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**I WOULD LIKE TO BE A THORACIC SURGEON**

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**M**y decision to become a thoracic surgeon in 1961 was an easy one. I only had to approach my chief of surgery, Dr. Edward D. Churchill, and state my interest in becoming a thoracic surgeon. He thought there would be no problem. I would become the chief resident at the Massachusetts General Hospital, and with his support I would be able to take the board examinations in thoracic surgery. When I stated my interest in developing a greater understanding of cardiac surgery within that specialty, he indicated that it would be easily accomplished, because I would get to see as well as do a variety of thoracic surgery procedures during my general surgical training, which would be totally sufficient. When the question was pushed further, he said that an experience in a concentrated cardiac surgical unit was reasonable but not necessary for my aspirations. Thus the

definition of the thoracic surgeon was easy to one of the leaders of that time: you just needed to complete an excellent training program in general surgery with exposure to the principals of thoracic surgery, and you would be certifiable as a thoracic surgeon. The idea and the concept of the thoracic surgeon had not greatly separated from the activity of general surgery.

Churchill was one of the great leaders of that early movement, together with Graham, Blalock, Gross, Alexander, and others. The debate persisted as to whether there was a true need for the development of a separate certification in this area. Before World War II, there had been an attempt to develop a separate board in thoracic surgery, but it was not until 1948 that the Board of Thoracic Surgery was initiated with the support of the American Board of Surgery, The American Association for Thoracic Surgery, and the American Board of Medical Specialists. The Board was not an independent entity at that time, but was an affiliate of the American Board of Surgery. In 1961, the requirements were not specific and were greatly dependent on two factors:

- A. Requirements for examination
  1. Certification by the American Board of Surgery.
  2. Adequate training in thoracic and cardiovascular surgery.

From the Massachusetts General Hospital, Boston, Mass.

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B. Definition of what constitutes adequate training

1. To qualify for examination in thoracic surgery, the candidate shall have had 2 years of training on an active thoracic surgery service that is approved by the Council of Medical Education and Hospitals of the American Medical Association in collaboration with the Board of Thoracic Surgery or training deemed equivalent by the Board of Thoracic Surgery.
2. Training obtained on surgical services where the experience with thoracic and nonthoracic cases is mixed can qualify the candidate for examination, but only after favorable review by the credentials committee on an individual basis.

My understanding of Dr. Churchill's concept of the thoracic surgeon was the accomplishment of training the complete surgeon. His idea may have been influenced by the needs of the surgeon on the battlefield, who could take care of all forms of trauma to the patient entrusted to the surgeon's care. It was believed that such a surgeon could run a complete field unit and would be able to handle all problems encountered. According to the Churchill setting, the idealized surgeon in peacetime was a person who, in the morning, would do a gallbladder operation, follow with a segmental lung resection, resect an abdominal aortic aneurysm, and finish the day with a colon resection. The surgeon would be capable of handling all areas of surgical need with rare exception.

The practice of surgery in the late 1950s and early 1960s generally required this diversity of ability, because concentrations of highly organized thoracic units were rare throughout the United States. They were seen only in very special university and clinic settings.

Our specialty has now evolved almost 50 years from the initiation of the Board, but during that time, have we developed the true thoracic surgeon? The minutes of the early Board meetings define what would become known as thoracic surgery. The emphasis was on experience and the further definition of a period of time and concentration in the field. In 1953, the Board stated that training would include 3 years of general surgery and 2 years of concentrated experience in the field of thoracic surgery. The trainee could gain Board certification in both specialties. In 1957, a concern was evinced in

the notes of the American Board of Thoracic Surgery that this 3-year training in general surgery would not be well done. Changes made by the American Board of Surgery formulated a rule that there should be two types of resident training in general surgery:

*Group I residents* had 4 years of training in general surgery. In the last year of this period of training, the individual would have served as the senior resident with accompanying senior responsibilities.

*Group II residents* were required to have 3 years of training in general surgery and in the third year of this period were to have acted at the senior level. When boiled down, this merely meant that an individual would have had 3 years of training in an acceptable but per se second-rate hospital and would then be permitted to proceed with 2 years of training in thoracic surgery without any question.

There was reluctance to initiate such a program of dual certification. We therefore became locked into a debate that has persisted to the present time. Faced with this reluctance of the American Board of Surgery to accept a dual certification, the Board did proceed until 1969 with the previous requirement of certification by the American Board of Surgery and adequate training in thoracic and cardiovascular surgery. Thoracic surgery requirements were flexible, allowing concomitant training of the thoracic surgeon during completion of general surgical training. Thus evolved a 5-year training program in which a large number of the candidates were allowed to take the examination after review by the credentials committee. This changed significantly on January 1, 1969, when the American Board of Thoracic Surgery adopted a provision that every candidate for certification must have completed 12 months of senior responsibility in thoracic and cardiovascular surgery, which preferably should be continuous. This requirement was strictly enforced January 1, 1970. In 1971, coincident with these new requirements, the American Board of Thoracic Surgery became an independent board and no longer an affiliate of the American Board of Surgery. Rotation to outside preceptors without a formal program in a hospital was no longer allowed, and the training became much more defined.

In 1973, the operative experience requirements were defined. Any program that fell into the 30th percentile or lower of the entire group of candidates would be submitted to credential review and the candidates could be refused for inadequate training. The policy was enforced on July 1, 1974. In 1975, the

Board further defined what an adequate independent operative experience would be by stating:

An overall major operative experience of at least one hundred cases is considered to be desirable. Among these one hundred cases a certain minimal distribution in key areas is necessary to insure a reasonably balanced experience. At least fifteen to twenty of the cases should involve the lungs and pleura. Thirty to forty cases should involve the heart, primarily utilizing cardiopulmonary bypass and surgery of the great vessels. Five to ten major operations on the esophagus and diaphragm are recommended. In addition to major operative experience, the trainees should have implanted approximately ten cardiac pacemakers and performed at least fifteen endoscopic procedures.

Thus for the first time we see a number outlined by a Residency Review Committee that was accepted by the Board as a definition of adequate experience. The knowledge basis is also considered to be that of the entire field and not of the area of the concentration of the candidate's experience as a resident.

In 1977, the current definition of thoracic surgical training evolved. The definition of adequate training now was delineated under the following statement: Every candidate for certification must complete 24 months of identifiable training in thoracic and cardiovascular surgery. This must include 12 months of senior responsibility, which should be continuous. The director of the thoracic training program is required to sign the application form of the American Board of Thoracic Surgery stating that the candidate has satisfactorily completed 12 months of senior responsibility and is recommended by him or her for examination. We now have committed ourselves to full training in general surgery, which is usually a program of 5 years, followed by a minimum training of 2 years in thoracic surgery. If we look at Tom Ferguson's presidential address to the Society of Thoracic Surgery in 1977, we find that we have accomplished the full cycle back to the company of barber surgeons in 1540 of a 7-year apprenticeship.

In 1953, another event occurred that has had a significant influence on the requirements of training the thoracic surgeon. The members of the Board of Thoracic Surgery were happy to turn over the duties of the review of residency programs to the newly formed Residency Review Committee for Thoracic Surgery. This unit took over the process of evaluating the programs including the teachers, the candidates, and the material that was covered. That function has evolved and the Residency Review Committee has become a very strong unit in the

definition of what a proper thoracic training experience should be. In 1973, the Residency Review Committee first defined the need for a separated program and described the type of operations that should be carried out as an independent experience for the trainee. This definition has evolved and has become extremely important in the decisions of what programs should be training thoracic surgeons. Under the Committee's guidelines, the number of training programs has been reduced from more than 300 to the present 91 approved programs in the United States. The intensity of the experience, as well as the diversity of cases to be performed, has been outlined. The work of the Residency Review Committee has been outstanding in these areas. Recently, the length of the training has been questioned, and this has been debated at length. There is complete agreement that at least 2 years is necessary to train the candidates in the specialty. The need for a third year becomes a point of contention. Throughout the history of the training of thoracic residents since the first Board activities in 1948, it has been agreed that at least 2 years is necessary to train the thoracic surgeon. This was true before the evolution of what we know as cardiac surgery today. It also was a definition before the complex approach to video-assisted surgery, transplantation, cardiopulmonary bypass, and other special elements became defined.

We must now look at what is to be considered an adequate training period. Rather than setting an absolute period of time, we probably should set minimum periods of time as we meet the criteria organized for the intensity of the experience and for the diversity of the experience. So long as those two elements are met, then the period of time spent in learning the field must be more vested with the program director than with the Residency Review Committee. The activity of the Residency Review Committee in restricting the years approved for thoracic training is somewhat influenced by some of its sponsors. The American Hospital Association, especially, is eager to control the number of years of training because approved years have always been funded. With the changes going on in national health care funding, this may become a moot point. At present, funding for any year after the fifth year of training is now at a 50% level. Future funding for training after the fifth year may be nonexistent. In the interim, however, decisions about length of training should be determined more by the need of education than by the cost of that education.

Thoracic surgery as it was recognized in the 1950s was predominantly what we call today general thoracic surgery without the presence of video-assisted surgery or complex cardiac surgery. It was still thought by the Board members at that time that a minimum of 2 years was necessary to train people in the specialty. Even with the advent of a rapidly growing subsegment of cardiac surgery, the 2-year training norm persisted. It was not until Shumway described a new route that serious consideration of the markedly increased need for training in the field of thoracic surgery was even considered. In his program, it was thought that less general surgical preparation was necessary and more thoracic surgery would be advantageous. A system of 3 years in general surgery followed by 3 years in thoracic surgery was attempted. As a further means of evaluating this new program, this technique of training was applied also in other training programs in the United States. These other programs did not find the system successful. Most of this process was carried out before the growth of cardiac surgery with the later development of coronary bypass surgery. Thus the great activity and complexity that we know today was not part of the training. Transplantation had not been attempted in an organized fashion. Consequently, we have challenged the system without a reasonable statement of what the specialty is. Thoracic surgery now is a very mature specialty. We have recognized the need to train our residents in the area of cardiac surgery, cardiology, pulmonology, and general thoracic surgical techniques, including video-assisted surgery. Despite the evolution of this large amount of knowledge requirement and technical advance, we remain wedded to old approaches and to restrictions that state we should not use so much time in training people in our own field. I would suggest that we look clearly at ourselves and realize what has evolved.

The American Board of Thoracic Surgery will be 50 years old in 2 years. The examination process has matured and has become based on a benchmark system that properly recognizes the body of knowledge necessary for the graduate to practice in a safe way. In addition, the Board has recognized the diversity of experience and the intensity of experience necessary to achieve the safe practice of the specialty. This organization has produced a curriculum that defines what must be taught and challenges each director to specify the area of effort that must be included in the teaching of residents. Through the efforts of the Residency Review Committee for

Thoracic Surgery, we have evolved a setting and have defined the participants who should carry out the process of education. In addition, we have developed a definition of what that education must include.

Added to the efforts of the American Board of Thoracic Surgery and the Residency Review Committee for Thoracic Surgery have been the achievements of the Thoracic Surgery Directors Association. This group appropriately has focused on the material that should be taught in the specialty of thoracic surgery. Multiple leaders have contributed to this, but the efforts of Ben Wilcox, Gordon Murray, Stan Nolan, and Robert Salley have been outstanding. The overall material developed from the Thoracic Surgery Directors Association provides a curriculum foundation for almost all programs in the country. Once we have properly applied this curriculum to our efforts, we will see that it readily defines our specialty. All disease processes of the chest are included. Our present protocol of 2 years of education would not allow the proper exposure for the candidates to fully cover the material outlined. As program directors, however, we have agreed that this is the critical basis for our educational process. We must recognize what we have agreed to. Time must be allotted, and effort must be directed to achieving this curriculum.

We have an extremely strong Board that has outlined what the graduate must know. We have a very dedicated Review Committee that has defined the environment in which the teaching of this material must be achieved, and program directors who have recognized what must be taught to achieve the proper education of a thoracic resident. Our defense of the Board requirement in general surgery is that the activity in general surgery allows for the maturing of our candidates and, thus, our ability to better choose them. Given today's system, I do not know if it is a maturing or an aging that we are seeking. Let us examine the requirements. The average age at graduation for a medical student is 25 years. The average age for the person finishing general surgery is 30 years. Thus we are demanding applicants who are well beyond the age of the average junior executive of major corporations in the United States. All of these requirements seem to state in other organizations and enterprises that maturity has occurred. By definition, any person applying for surgical residency at the Massachusetts General Hospital is considered mature, and this is something that we must recognize in all of the residents who

are seeking an opportunity with us. If their maturing process is slow, it is generally not because of the resident, but because of the attitudes that we have developed toward their evolution. We have set up a system of tardy growth and reluctance to involve them in the direct care of our patients. For example, in our own management of patients, the most junior house officer is the one left on at night. The backup is usually the next most junior, and then we go through a chain of command so that maturity shows up only after a series of calls and pleas for help from the staff that is left with the patient. Therefore the maturation is not so much in the individual but in the system. I honestly believe if we put in the effort and if we work in the proper way, maturity will come with exposure rather than with aging. There is strong evidence of this that is not just accidental. I could cite a number of my contemporaries and people I have worked with at the Massachusetts General Hospital, and at other institutions, who show how quickly maturity can come. A large segment of the people we were working with were able to complete their total training in less than 6 years, and some even in slightly more than 5 years. It is often said that that is just anecdotal, but it really comes down to the fact that they were given the opportunity, and they flourished with it.

The system that we have developed takes away the ability to be flexible and does not allow the resident to grow and to mature by challenge but rather by decree. It was evident to me that residents who had finished 2 years of general surgery and then spent time with Andrew Morrow at the National Institute of Health had been able to show the maturity necessary to manage these complex diseases in the 1960s. This was a maturity that was quickly gained by the challenge. The results produced under Dr. Morrow's guidance, and with his dependence on his residents, showed very quickly in his statistics and in other statistics around the country. The absolute evidence of the success of this type of program has been shown by Shumway. With this type of exposure, his training program has produced some of the outstanding leaders in thoracic surgery today in the United States. The focus of that activity was more in cardiac surgery, but I am certain that if the principles were applied equally to general thoracic surgery, the outcomes would be similar. There are many cardiac surgical units in the United States, even today, with excellent results in which only residents who are in their third and fourth year of general surgical training are used. This practice

bespeaks a tenor different from that which we call maturity. We should look carefully at what we practice and from that learn what we can teach in the future.

I would like to suggest a possibility of change that comes from 30 years of training young people almost every day of my professional life. Twenty-five years ago, we trained our residents basically with a 1-year experience in isolated cardiothoracic training. They did have a 4-month experience in cardiac surgery at some point during their general surgical training, and some of them had 6 months of associated experience in an English thoracic unit. Accordingly, they did have more than 1 year, and they did have enough flexible activity to give them a complete training. We were then required, in 1983, to give 2 continuous years of thoracic training to all our residents. What evolved from this was a spreading out of their experience over 2 years, a more complete understanding of the disease processes in both general thoracic surgery and cardiac surgery, and the ability in cardiac surgery to get the resident involved with much more complex procedures including reoperative surgery and complex congenital heart surgery. Thus the product became better as the concentration became greater. However, this does not indicate a change in the concentration in general surgery, but a concentration of effort in thoracic surgery. We have learned in the past 10 years that our ability to train a more complete thoracic surgeon required at least 2½ years. That has been challenged both by the Residency Review Committee and by other sources saying that we should continue with the 2 years even though the total educational material that we had to teach was much greater and much more challenging than we ever needed to cover before. I think now is the time for us to look at what we are doing, to recognize where we are, and finally state that we are a complete specialty, and as a complete specialty, take on the responsibilities of that specialty.

It is also our obligation to recognize how many residents we should be training. Every program director has encountered the graduate who is concerned about finding a good job, a job for which the graduate has already been well prepared. One way to deal with that is to voluntarily evaluate the number of residents we are training and, within the allowed number of residents we are given, decide how many we will train each year. It is not obligatory to fill every slot. It is our obligation to ensure that we completely train every resident that we take on. In

addition to this, we should take on a further obligation. We should be sure to maintain any resident that we train until he or she has obtained an adequate and appropriate job. Therefore the training program should employ its own graduates until they find the proper work commensurate with the education they have been required to undergo. This should be done to be sure that our residents have free choice and take employment that meets their desires for the future. The European systems, particularly in Great Britain, have done this for years and we have to learn from their example. Because of these considerations, we at the Massachusetts General Hospital are going to reduce the number of thoracic surgical residents we train each year from three to two, and we will do that until we see how the market evolves. Manpower studies are evolving, but they will take a long time to define the real needs. Until then, we, as responsible program directors, should take this onus on ourselves to be sure that each individual program recognizes its duties to the resident, both as to the number we select and to the future placement of the resident.

Other specialties evolving from general surgery have found that prerequisite training periods in general surgical programs have not led to poorly trained people or to poorly treated people. Our own experience shows that the trainees from neurosurgery, urology, and now plastic surgery, while on the general surgical service, are well treated, get a reasonable experience, and can be prepared for activities other than general surgery in a fair and appropriate fashion. I do not think the preparation of a thoracic surgeon should be any different. A meaningful experience of 3 years in a general surgical program can be gained with the cooperation of the general surgical program directors. The major problems of the past have centered around dual certification. If we give up the desire to have certification by the American Board of Surgery, the training activity in those 3 years can be very fruitful. The designated experience in the primary areas of the specialty of general surgery will prepare very well those residents who later specialize in thoracic surgery. Exposure to emergency care, intensive care, the routine diagnosis of surgical disease, and the development of surgical techniques will be critical to the developing candidate. With this cooperation in general surgery, a very meaningful and productive 3 years can be developed.

An alternative step in the development of a new program in the training of the thoracic surgeon

would be to take the fourth year of general surgical training and devote it to thoracic surgery. This year would be spent divided among general thoracic surgery, vascular surgery, and cardiac surgery. This could be an outstanding year of education. The problem I envision is how to integrate this into the total educational program. Would we select our candidates for training in thoracic surgery before this fourth year, thus making our choice at the end of the second year of general surgery? Would there be enough slots throughout the country to have all the candidates go through this year? If there were not enough slots to allow the training of every candidate during this year, then would some candidates get 3 years of training and others only get 2 years of training? This approach has the potential of leaving us with confusion and a differential in the way that we would train the thoracic surgeon. Our programs would still be totally dependent on general surgical training.

If we do not match the residents before this special year, then there is the potential that candidates may take the year, receive excellent training in the three areas, and subsequently decide not to proceed into thoracic surgery after completing their time in general surgery. Would this have the potential of increasing an already difficult problem? At present, the management of general thoracic cases in the United States is still more in the hands of the general surgeon than the certified thoracic surgeon. In South Carolina, it has been estimated that 70% of the general thoracic type cases are done by nonthoracic surgeons. Will we develop, therefore, a group of general surgeons who have been significantly trained in general thoracic surgery and are competing for the limited number of available cases? In our process of seeking compromise and reorganization, are we only creating a more difficult template to define the thoracic surgeon? I think that we should go back to where we started. We would finally have to agree with the members of the Board in 1953, that if a proper relationship with general surgery to give dual certification cannot be worked out, then we should accept just certification in thoracic surgery. Practically every other major specialty in surgery has done that.

In the program that I would suggest, the preparation would be 3 years of a prerequisite active surgical experience in all areas of general surgery. As general surgical programs are contracting, the presence of transitional residents becomes critical to the proper management of patients. Some educators

have been concerned that an adequate exposure, particularly to the esophagus and gastrointestinal tract, would not be possible for the trainee who has a special interest in general thoracic surgery. This may be true, but let us look at our present practice. In the fourth year of general surgery, many programs rotate their residents through the general thoracic programs in the United States. There, they carry out the procedures that we are concerned about. Thus, with 3 years of previous training in general surgery, the residents, under proper supervision, are able to carry out complex procedures. I am not espousing such activity. I am espousing that they would enter a general thoracic training program at that level and have a 3-year period to mature in their development of techniques and understanding of the general thoracic disease processes. This would be an even more intense way of educating these people than under the present programs. I am sure that, once integrated, it not only would be well accepted by general surgical programs, but would be looked on as a truly helpful way to manage the complex diseases that necessitate general surgical care.

At the completion of the 3 years, the residents would enter another 3-year program in thoracic surgery. The first 6 months would have to include an educational program to teach the basic knowledge of our specialty. We previously had relied heavily on the teaching during the general surgical programs to meet many of our needs. From the examination of the Board in General Surgery 20 years ago, it was evident that up to 30% of the questions involved cardiothoracic pathology, physiology, and operative procedures. Today that is a much reduced requirement. It is the belief among some young residents in general surgery that when they take their in-service exam it is better to avoid the cardiac questions than to take the risk of giving a wrong answer. We have to recognize that the role of thoracic education in general surgery has become less critical. We must take on the responsibility of teaching our own specialty, and we should get to it early. During the first 6 months of thoracic education, basic experience in radiology of the chest, including computed tomographic scanning and magnetic resonance imaging, should be given. There must be thorough teaching of pulmonary physiology, not just simple spirometry, but also exercise testing and an understanding of pulmonary pathology, pathophysiology, and anatomy. The requirement on so many of us when we were learning pulmonary management in

the 1950s was simply to have the patient walk up a flight of stairs and check the pulse at the end of that tour de force. The evaluation today is much more complex and its understanding is necessary if the excellent results that we seek are to be achieved. We also need to teach extensively the concepts of cardiac catheterization, echocardiography, coronary radiology, and ventriculography, not only to determine the pathology that our specialty requires us to understand but also to provide an understanding of what factors lead to risk and to predictable outcomes. This needs to be taught early and in an organized fashion. It is certainly critical to us as a profession to do this. Cardiothoracic surgery uniquely has the need to teach intensive care, which is not emphasized in many general surgical programs because of the presence of intensivists. Postoperative care is commonly removed from the general surgeon's control and placed in the hands of the anesthesiologists and other expert groups. The general surgeon now is more an observer in the intensive care unit than he ever was before.

After that first 6 months of proposed thoracic training we would start heavily into the teaching of the discipline of thoracic surgery. I know from experience that properly selected operations can be carried out by supervised residents with the experience would be derived from a well-organized 3 years in general surgery. The progressive steps of going through vascular anastomoses starting with proximal and later with distal anastomoses is easily accomplished by the well-prepared fourth-year surgical resident. The operation of valvular replacement similarly can be well done. The ability to carry out wedge resection, lobectomy, and multiple endoscopic procedures, including mediastinoscopy, can be readily mastered in the fourth year of surgical training. Given the period of time that we have, we can rotate residents through twice with progressive responsibilities in both general thoracic and cardiac surgery during the first 2 years. A third year of the program would have the final 6 months of senior residency responsibility for each of the candidates to complete the final year at a senior level in the areas of cardiac and general thoracic surgery. We would reserve the last 6 months of this 3-year program for specialization at the election of the residents. They would be given the opportunity to spend concentrated time with complex cases in the fields of general thoracic surgery or adult cardiac surgery and, in special circumstances, congenital heart surgery. As the practice changes, we also may find that

these 6-month periods would be used advantageously in the exposure to transplantation, circulatory assistance, and heart replacement. To seek added Fellowship time for each of these disciplines would be counterproductive, because they are integral to our practice of thoracic surgery.

We must recognize the maturity of these adults. We must not keep restraining their ability to develop and holding them back from the profession for which we should prepare them well. In my 30 years of training residents, I know of none who could not mature over a 3-year period. I have, however, observed a lack of maturity in teachers who were not confident enough to share their ability with these young people.

We as a society, as a group of experienced workers in the chest, must step forward and say that this is what we prepared for. We can be teachers, educators, and experts to train the people that we have selected to be thoracic surgeons without the necessary dependence on other people and other activities to get these residents ready to work in our field. Are we really saying that we need 5 years of general surgery so that we do not have to do so much of the actual training of the thoracic residents? At times that seems to be our statement. We have the opportunity now, we have the need before us, and we must meet this challenge.

Our predecessors have defined what a program is, what should be taught, who should teach it, and what

should be learned during the period of training. The challenge to us is to learn how to use those advantages from the past to take on the responsibilities of the future. We must, I think, become a complete specialty. We must move forward with the education of our residents in an organized way and develop the flexibility that will allow us to achieve these goals. We should ask of the Board of Thoracic Surgery for a change in the rules to state that board certification in general surgery is no longer a requirement to take the American Board of Thoracic Surgery examination. A 3-year period of prerequisite preparation in an established program recognized by the American Board of Surgery would be required. We would ask the Residency Review Committee to establish the minimum requirements. This might include a minimum of 2 years of senior training in thoracic surgery, but allow flexibility to be applied by the program directors. The Residency Review Committee and the American Board of Thoracic Surgery should strictly enforce the requirements including diversity and intensity of experience to prepare trainees to take the Boards examinations. Finally, the program directors must broaden the task of education. The system we now use delegates a significant amount of our educational responsibility to others when it truly is our own. The process will be more difficult, but I think the product will be better and we will finally be able to define what would result when a candidate makes the request, "I would like to be a thoracic surgeon."