It has been a tremendous honor for me to serve as your 84th president of the American Association of Neurological Surgeons (AANS). Even though this is the 85th Anniversary of our Society, Dr. Frank Ingraham served as president of the organization 2 years in a row during World War II, which makes this the 84th Presidency.

This past year the AANS membership surpassed 11,000 people. To have been bestowed your confidence in my leadership abilities will always remain the greatest moment of my professional career.

My father, who could not be here today, has always maintained that “life is like a roll of toilet paper—the closer you get to the end, the faster it goes.” That being said, this year passed so quickly that my roll must be growing short.

Every few years, as part of our strategic planning process, the AANS performs a membership needs assessment to make certain that we continue to meet your expectations and that your priorities haven’t changed over time. This year Alex Valadka, Chairman of our Strategic Planning Committee, undertook a new membership needs survey. With over 1000 responses, once again and by a large majority, your two most important requests were education and advocacy (AANS Strategic Initiative 2017). It is upon those subjects that I would like to speak today.

Education, like many things in our time, is evolving at an accelerating pace. History has shown us that the best way to prepare for the future is to understand the lessons from our past. So to put things into perspective, it might be worthwhile to examine from whence we have come.

Let me take you back to the mid-1800s, to another era of rapid change (Fig. 1).
The Past

Cyrus West Field, who some have called “the greatest American of whom you’ve never heard” (Fig. 2), was born in New York City in 1819 and, despite a sickly youth, began his first job working in a dry goods store at the age of 15.

By age 18 he had started his own paper company. This proved successful and he soon made his fortune selling paper products. By all accounts, he was a tireless worker who rarely took a day off.

Mr. Field had retired at an early age over health concerns when one day he was approached by an English engineer, Frederick Gisborne, who was looking for investors in a project running the first telegraph cable across the Atlantic Ocean, linking North America to Europe.

After consulting with Samuel Morse, inventor of the telegraph, on the feasibility of sending electrical impulses those great distances, Field soon became obsessed with the project and began fundraising among his wealthy colleagues.

It took several attempts, including a pause for the American Civil War, and, ultimately, financial backing from both the British and American governments to complete this task.

The final cable was 2500 miles long, took 8 months to make at 14 miles per day, and had a weight of 9000 tons and a cost of $250 million. That is the equivalent of $3.6 billion in today’s money.

On June 13, 1866, Field’s dreams were realized and the trans-Atlantic telegraph became a reality. Consider that it cost $10.00—or the equivalent of $285.00 per word—to send text! But in that era the telegraph had become, in the words of Western Union’s president, William Orton, “the nervous system of commerce.”

It was the next year, 1867, that Joseph Lister, a Professor of Surgery at the University of Glasgow, first published 6 articles in The Lancet describing his preliminary results in the use of 5% carbolic acid (which we now term phenol) to prepare skin and surgical instruments as a means of preventing surgical infection. This discovery led, by the time of his death in 1912, to his being called “The Father of Modern Surgery.”

His student and fellow Scotsman, William Macewen, became an assistant surgeon at the Glasgow Royal Infirmary in 1875. In 1879, having become familiar with the brain mapping techniques of John Hughlings Jackson and David Ferrier, Macewen was able to localize and successfully remove a left frontal lobe meningioma in one patient and a subdural hematoma in another. Harvey Cushing later commented, “To Macewen belongs the distinction of having been the chief pioneer in cranio-cerebral surgery” (Fig. 3).

In London, Victor Alexander Haden Horsley joined the faculty at Queen’s Square where, in 1886, he performed his first brain surgery, resecting a seizure focus in a young adult. In August of 1890, at the International Medical Congress in Berlin, Horsley reported a series of 44 brain operations with only 10 deaths. At a time when blood replacement was nonexistent, Horsley is also credited with inventing bone wax to stop bone bleeding.

Meanwhile, on the continent, neurosurgery was also moving rapidly. The Parisian surgeon Thierry de Martel...
had heard of the work of Horsley, visited him regularly, learned from him, and returned to Paris where, working with neurologists Babinski and Clovis, he began to perform similar neurosurgery in 1907.

He is known for introducing the sitting position for posterior fossa surgery, for which he developed a special chair. He was also the first surgeon to begin filming his operations.3

In 1892 in Germany, Fedor Krause developed an extradural approach to the gasserian ganglion and successfully sectioned the second and third trigeminal divisions for tic douloureux. By 1898 he had also described approaches to the eighth cranial nerve, which he sectioned for tinnitus.29 In 1906, he published a case in which he removed a ruptured lumbar disc in a patient with cauda equina syndrome.23 In Germany, Krause is known as the “Father of Neurological Surgery.”

Meanwhile, in the United States, William Halsted graduated from Columbia University School of Medicine in 1877.16 He then joined the New York Hospital as a “house physician.” As an intern, he introduced the “hospital chart” upon which a patient’s heart rate, respiratory rate, and temperature were recorded by the nurses. As was the fashion for American medical graduates of the time, he then traveled to Europe where he studied under more than a dozen of the most renowned surgeons and scientists of the day.

Upon his return to New York City in 1880, Halsted spent the next 6 years in a busy general surgery practice. He is said to have performed one of the first cholecystectomies in America—on his mother, upon her kitchen table at 2:00 in the morning. Secondly, he was said to have performed one of the first blood transfusions in America. He was called to see his sister in Labor and Delivery, where he found her in shock from excessive blood loss from childbirth. He quickly had his own blood transfused into her and then operated on her to save her life!

Halsted was recruited to Baltimore in 1886 to help open the new Johns Hopkins Medical School, where he became the first Chief of Surgery in 1889. During his time at Hopkins, Halsted developed a model for surgical residency that has served American surgical training since that time.

Harvey Cushing, like Halsted, attended undergraduate school at Yale, where he graduated in 1891. He then...
completed medical school at Harvard, followed by a surgical internship at Massachusetts General Hospital in 1895. During Cushing’s internship there was great discussion as to where he should next seek training. Cushing’s father, Kirke, a Cleveland physician, had heard great things of Halsted and encouraged Cushing to seek him out in Baltimore. According to Bliss, Halsted’s advice to Cushing was “go to Europe as soon as you can…you probably know that there is little if any scientific work done in this country in medicine.”

In the end, Halsted invited Cushing to train under him at Hopkins, where Cushing also helped run the Hunterian Research Laboratory. He furthered Halsted’s efforts to use cocaine as a local and regional anesthetic, eventually earning himself an international reputation for his technique of hernia repair in elderly patients under local anesthesia.

In 1900 Cushing traveled to Europe, where he spent time observing a number of famous surgeons but was not impressed by what he saw. He spent most of his time working in the laboratory of Kocher in Bern, where he performed craniotomies on animals, studying the physiological response of the brain to gradually increasing pressure from a rubber bladder blown up inside the cranium. From this work and his meticulous notes came the first description of the “Cushing reflex.”

He also visited Turin, Italy, where he was introduced to Scipione Riva-Rocci and his sphygmomanometer, as a noninvasive tool for measuring blood pressure. This he later introduced into his operating theater as a means of monitoring the patient’s vital signs while under anesthesia.

There is little doubt that it was Cushing’s time in Europe that solidified his passion for surgery of the nervous system. It was while abroad that he received a letter from Halsted inviting him to return to a faculty position at Hopkins with the promise that all patients with diseases of the nervous system would come to him. Thus it was in 1902, at the age of 32, that Cushing returned to Hopkins to eventually become America’s “Father of Neurosurgery.”

It was the many advances of Cushing and his mentees that really changed surgical training from the American trainee traveling to Europe to learn the state of the art to the European trainees traveling to America to observe the greatest advances in neurosurgery.

Likewise, when Cushing and 11 of his colleagues established the Society of Neurological Surgeons in 1920, they were a small group. Given the paucity of neurosurgical textbooks at the time, they would visit one another’s operating room, see how one would position his patient, watch where he would make his skin incision and where he would make his burr holes, and see how each member of the group performed surgery.

At the same time, advances were being made in communication. Although Bell had introduced the telephone in 1876, it was not until the development of the vacuum tube in 1921 that the sound of voice could be amplified over long distances. Also, as a consequence of the vacuum tube, the 1920s saw the invention of the wireless radio and, in 1927, the wireless radio-telephone.

William Van Wagenen, or “Van,” began training under Cushing in 1924. Under Cushing’s influence, Van spent the year of 1927–1928 in Europe. His neuropathology research was conducted in the pathology lab of Walther Spiemeyer in Munich and resulted in his discovery that meningiomas arose from arachnoidal cap cells.

He then worked with Otfrid Foerster in Breslau, who was doing awake craniotomies and cortical stimulation mapping at the time. Foerster’s work in epilepsy influenced Van Wagenen’s lifelong interest in epilepsy surgery (just as Foerster also influenced Canadian neurosurgeon Wilder Penfield) and led to Van Wagenen’s publications on corpus callosotomy for seizure control.

By the 1930s, the original members of the Senior Society had trained a number of neurosurgeons, a second generation if you would, who were not senior enough to be admitted to the Senior Society.

For over a year, Van Wagenen and Spurling had correspondence regarding the notion of forming a new neurosurgical society. They then enlisted help from Eustace Semmes of Memphis and Temple Fay of Philadelphia. The four agreed to approach Cushing for support, figuring that if they named the new organization in his honor, he would be less likely to get upset at their forming this new organization.

Honored that the new organization would be named after him, Cushing was most supportive of the new society and in fact offered to host its first meeting in Boston and to hold an “operative clinic” so they could observe him doing surgery; hence, the origin of the Harvey Cushing Society, later renamed the American Association of Neurological Surgeons (Fig. 4). Our Society was born with the expressed intent of “the promotion and advancement of neurological surgery.”

Van Wagenen was the first president of the AANS. He was so influenced by his year abroad that he and his wife, Abigail, went on to endow the prestigious Van Wagenen fellowship. This year marks the 50th Anniversary of the Van Wagenen fellowship, which has afforded 51 fellows an international research experience similar to that of Cushing and Van Wagenen. Those 51 fellows have gone on to co-author over 4500 peer-reviewed manuscripts (Schmidt TM et al: For the further training of individuals in neurosurgery: a history of the Van Wagenen Fellowship, submitted to the Journal of Neurosurgery, 2017).

It was August 14, 1956, the year of my birth, that AT&T successfully laid the first trans-Atlantic telephone cable, known as TAT-1 (trans-Atlantic telephone cable). This successful accomplishment led shortly thereafter to similar cables which connected all of the continents on earth.

Regarding advocacy, as neurosurgeons, from the day we don our cloaks and take our oaths we each become advocates for our patients and for our specialty. This was true in Cushing’s day, where he served on President Roosevelt’s Medical Advisory Committee.

By 1975, the specialty of neurosurgery had become so large and its needs so unique, that the profession could no longer rely upon the American Medical Association or the American College of Surgeons to represent our interests at the national level. Therefore, neurosurgery’s first lobbyist, Charles Plante, was hired. The Washington Committee office began with 6 neurosurgeons, 3 from the AANS and 3 from the Congress of Neurological Surgeons (CNS), with an annual operating budget of $12,000. Mr. Plante’s
early efforts were aimed at increasing NIH funding for neurosurgical research, lobbying for improved liability reform, and working to improve trauma services.

One can see that our presence in Washington has become steadily more complex (Fig. 5). The Washington Committee has expanded from 6 to 34 volunteer neurosurgeons and from 1 full-time lobbyist to a staff of 6. Under Katie Orrico’s able leadership, we now have 6 standing committees with sub-specialization of our Washington Committee’s expertise that parallels our clinical sub-specialization. A testament to her outstanding reputation was Katie’s being awarded the American Medical Association’s “Lifetime Achievement Award” this past fall [2016]. I would emphasize that, when it comes to advocacy for our patients and for our profession, each one of us must be a citizen, not a spectator.

For those of you who are not aware, the leadership of the AANS, CNS, American Board of Neurological Surgery (ABNS), Washington Committee, Society of Neurological Surgeons, and Residency Review Committee meet together at least 3 times a year, coming together for the benefit of our specialty. This year I would like to recognize Kim Burchiel, Chairman of the Accreditation Council of Graduate Medical Education (ACGME) Task Force on Resident Education, for his work to successfully reverse the PGY-1 duty-hour restrictions of 2011. These had limited our first-year residents to a 16-hour work day. Providing data showing that more frequent hand-offs were harming our patients and that more free time did not improve scholastic performance, the ACGME has now altered its position and increased the amount of time our first-year residents can participate in educational activities.

**The Present**

This past year, Google’s new superfast Internet cable came online, connecting Japan with the United States. This cable is capable of transmitting 60 terabits per second, or the equivalent of 1600 DVDs worth of data in 1 second.

We have now reached a point where telecommunications are a way of life. If I tell you that the world’s population is currently 7.13 billion, you might be surprised to know that there are now over 7 billion cell phones in the world. In fact, there are now more cell phones in the world than there are toilets! This connectivity has allowed tremendous innovations in education.

Salman Khan, this year’s Hunt-Wilson Lecturer, has shown us how massive open online courses (MOOCs) have changed the world of education. Whereas traditional classrooms are limited to small numbers of students, MOOCs can educate tens of thousands of students per class (https://www.khanacademy.org/).

The AANS has also invested in high-quality online education for our members. Through generous support from the Neurosurgery Research & Education Foundation (NREF) and the tireless efforts of Jeff Sorenson, we now have an increasing number of online educational tools that permit a neurosurgeon anywhere in the world, with Internet access and a smartphone, to review relevant surgical anatomy. They can see how to position their patient, where to make a skin incision, and then watch high-definition surgical videos of experts performing neurosurgical operations.

The Rhoton Collection, now available as a cell phone app, is linked to the *Journal of Neurosurgery* so that by clicking on key words in a *Journal of Neurosurgery* article, the reader is instantly taken to the Rhoton Collection. There is also now an Instagram version and, thanks to neurosurgeon Jimmy Chuang, we now also have a Chinese translation of Dr. Rhoton’s lectures.

It should be noted that these beautiful dissections, some 75,000 slides, created in the Rhoton Lab in Gainesville, were the work product of over 120 international fellows who came to the United States from around the world to make the Rhoton Collection what it is today. One of those graduates, Evandro de Oliviera, will regale us with his experiences in the Rhoton Lab as our Rhoton Lecturer later this week.

Similarly, through the generous gift of Aaron Cohen-Gadol, we also have a cell phone app for the Neurosurgical Atlas. This encyclopedic collection holds over 280 chapters, 150 webinars, and 1200 surgical videos, all being linked to our *Journal of Neurosurgery* under the able leadership of our Editor-in-Chief, Jim Rutka. The Atlas includes 3D renderings of anatomy, endoscopic skull base

![FIG. 4. At the first meeting of the Harvey Cushing Society in Boston, Harvey Cushing held an operative clinic in which the founding members of the new neurosurgical society could observe him performing neurosurgery. Courtesy of Yale University, Harvey Cushing/John Hay Whitney Medical Library.](image-url)
approaches, and 3D simulations that can be manipulated in space, all on your smart phone.

The cell phone apps for both the Rhoton Collection and Aaron’s Atlas can be found in your Annual AANS Meeting App as well as on the AANS website if you would care to access them.

This year, under the leadership of Editor Bill Couldwell, our open-access online journal Neurosurgical Focus also started its surgical video series. As a testament to its success, Focus documented 46,000 full-text articles downloaded from our website in the month of November alone.

As a consequence of global communication, the way we manage our patients has also become globalized. From our multi-national clinical trials in brain tumor management to our current protocols for deep brain stimulation and management of vascular pathologies, neuro-trauma, and even degenerative spine disease, we continue to learn from one another without geographical constraints.1,6,7,11,12,19,21,28

I would like to suggest that, as NeuroPoint Alliance (NPA) matures, the AANS now has the ability to serve not only as a national data repository but also as an international center for neurosurgical clinical trials. Our industry partners have recognized this and have helped us develop prospective registries such as our Stereotactic Radiosurgery Registry, which can store complex MR images and data sets, including patient-reported outcomes.1,6,11,12,19,21,28

Our negotiations with the FDA are moving forward in anticipation that NPA can become a national post-market surveillance center for new drugs and devices. In fact, one of our own members, Chris Loftus, has just been appointed to serve as the Chief Medical Officer for the Division of Neurological and Physical Medicine Devices at the FDA.

In 2015, AANS President Bob Harbaugh invited the presidents of the 4 other continental societies; Walt Johnson, one of our members working at the World Health Organization; and the leadership of the World Federation of Neurosurgical Societies (WFNS) to hold a seat at our annual Board of Directors meeting. This informational exchange has served to help bind the World of Neurosurgery in a common purpose.

Last year, at the request of President Hunt Batjer, the AANS undertook a Task Force on Globalization to clarify the role of the AANS in relation to the world of neurosurgery. Chaired by Anil Nanda, the Task Force made several recommendations.

The first was to develop a AANS Ambassador’s Program in which esteemed representatives from our society will serve as ambassadors to each of the other continental societies.

Whereas our leadership turns over on an annual basis, it is hoped that our ambassadors can provide more continuity in our interactions with the other continental societies, thus enabling us to better engage these organizations and their leadership.

We have also developed an International Speakers’ Bureau, identifying AANS members from each Joint Section with special expertise who are willing to teach at international venues.

FIG. 5. The Washington Committee began in 1975 with 1 full-time lobbyist, Charles Plante, and 6 neurosurgeon members, 3 from the AANS and 3 from the CNS. Since then, under the capable leadership of Katie Orrico, the Washington Committee has grown to 6 full-time staff and 34 neurosurgeon members manning 6 standing committees. Inset photographs: Katie O. Orrico, JD, courtesy of Katie O. Orrico. Charles Plante, JD, courtesy of the Plante family with permission from the photographer, Frank Leary. Figure is available in color online only.
Finally, we have developed a new reduced-cost membership category for neurosurgeons in low- and middle-income countries such that these neurosurgeons can take advantage of our online educational forums and other member benefits at a rate they can afford.

The Future

In the age of globalization, it is worth noting that our public reporting of quality and performance metrics is not only viewed by our public, but is now on display to the world. The quality metrics that we establish serve as a barometer for health care on a global stage. The world has become a smaller place, and travel more affordable. As the world economy improves, more and more patients are able to seek the provider of their choice and are no longer geographically constrained.

Our ACGME has now developed an ACGME-International, which performs site visits and helps medical schools in other countries develop standards similar to our own. Through site visits and formal systems evaluations, hospitals that wish to develop training standards comparable to those in the United States—and have the means to do so—are able to work with ACGME consultants to implement these standards (http://www.acgme-i.org/).

The Joint Commission International (JCI) now contracts with hospital systems worldwide to improve hospital quality and patient safety. To date they have accredited over 125 hospitals in 53 countries (http://www.jointcommissioninternational.org/).

I find it interesting that one of the most influential means of improving hospital quality of care in our country has been a magazine. In fact, I would go so far as to say that the annual “Best Hospitals” issue of *US News and World Report* has done more to improve the quality of patient care than any of the quality-improvement programs our government has given us (http://health.usnews.com/best-hospitals). Just as *US News and World Report* recognition has become the sine qua non for centers of excellence in the United States, we see similar quality metrics being reported around the world.

It is estimated that medical tourism is growing at a rate of 10%–20% per year. In the short interval from 2004 to 2012, the industry more than doubled. A comparison of outcomes from coronary artery bypass surgery in several California hospitals to some of the international hospitals marketing to patients shows that large international hospitals perform complex surgeries with complication rates well below those of many hospitals in the United States.23

Medical tourism is a burgeoning industry, and US health plans are now participating. In 2000, Blue Shield of California began offering a plan in which they would pay for treatment at 3 hospitals in Mexico. If you choose a primary care physician in Tijuana, the cost of your premiums are significantly less compared with California-based physicians and you are guaranteed to see your doctor on the same day that you call.

Similarly, in 2007 Blue Cross/Blue Shield of South Carolina developed a subsidiary called “Companion Global Healthcare” in which they offered high-quality, reduced-cost care at hospitals in Thailand, Singapore, Turkey, Ireland, Costa Rica, and India.14

Should you decide to have your transformaminal lumbar interbody fusion (TLIF) done in Bangkok, you will find state-of-the-art facilities, and physicians and nurses who speak your language. As their medical director told one of my anesthesia colleagues, “We can’t afford to keep doctors here who have high complication rates. The only way we can keep our business affordable is by keeping our complication rates low” (https://www.bumrungrad.com/en/spine-institute-surgery-bangkok-thailand-best-jci). And if you are worried about the possibility of a complication overseas, there are a number of insurance plans available. Many of these include transportation back to a hospital in the United States if necessary.

If we define globalization as the movement of goods and services across borders for purposes of efficiencies, there are both upsides and downsides of its application to health care.9 On the upside, as more countries adopt better standards of care, the quality of health care worldwide will only improve. Conversely, unlike other commodities, health care involves complex cultural, ethical, and social differences, which will present us with new challenges. If a hospital system abroad becomes too enamored of medical tourism, it may adversely affect access to services for the local population.

Second is the “Brain Drain.” In systems where professional degrees become internationally recognized, the migration of qualified professionals across borders becomes facilitated. My good friend Juri Steno, who is both a neurosurgeon and dean of the medical school in Bratislava, tells me that it is challenging for his country to keep neurosurgical graduates there. Once they complete their training they can seamlessly compete for positions across the European Union.

Third is the emigration of patients abroad for services that are either unavailable or unaffordable locally.

Finally, there are workforce implications. As you may know, federal funding for residency positions in our country has been frozen for the last 20 years, following the Balanced Budget Act of 1997. This year, out of 35,969 medical school graduates competing in the Match, 8281 or 23% failed to match into a residency position.22

Now, if I had worked hard to get through medical school, had accrued $150,000 in student loan debt, and found I could not get a job in the United States, I might find training in an ACGME-International hospital in Singapore or Abu Dhabi an attractive option.25

Let me share with you a recent story that is near to my heart. A year and a half ago, I arrived in clinic one morning to find a CT scan being done on one of my partners. Julius had thought he had a viral headache for 10 days but it was getting worse, so he decided to drop by the clinic for a scan. His MRI showed a large right temporal tumor with extension into the right thalamus and midline shift causing ventricular obstruction. Given his hydrocephalus, we gained permission to immediately admit him to Le Bonheur Children’s Hospital, where our intra-operative MRI scanner was located.

Julius and his girlfriend, Jody, had been together for several years, and Julius’s only request was that he be al-
allowed to marry her before undergoing surgery. We called ahead and had the Child Life people prepare one of our ICU rooms for the wedding and called for the hospital priest to be there to perform the ceremony. By the time Julius got to the hospital he was getting sleepy and was unable to walk from his car into the hospital.

While the ceremony was taking place upstairs, our operating room team was preparing for his surgery. By the time Julius got to the operating room, he was no longer following commands. Paul Klimo and I removed his glioblastoma, and Julius made a speedy recovery. When we started looking into treatment options, Julius was not interested in a therapy that merely extended his survival. As a newlywed he wanted a therapy with potential for cure. Interestingly, nearly all of the approved protocols in the United States required that the tumor recur before Julius could be eligible for treatment. As it turned out, the immunotherapy company Northwest Biotherapeutics was based in Bethesda, but their vaccine (DCVax) was made in Memphis, 15 minutes from our clinic. Even though the vaccine for Julius’s tumor was made in Memphis, the only place he was eligible to get the injections was in London. So, he enrolled in a treatment protocol and had the drug made in Memphis. It was then shipped to London, where he and Jody had to fly so that he could receive his vaccinations.

Julius was my partner. He was one of the brightest and most capable residents I have ever trained—the kind of guy who is just as comfortable doing a T2-to-ilium fusion as he was placing deep brain stimulation (DBS) electrodes for Parkinson disease. He repeatedly won our residents’ “Teacher of the Year” award. His follow-up MRI showed that the deep portion of his tumor infiltrating the right thalamus appeared to have responded nicely to therapy. For 16 months Julius was well. But as one might expect, his symptoms eventually progressed, and he died 2 months ago.

In closing, we in neurosurgery have benefitted enormously from the rich and diverse culture created for us by our founding fathers. The culture established by our early leaders has built for us a legacy of excellence that continues to serve us well.13 As we near the end of our 1st century as a specialty, not only have we endured the barrage of health care reforms that have become a part of our daily lives, but our culture of excellence has positioned us as leaders from whom politicians and professionals alike seek guidance.

As has been our legacy, we must also continue our collaboration with neurosurgeons around the world. For as neurosurgeons, our culture knows no political, racial, or religious boundaries.

FIG. 6. This graph of physicians’ work-related stress and burnout demonstrates that neurosurgeons are outliers. When neurosurgeons have a “bad day” it generally means that someone is going to have a bad life; but, compared with other physician groups, neurosurgeons, by training and culture, historically have seemed to be able to effectively deal with these stresses. Figure reprinted from Mayo Clinic Proceedings 90(12); Shanafelt TD, Hasan O, Dyrbye LN, Sinsky C, Satele D, Sloan J, and West CP: Changes in burnout and satisfaction with work-life balance in physicians and the general US working population between 2011 and 2014; pp 1600–1613; Copyright 2015, with permission from Elsevier. Figure is available in color online only.
As Joi Ito, director of the MIT Media Lab put it, “Instead of rules or even strategy, the key to success is culture. Whether we are talking about our moral compass, our world view, or our sensibility and taste, the way that we set these compasses is through the culture that we create and how we communicate that culture through events, e-mail, meetings, blog posts.”

If there is any doubt about a neurosurgeon’s culture being unique, look at this graph of career satisfaction and burnout (Fig. 6). Compared with our colleagues, it would appear that we score poorly on metrics of work-life balance. When we have a bad day, someone else generally has a bad life; but whereas others find our routine intolerable, we set these compasses is through the culture that we create and how we communicate that culture through events, e-mail, meetings, blog posts.

In a 1931 manuscript Dr. Cushing wrote:

Every generation is prone to overvalue its own accomplishments and to feel that it has lived through the most eventful era in history. So it is music in our ears to be told that this recent half century has seen the greatest progress of all. Not everyone is entirely happy about it, for with standardization and mass production and the mechanical robot has come a vast deal of unemployment and any day some new machine or centralized control may throw still more of us out of work.

In closing, I would like to thank each of my mentors, the AANS Board of Directors and staff, Katie Orrico and the Washington Committee, and my loving family for their support of my efforts this year. Finally, I would like to thank all of the children I have cared for over the years for teaching me lessons of bravery, perseverance, and how to live life to its fullest even in the face of adversity. This honor has been all mine.

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