part of our task remains to develop flexible plans of training that take into account the biological and family needs of women.

10. We have failed to expose our residents to knowledge of the organizational demands of the world of practice that they will be entering as if, by doing so, we may somehow be accused of being tainted by commercialism. We need to overcome this feeling and have our residents understand the national and regional systems in which they will be operating so that they may as physicians contribute to efficient management and the hus-

banding of resources; if war is too important to be left to the generals, health is certainly too important to be left to the bureaucrats.

Surgeons should not forget that the structure of the hospital as we know it today crystallized in the 1890s, around the time of the introduction of abdominal surgery. It was the need for a surgical workplace with necessary light, sterility, trained assistants, and a burgeoning array of instruments—not reproducible in the family kitchen—that revolutionized hospitals throughout the world. In the mid-20th century, it was the surgical miracle of cardiopulmonary bypass followed by the frontal attack on shock and sepsis that spawned the intensive care units that have transformed the design, purpose, and economics of our hospital world. As we move toward the year 2000, it is the technology that permits major surgical procedures to be done on an ambulatory basis and the invention of ever more sophisticated instrumentation that has brought all surgical specialties to another critical turning point in the organization of the environment in which we practice.

For all these reasons and many more, surgeons should be intensely involved in the design and implementation of any new operational structure or systems in our workplace. For us to be effective, understanding of the broad principles of hospital management and finance is essential, and residents would benefit from instruction in the fundamentals.

11. We still do not adequately stress our responsibilities as citizens and taxpayers for the expenditures we generate as surgeons. There should be a heightened consciousness about wasted operating room time, such as, in my own institution, \$918 for the first half-hour (\$30 a minute) and \$600 for each half-hour thereafter, the discarded vascular graft costing hundreds of dollars, the careless selection of the unnecessarily expensive and often ineffective antibiotics, and the waste of avoidable bone scans, MRIs, unfocused laboratory tests, and frozen sections on which no action will be taken.

12. We have often failed to transmit an appreciation of our cultural origins as surgeons. The vivid history of our forebears contains many inspiring and salutary lessons for the years ahead. A sense of heritage is not acquired by osmosis

alone, and knowledge of the magnificence of past surgical achievements can be a source of great pride and self-confidence.

Each of the preceding 12 deficiencies could be easily corrected if they are thought to be valid, but many are ignored because of a rigid and sometimes complacent mindset.

Constructive suggestions

Criticism without constructive suggestions is the classic refuge of the feckless politician and is disruptive rather than helpful. There is much that we can do, and I shall briefly outline 10 possible improvements without attempting an exhaustive or greatly detailed list.

1. We can very rapidly persuade surgeons to be sensitive to those segments of the medical economy that we so greatly influence. We can achieve this goal by persuading our surgical boards to test these facets, as was done by the American Board of Surgery in the area of critical care when it was felt that our trainees were ill-prepared in critical care. By the simple process of educating the examiners and informing program directors that their candidates would be expected to answer some reasonably sophisticated questions, the standard of surgical critical care rose dramatically within a very short period. In other words, the examination can be a very effective instrument to mold behavior. The announcement that knowledge of surgical costs will be tested would rapidly influence attitudes and demonstrate the genuine importance that we attach to this information.

2. We should review our scientific curricula rapidly and introduce new information that surgeons preparing for the 21st century should know. These subjects include important elements of genetics, chemotherapy, pharmacodynamics, and applied immunology.

3. Aspects of humanism should be addressed in the curriculum, including attention to ethical problems and thorough discussion of them on rounds or at conferences. The psychosocial problems of surgical patients, such as altered body image after mastectomy, impotence after prostatectomy, reduced cerebral function after head injury, and alcohol and drug addiction in trauma victims too often tend to be ignored.

4. The history of surgical ideas should be

taught as one would do in a graduate school so as to avoid repetition of past errors and to stimulate excitement at the recognition of how past challenges were overcome by serendipity or by design.

5. Knowledge of the cost-effectiveness of our surgical decisions and the manner in which surgeons can imaginatively influence our health systems should be encouraged so that surgeons may become leaders in these evolving fields.

6. A reasonably sophisticated understanding of statistics is indispensable today, and every resident should be knowledgeable in the interpretation of purported new ideas and of published data, such as the design of clinical trials, whether they be for laparoscopic inguinal hernia or for neoadjuvant chemotherapy. The optimal use of computers and other technology in retrieving and organizing knowledge should be formally taught as part of a modern appreciation of medical informatics, which are increasingly an inescapable part of efficient daily clinical practice, practice management, and laboratory research.

7. Improvements in the learning of surgical technique can be achieved by the establishment of skills laboratories. All residents do not possess equivalent technical skills at entry, and it is increasingly difficult to justify initial learning of such things as critical anastomoses on animals or on humans. We need to seek ways of having our residents (and practitioners too) become rapidly skilled in minimally invasive surgery and other innovations as they appear. For example, we who are general surgeons have been slow to learn and apply new technology such as endoscopy and its offshoots and ultrasonography in abdominal trauma, breast disease, and intraoperative mapping of the liver and pancreas in contrast to our colleagues in gynecology, urology, and vascular surgery who have been far more aggressive in applying new technical advances to their clinical decision making and practice. I must warn that when surgeons of any discipline neglect the application of new instrumentation that permits the treatment of surgical diseases through small incisions or different pathways, others, without the desirable broad training in the underlying pathology or management of iatrogenic complications, will fill the void.

8. The experience provided to residents by a substantial number of residency programs is too



shallow because of the restricted case mix available to these institutions. There has been an understandable reluctance by the American Board of Surgery and others to formulate normative numbers for individual operations. Part of this reluctance has stemmed from the fact that examination of data reveals significant hiatuses in a wide variety of residency programs, including some of the most prestigious. For example, studies by the American Board of Surgery have shown that many programs provide grossly inadequate exposure to the management of trauma. Other surgical boards have no doubt identified similar weak areas. These deficiencies may be approached by the formation of training alliances on a regional basis to ensure the desired broad exposure. Residents from institution A, with a large and perhaps even excessive trauma service, could train residents on rotation from institution B, which does not have this surplus; in return, the residents of institution A with a relative dearth of clinical material in a specific field may be exposed to the strengths of program B in the corresponding field. Such cross-fertilization, a kind of academic lend-lease, would greatly improve the breadth of knowledge, experience, and confidence of individual residents, their parent programs, and ultimately the American public. The logistics may be awkward but are not insuperable; pride may be the greatest barrier.

9. Now that 40 percent or more of surgery is performed in ambulatory surgical centers and virtually all elective surgery is arranged on a same-day admission basis with a short hospital stay, residents are increasingly denied the chance of thorough preoperative assessment and decision making, postoperative follow-up, and the establishment of a reasonably strong relationship with their patients. Our cherished concept of continuity of care is increasingly more honored in the breach than the observance and needs modernization to ensure that the primary resident at the operation personally observes subsequent wound care, complications, and psychosocial difficulties of the surgical patient. Much of the problem may be ameliorated by changing the logistics of resident rotations, although making such changes is increasingly difficult to do with a contracting workforce. The introduction of surgical assistants or clinical nurse specialists to

free surgical residents for appropriate educational experience should help to resolve this problem at least partially, albeit at an increased though justifiable expense.

10. Although surgeons by temperament and attitude tend to be effective teachers, we have traditionally adopted an amateur approach. Teaching has a scientific structure that can be taught, absorbed, and then transmitted. Courses on teaching given by trained educators, including surgeons, can be stimulating and rewarding. The recently instituted "Surgeons as Educators" courses sponsored by our College show high promise of producing significant educational dividends for faculty, residents, and students. In an ideal world, all who teach would periodically attend well-designed courses of this type. I sometimes dream that such a College program might eventually achieve the international recognition of our ATLS® program. With the current politically charged emphasis on primary care and the consequent reduced exposure of students to surgery, we need more than ever to make our presence known and felt in educational circles both in the medical schools and in the American Board of Medical Specialties. As we compete to attract the much sought-after "best and brightest," our performance as teachers is a powerful magnet.

Conclusion

I apologize if I have sounded carping or perhaps even strident, but dissatisfaction can be creative and the importance of preserving the quality of our training programs cannot be exaggerated. Perhaps my obsession with the preservation of the glory of American surgery is an expression of an immigrant's once youthful admiration and envy of a magnificent system that then seemed remote and closed to him. Now, with an insider's view, I believe that we are in generally sound, though not optimal, condition but well able to rise to the looming challenges of the next century—provided we have the vision and the will.

It is in the American tradition to engage periodically in great national discourses. We are currently in the vortex of a painful debate on health care, and I would welcome one of equal intensity on surgical education without the corrosive partisanship of the health reform debate.

As we move toward a world of minimally invasive surgery, therapy directed by three-dimensional imaging, robotic-directed surgery, so-called trackless surgery without incision, telesurgery where the surgeon may be distant by hundreds of miles from the patient, gene insertion, and artificial organ transplants, we have to open our imagination to the fantastic technological changes on the horizon and adjust our educational perspectives accordingly. Simultaneously, because of the detachment of technology, which has no interest in good or evil, it becomes more vital than ever that we reinforce in our programs the eternal human values of medicine because ultimately we exist only for patients. As the lyricist Alan Jay Lerner has it, "There's more to us than surgeons can remove."

It is heartening and significant that virtually all the specialties of surgery are currently engaged in an active if sometimes anxious reassessment of their individual curricular and educational goals. Although surgical techniques must inevitably continue to multiply and diverge, there will always be much more that binds surgeons than divides us. We share ethical beliefs, similar concerns about disrupted physiology, and an innate pragmatism that encourages direct approaches to problems without paralyzing contemplation. Fragmentation or insulation from each others' ideas can only enervate American surgery. This College, with its advisory councils and diverse membership, remains a home for all of surgery. Its committees on Graduate Medical Education and Emerging Surgical Technology and Education, its involvement in most of the surgical residency review committees, its preparation to play an active part in the world of informatics, its cancer and trauma departments, may each serve as the nidus for a dazzling string of educational pearls.

The gestation of this College was provoked by a desire to serve our patients by raising the standards of surgery through education in all of its ramifications. Content, structure, hospital environment, quality assessment, and peer review have been features of our educational concerns in all of the 81 years of our existence. Over the past decade, we have, of necessity, been distracted by national socioeconomic pressures. To use an old African term, I believe the time has come for a Great Indaba on the education of our surgeons

for the 21st century. If we seek to remain what I, perhaps chauvinistically, regard as the preeminent surgical graduate medical education system in the world, we have work to do. It would be in the very finest tradition of this College to serve as the millennial enzyme in this pursuit. Ω

Dr. Walt is Distinguished Professor of Surgery, Wayne State University, Detroit, MI. He is also a former Chairman of the Board of Regents and the current President of the College.

