Why Am I Here?

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There are many important issues that constantly surround us, issues that we confront every day and night as we care for the injured. Most cannot be adequately addressed in a few minutes because of their scope and influence on our professional lives and the lives of our patients. None, however, are unimportant. Allow me to list a few of these:

- Solving the problem of alcohol as a trauma potentiator
- The importance of rehabilitation as the final pathway for our patients
- Profitability in trauma: how are we going to do more with less?
- Recognizing the importance of spirituality to us and our patients

However, following the advice of one of my good friends and predecessors in EAST, I have decided to play from my strengths in this address. I will speak to you today as a surgical specialist, one who began his surgical career and training as a general surgery resident with an interest in trauma, and one who has been most fortunate to be asked by his colleagues to serve in various positions in this organization. In so doing, I hope to provide for you an answer to a simple question I have often posed for myself:

- Why am I here?

I am sure many of you have been asking yourselves this same question. In fact, I have had some members come right up to me and ask me just how in the hell is it that I have come to be president of EAST? But because I hold this organization and this office in such great esteem, I have been thinking critically about this. Each morning and night when I sit at my desk at home with the EAST gavel in front of me, I am reminded that as a surgical specialist, my roots, like those of my specialty of plastic surgery, are in trauma. Furthermore, this may well be the reason that I am where I am today. It is not by a mistake or mere providence that we come to the positions we occupy in our professional and personal lives. We must all discern why we are where we are. In my case, I feel that there is something I have to contribute, and I must figure out what that is and thereby answer this question: why am I here?

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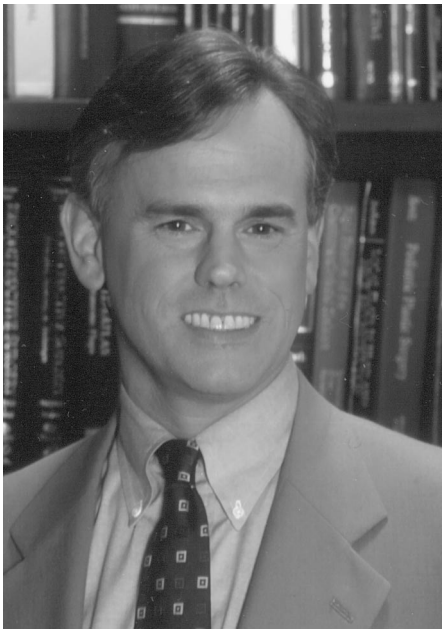

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In my professional life, I frequently find myself wearing two hats, that of a plastic surgeon and that of a plastic surgical traumatologist. Perhaps a better metaphor would be to say that I often stand with one foot in the boat of trauma and one foot on the dock of plastic surgery. Generally, all seems well until the dock moves relative to the boat, or the boat begins to sail away from the dock. Either could produce a certain amount of personal discomfort. Fortunately, I have not yet had to jump onto to the dock or into the boat, and it is my intention not to do so.

However curious I might find my position to be, it is clear to me that I should examine the important interdependence of trauma and the surgical specialist as we deliver care to our injured patients. To do this, I would like to address several questions:

- Is trauma care important to the surgical specialist?
- Are the surgical specialists important to trauma?
- What problems exist that may threaten our interdependence, and how do we solve them?

IS TRAUMA IMPORTANT TO THE SURGICAL SPECIALITIES?

Let us start by examining whether or not trauma care is important to the surgical specialists. In doing this, I would

like to look at the specialties of plastic surgery, neurosurgery, and orthopedic surgery. However, let me hasten to acknowledge that there are numerous other specialties that also have important interdependent relationships with trauma. Their exclusion in this discussion is strictly editorial on my part because of the constraints of time.

There is little doubt that this question is answered in the affirmative. But to understand why this is so, a brief review of the early years of these specialties may be instructive. Let us begin, then, by examining the history of plastic surgery, neurosurgery, and orthopedic surgery during their early years as independent specialties. It is important to remember that the emergence of these fields as independent fields of surgery came much later in history than did their presence and importance to surgery itself. Stated otherwise, these fields traditionally were within the purview of the general surgeon or physician, long before they emerged as specialties in themselves. Consider Ambroise Paré during the 16th century or Dominique Jean Larrey at the end of the 18th century, or our own Civil War surgeons in the last century. All were called into service of their fellow man on the battlefield to care for injuries to the torso, head, face, and extremities. Specialization as such did not exist. And yet each in their time contributed to these specialties without themselves being specialists.

Furthermore, I would like to look at each of these specialties through the careers of surgeons who are arguably considered the fathers of these fields of modern surgical specialties: Sir Harold Delf Gillies, plastic surgeon; Harvey Cushing, neurosurgeon; and Sir Robert Jones, orthopedic surgeon. The time frame we will consider is the first part of this century, during World War I, at a time when trauma became a cornerstone of the foundation for each of these modern surgical specialties.

With the assassination of Archduke Franz Ferdinand and Countess Sophie of Austria in Sarajevo, the "war to end all wars" broke out in Europe. This would be a war different in every regard to those that had preceded it, a conflict that was to present numerous heretofore unaddressed challenges to a medical community whose knowledge of military wounds was based on the Boer War fought on the South African desert terrain some 15 years earlier. In contrast, World War I was fought in trenches dug in the highly cultivated and manured fields of France, producing wounds richly contaminated by a variety of organisms. Rapid advances in weaponry and the introduction of heavy artillery produced wounds that differed from past conflicts in both quality and quantity. And because of the trench nature of this conflict, a disproportionate number of wounds were sustained to the head and face, because they were exposed above the parapets.[1]

Sir Harold Delf Gillies

The "father of plastic surgery" is said to have been Gaspar Tagliacozzi, who, in 1597, described a method of nasal reconstruction utilizing an arm flap. However, opposition by the Church to reconstructive surgery delayed the development of this field for the next 200 years. With the advent of general anesthesia in the mid 19th century, advances in surgery were largely directed at areas of the body that were formerly rather inaccessible. At the beginning of the 20th century, there existed neither separate divisions of plastic surgery, texts on plastic surgery, nor surgeons who were solely devoted to plastic surgery.[2,3]

When war broke out on the continent of Europe, and casualties flowed across the channel to Britain, the figure who emerged to meet the challenges and to carry forward the field of plastic surgery was a British surgeon, Harold Delf Gillies. Gillies' initial training and interest was centered on otolaryngology. With the outbreak of war in 1915, he traveled to France as a general surgeon with the British Red Cross. Because of the influences of Sir Charles Valadier, who established the first British plastic and jaw unit, and a book given to Gillies on the treatment of jaw fractures and wounds by the German doctor Lindermann, he became keenly interested plastic surgery.[4]

On his return to England at the end of 1915, Gillies set up a plastic surgery unit at the Cambridge hospital at Aldershot. Although given little interest from the War Office, Gillies asked that all wounded face and jaw patients be sent to his unit and personally purchased labels to tag such patients; he then distributed these tags to the casualty-clearing stations in France. Soon a steady flow of patients began to arrive. During the battle of the Somme, from which he first anticipated 200 patients, over 2,000 arrived for care and treatment, all neatly tagged for him, both with the tags that he had had printed and with other tags that had been officially printed by the War Office. Because of the demand for plastic surgery, Gillies unit soon outgrew Aldershot, and, in 1917, he moved into the Queens Hospital at Sidcup, which eventually held more than 500 beds. This hospital included four separate units led by the British Gillies, the Canadian Risdon, the New Zealander Pickerill, and the Australian Colonel Newland. The competition and collaboration among these units was responsible for great progress in this surgical specialty.[4,5]

Gillies' contributions to the field of plastic surgery, which began with the treatment of World War I casualties, are profound. The use of local flaps, tube flaps, skin grafts, bone grafts, and the like were developed or advanced under his guidance. But what emerged most importantly from this early trauma experience were principles that are still followed today. Although these have been added to and altered by Millard,[6] the original16 principles bear repeating:[4]

1. Observation is the basis of surgical diagnosis
2. Diagnose before you treat
3. Make a plan and a pattern for this plan
4. Make a record
5. The lifeboat
6. A good style will get you through
7. Replace what is normal in normal position and retain it there
8. Treat the primary defect first

9. Losses must be replaced in kind
10. Do something positive
11. Never throw anything away
12. Never let routine methods become your master
13. Consult other specialists
14. Speed in surgery consists of not doing the same thing twice
15. The aftercare is as important as the planning
16. Never do today what can honourably be put off till tomorrow

Soon after the war had ended, Gillies and others struggled to have plastic surgery recognized as a specialty in itself. Had it not been for the work of Gillies and his colleagues caring for the war-injured, the emergence of my chosen field of plastic surgery would no doubt have been much longer delayed.

Harvey Cushing

At the beginning of this century, neurosurgery was, like plastic surgery, in its infancy as a surgical specialty. With the exception of a few general surgeons who had acquired a special interest and expertise in neurosurgery, most of the operations were being preformed by general surgeons under the direction of neurologists.[7] Neurosurgery was unprepared for the challenges of World War I. Mortality rates from earlier conflicts were staggering. During the Crimean War, McLeod reported mortality rates of 73.9% for penetrating injuries to the cranium. Similar rates were reported during the American Civil War.[8] Although some progress was made in the treatment of such injuries in the Boer War, mortality rates remained high (45.5%).[9] While, in the first part of this decade, great progress was being made with antisepsis and precision in neurosurgery, little attention was being paid to preparations for wounds produced by the type of warfare to be waged in 1914. Because of the nature of trench warfare and the absence of helmets (which were not introduced until later in the war), almost 25% of penetrating injuries involved the central nervous system.[9]

This war caught Cushing, the leading neurosurgeon of his time, at the peak of his career. Having trained as a general surgeon with Halsted, he had been appointed as surgeon-in-chief of the Peter Bent Brigham Hospital, where his efforts continued the development of modern neurosurgery. In March of 1915, while still a civilian, he sailed with the Brigham unit to France for an intense 5-week visit. He traveled extensively and observed both the French and British medical systems in operation. During this visit Cushing became keenly aware of the need to prepare for American entry into this conflict: on his voyage home, the wreckage and bodies of the *Lusitania*, sunk several days earlier, were visible from the deck of his ship.[9]

During the next 2 years, while Cushing was preparing for the United States entry into the war, conditions at the front remained chaotic. The belief that the head-injured patient did not tolerate transportation was axiomatic. Thus, limited surgery was performed close to the front, with secondary closure later, and extensive surgery to be done several days later at the base hospital. The injured were either receiving too little too soon or too much too late. Because of this, mortality rates in the French army were estimated by Cushing to be about 50% to 60%.[9]

Cushing returned to France in 1917 and was soon working at British casualty clearing station #46 at Medingham, 9 miles from the front. Over the next 3 months during the battles of Ypres, Cushing's team operated on 219 of 250 head-injury cases. This experience provided him with a unique opportunity to maintain statistics and follow-up data on these patients. At the peak of battle, Cushing operated on eight major cases a day. He added a second table placed next to his operating table where he could examine and observe the preparation of his next patient. Criticized for his slowness in surgery, Cushing contended that it was better to perform one operation well and precisely, than to perform several incompletely. In reviewing his own cases during this period of time, Cushing, by using appropriate techniques, reduced his monthly mortality rates from 55% to 29%.[9]

After the battle of Ypres, Cushing was transferred to the Casino at Boulogne, to several clearing stations, and to Neufchateau. He was then promoted to lieutenant colonel and was made the neurosurgical consultant to the American Expeditionary Forces. He remained at that post until the day of the Armistice. During this interval, he trained numerous surgeons in the care of head-injured patients, developed teams to staff mobile hospitals, and developed plans of triage. He was discharged as a Colonel 1 day after his 50th birthday and returned to an active civilian career.

Cushing's efforts during the war had a profound effect on neurosurgical trauma care. By creating a classification of head injuries, he was able to correlate the degree of injury with survival rates. He was willing to disregard prevailing opinions regarding the care of these patients and was able to achieve superior results. Mortality rates were reduced by half through his requirements of meticulous debridement, followed by careful dural coverage and primary skin closure by carefully designed flaps. His observations and techniques remain relevant today. As a result of his wartime involvement as the leading neurosurgeon of his time, he established the care of the head-injured patient as a critical part of modern neurosurgery.

Sir Robert Jones

Orthopedic surgery, too, was changed by the experiences of World War I through the work of Robert Jones, considered by some to be the father of modern orthopedic surgery.[10] At the turn of the last century, orthopedics was perceived as a true specialty but was mainly concerned with congenital bone deformities.[7] It was the general surgeon of this time that treated fractures and dislocations. Hugh Owens Thomas, the uncle of Robert Jones, was descended from a long line of bonesetters and learned this practice from his father. He is

best known for his development of the Thomas splint, which is still in use today. He was also instrumental in encouraging his nephew, Robert Jones, to enter medical school and to apprentice with him.[11,12] Thus it was that in 1873 in Liverpool, young Jones began his medical career at the same time that he learned the care of fractures from his uncle. Although he became medically qualified in 1878, he did not become a full-time orthopedic surgeon until 1905, when he abandoned general surgery.

In 1887, the construction of the Manchester Ship Channel, which would connect the Atlantic Ocean with the commercial city of Manchester 35 miles inland, was begun. Jones was appointed as the Surgeon Superintendent, which allowed him to form the first large accident service in the world, caring for 20,000 workers. During the next 6 years, Jones, assisted by 14 surgeons and 3 hospitals along the route, treated 3,000 injuries. From this experience, Jones learned the necessary skills to organize, supervise, and treat large numbers of injured patients in relatively rudimentary conditions.[10]

Throughout his career, Jones made numerous important contributions to the field of orthopedic surgery, and Eleven Nelson Street, Liverpool (the clinic he took over from his uncle) became recognized as the "mecca" of orthopedic surgery by U.S. surgeons. After visiting Jones for 1 week (having intended to stay for only a day), William Mayo wrote the following: ". . . he is expeditious, yet neglects not the smallest detail and his wonderful experience enables him to do wizard-like operations with a precision that is startling. So unassuming and modest is the man that he is, I believe, entirely unaware of his great ability. . . . I must place Mr. Robert Jones as one of the greatest surgeons it has be my good fortune to meet."[10]

But when the war broke out, Jones, then 57, immediately volunteered for the army. As a major, he was sent to France, where he introduced the Thomas splint for the treatment of femur fractures. This alone reduced the mortality rates of open femur fractures from 80% to 20%, prompting Colonel George Crile to remark that that the Thomas splint "did more to prevent deaths from shock than any other measure."[13] Against strong opposition from general surgeons, he prevailed in his efforts to establish an organized orthopedic service and was made Director of Military Orthopedics, thus becoming the first orthopedic surgeon to sit on the Army Medical Staff of the War Office. Working at Alder Hey, a 250-bed hospital later expanded to 500 beds, Jones and his staff achieved excellent results, and nine such hospitals with a total of 30,000 beds were eventually established by the end of the war.

Jones experienced great difficulty in staffing these hospitals. In 1917, Dr. Joel Goldthwait of the Massachusetts General Hospital sailed for Britain with 20 surgeons to assist at British orthopedic hospitals, only 3 weeks after learning of the need of such help. By the war's end, over 400 American surgeons worked in these hospitals and trained under Jones. In 1921, Goldthwait stated before the American College of Surgeons that "the fact that there were less than 400 amputations among 200,000 U.S. wounded was due to the methods of treatment of Sir Robert Jones. More that 400 young U.S. surgeons received invaluable orthopedic training under him—training that they could not have acquired otherwise in a lifetime."[10]

At the end of the war, Robert Jones was 61 years old. He was bestowed the United States Distinguished Service Medal by Major General Ireland, which is the highest honor a foreigner can receive. His career continued until his death in 1933. In addition to being knighted and given a baronetcy, he coauthored *Orthopedic Surgery* with Robert W. Lovett, first published in 1923. He was instrumental in the formation of the British Orthopedic Association and was specially honored by the American Orthopedic Association on the occasion of his 70th birthday.

Each of these surgical pioneers began with roots in general surgery, as did the specialties they were instrumental in creating. At the time when these specialties were emerging as fields of surgery in themselves, trauma was both an important part of, and an important catalyst to, their development. Thus it was, and is, that trauma is of major importance to these surgical specialties.

ARE SURGICAL SPECIALISTS IMPORTANT TO TRAUMA?

This question will be answered somewhat more succinctly by reviewing the statistics from the University of Tennessee Medical Center in Knoxville. Established as a Level I trauma center in 1987, the medical center is accredited for 582 beds and has over 50,000 emergency department visits a year. The trauma service is staffed by three full-time trauma surgeons who are assisted by the general surgical staff. Support from the specialty services is provided by staff neurosurgeons, orthopedic surgeons, and plastic surgeons. The only specialty residents are oral surgery residents who work with the plastic and oral surgery attendings on facial trauma.

During the year 1998, for which the most recent statistics are available, 2,764 patients were admitted for trauma. Countless other trauma patients were treated and released from the emergency department, including a high volume of facial injuries that were either repaired or evaluated for later repair. Because 85% of our trauma patients are victims of blunt trauma, only a small portion of these patients are operated on by trauma surgeons: 274 patients with 328 operations. In contrast, however, the number of patients operated on by specialty surgeons is much greater:

Surgical Specialty	*No. of Patients*	*No. of Operations*
Orthopedic surgery	611	777
Neurosurgery	103	107
Plastic surgery	82	98
Total	796	982

Clearly, the care of the trauma patient at such an institution is every bit as much dependent on surgical specialists

as a group as on trauma surgeons. We can feel quite safe, then, in saying that the surgical specialist is of great importance to the field of trauma.

Furthermore, we must acknowledge the vital interdependence of the fields of surgical specialization and traumatology. Neither, on its own, can deliver complete care to the injured patient. Traumatologists and surgical specialists are like stones carved for a great archway. Each must fit tightly one next to the other to construct the arch. If one is missing, or the fit is not right, the arch will collapse, and the stones themselves will be of little use.

WHAT PROBLEMS EXIST AND HOW DO WE SOLVE THEM?

In such an address, the problems are always easier to enumerate than the solutions are to elucidate. Yet it is important that we give this a good effort. To do so, I have conducted an informal survey of surgical specialists who are involved with trauma care. Thirty-eight specialists, who are either members of EAST or are working at trauma centers whose directors are members of EAST, responded to a simple 1-page survey that asked about their involvement with trauma, their attitudes toward trauma, and the problems that they might encounter with trauma care at their institutions.

In terms of the specialities of the respondents, the breakdown is presented below:

Orthopedic surgeons	14
Plastic surgeons	11
Neurosurgeons	10
Other	3
Total	38

The majority of these specialists have had extensive experience with specialty trauma care, both in terms of their years of practice and the proportion of their practice devoted to trauma care. Additionally, these surgeons believed that trauma was an important part of their specialty and found that caring for the injured was both professionally challenging and rewarding. As a companion part to this survey, several trauma directors responded that they were all either satisfied or very satisfied with the trauma care provided by these specialists.

So where do the problems lie? I have been able to enumerate at least three or four areas of concern. Unfortunately, some of these are attributable to the nature of trauma itself and are thus very difficult to change. First and foremost is that fact that the timing of trauma is unpredictable and can interfere with the care of other patients. This is undeniable, and there seems to be little we can do about this until we are able to train our trauma patients to injure themselves in a convenient manner with regard to the time of day and the business of our schedules. However, any means of allowing these patients to be cared for more efficiently would reduce the time burden of specialty trauma care and help to counteract the effects of the unpredictability of trauma.

The second area of concern is the low level of reimbursement for trauma care. Again, we all seem to be in the same predicament of having to respond to a population of patients who may be uninsured or underinsured at a time in which insurance reimbursement is plummeting. Indeed, many of the parent institutions may believe that trauma care is unprofitable. However, when direct and indirect revenues are accounted for, it is believed that trauma care, at least in my parent institution, is profitable.[14] Thus, the acquisition of as many trauma patients as possible by such institutions makes good sense from a business standpoint. Therefore, special contracts and carve-outs should be negotiated with insurers. When such contracts are negotiated, the interests of the specialists and trauma surgeons must be equally well represented to achieve an equitable formula of reimbursement for the care provided.

As might be expected, there are always the concerns of the medical legal risks of trauma care. Whether real or perceived, these concerns are not dissimilar from the concerns of the trauma surgeons themselves. Thus any remedy should be directed at the entire field of trauma. It would be hoped that some form of umbrella coverage could be enacted to cover all those who, by their involvement with trauma care, must accept these patients and care for them without regard to other issues. If quality assurance is programmatically maintained through the trauma centers, and a reasonable standard of care is thereby assured, it might be possible to indemnify, or at least partially shield, these surgeons from malpractice claims, as long as they comply with the quality assurance process. Such indemnification should be conducted at the institutional level, possibly through state legislation.

The last area of concern is the degree of institutional support given to the surgical specialists when caring for the trauma patients. These concerns center on available resources, such as operating time, staff, and the priority given to specialty care. Clearly, life-threatening injuries must and do take priority over all else. However, after these concerns are addressed, the priorities for the remainder of the care for these patients' injuries become less distinct and sometimes less urgent. It would be my recommendation that the same support in terms of the use of dedicated trauma operating rooms and call teams be given to the specialist, as to the trauma surgeon, in order to expedite the care of these patients, which may continue for many hours after the potentially lethal injuries have been addressed and the trauma surgeon has left the patient's side.

As a footnote to the problems I have listed, I would add a concern of my own: the involvement of surgical specialists in the scientific program of this meeting. In the first 10 years of our meetings, an average of 10% of the papers presented involved the surgical specialties. Now, I would point out that some of the papers were not presented by the specialists themselves, but rather by trauma surgeons. However, in the last 3 years (including this meeting), less than 5% of papers involved the surgical specialties, accounting for one or two papers a year. There is no one single reason nor a simple solution

for this problem. I would add that this should not be considered to be a failing of our program committees. They have consistently provided outstanding scientific programs for which we are all grateful. But as the quality of mainstream trauma papers has risen, the place of specialty papers has been threatened, perhaps making us victims of our own success.

Reversing this trend will not be easy and will require a grass roots effort by our members. We must first encourage surgical specialists to join EAST and attend our meetings. Second, we must encourage our specialists to submit abstracts, or collaborate with their trauma surgical colleagues in the submission of abstracts. Finally, specialists should be included in courses, breakfast sessions, and other aspects of the program in which their participation would be mutually beneficial for their specialties and the educational opportunities of the trauma surgeon.

Although trauma care may present certain problems for the surgical specialist, and although there has been a recent falloff in involvement of the specialist with our meetings, EAST, as an organization, recognizes the importance of the contributions of the surgical specialist to trauma. I believe that it is for this reason that I have been privileged to have been involved with this organization and have been asked to be your president this year. It must be then that this is why I am here. I offer you my most sincere and heartfelt thanks for this recognition as a surgical specialist and for this wonderful opportunity.

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