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SLS President 2005

Ladies and Gentlemen,

I am deeply grateful for the honor of serving as your president for this past year. It has been truly fulfilling to have had the opportunity to work together with so many of you under the auspices of this Society.

Before we begin, I would like to take just a moment to extend our blessings to those whose lives were lost or uprooted by the devastating hurricane [Katrina] and flooding. We are praying for their speedy recovery.

In preparing for today's address, I have been spending quite some time reflecting on the unusual trials and triumphs that have characterized the history of laparoscopic surgery. Through these ruminations, it was with special gratitude that I reflected upon SLS, recalling how, even when the role of operative laparoscopy had yet to be clearly defined, let alone fully accepted, SLS stood as an unwavering beacon, guiding us through and beyond uncharted shores.

Dr. Paul Wetter along with Janis Chinnock **(Figure 1)** and their colleagues envisioned with remarkable foresight the need for a multidisciplinary approach to advance laparoscopy even further. This organizational innovation ultimately proved to be crucial for our collective successes, for it encouraged us to come together so that we could gain insight from one another as we embarked into the unknown.

We also benefited from the leadership of Dr. Michael Kavic **(Figure 2)**, the founding editor, whose expertise helped transform the *Journal of the Society of Laparoendoscopic Surgeons* (*JSLS*) into a world-class publication, one that gave all of us a unique forum for sharing knowledge. This collaborative ethos, so perfectly exemplified by SLS, contributed substantially to the rapid ascension and acceptance our discipline finally experienced in the 1990s, a shift that allowed for an exciting era of renewal and renaissance to spring forth. It is this spirit of cooperation that I wish to speak about briefly today, to emphasize its remarkable transformative powers.

Relatively little attention has been paid to the impact that interdisciplinary collaboration has had on progress in medicine. More often than not, it is the absence of such teamwork that piques our interest more readily.

Certainly, we all know by now the disheartening stories of antagonism encountered by laparoscopy's forefathers, such as Bozzini, among others. In contrast, instances of positive scientific exchange can be easily overlooked, for the benefits often work imperceptibly, functioning as an indispensable yet intangible factor underlying so many of humankind's greatest achievements. If we each reflect upon our own unique experiences, surely we find that so many of our individual triumphs were fortified by sources of inspiration external to ourselves—peer support in the form of knowledge freely shared, or simply encouraging words from an admired mentor. Even the smallest gesture can convert into the greatest catalyst for reinvigorating our own creative drive, a phenomenon that demonstrates just how truly interdependent we are. In my case, Dr. David Stevenson comes to mind.

To some degree, this notion of interdependence contradicts the traditional ideologies associated with America's early pioneering days. The cherished values of rugged individualism and stoic independence have been glorified in our nation's mythologies and movies. Scientists, too, are portrayed in similar fashion, with images suggesting that of an isolationist, happily sequestered within the solitary chambers of the lab—or mind.

While promoting such images of steely resolve may have served a practical purpose in the past, for today's scientific community, greater progress may be achieved more readily by maintaining our shared commitment to open exchange. To highlight this notion, I would like to take us back to our history books for a moment to reevaluate 2 stories that demonstrate how the presence—or absence—of broad-scale collaboration helped to effect vastly different outcomes for humankind.

The first story is that of the successful campaign to eradicate smallpox, which is in striking contrast to the string of mis-

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Figure 1. Paul Wetter and Janis Chinnock.

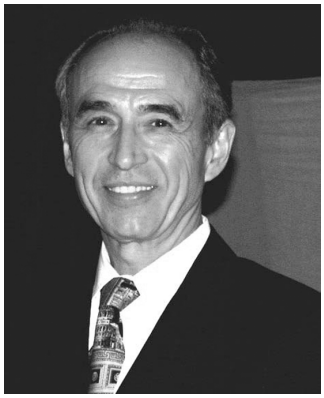

Figure 2. Michael S. Kavic.

fortunes that characterize the story of Ignaz Semmelweiss, the Hungarian physician who first attempted to introduce antiseptic safeguards into surgery. The worldwide campaign to eradicate smallpox exemplified the collaborative spirit at its finest, for its success was the result of an international effort that benefited millions of lives.

The idea to attempt global eradication was first introduced in 1958 by a public speech given by the Soviet Union's minister of health, who invited other world leaders to meet the challenge. The Soviet's took further steps to mobilize interest by donating their enormous stockpiles of vaccine. Of course, some political analysts have interpreted these actions in a less generous light, but we won't get into that political maelstrom today. In any case, world leaders of the day accepted the Soviet's bold challenge, and just like that, a fire was lit and a dream was born.

In 1967, some of the most powerful institutions were involved in this shared vision. Coordinated by the World Health Organization, political leaders from other countries and representatives from the US Senate, the CDC in Atlanta, and eventually President Lyndon Johnson himself, all came forward to unite their energies and resources toward this one noble cause. Catalyzed by this spirit of unity, other sectors of society and medicine moved into action. Innovations poured forth from research centers across the world. Within a short time, scientists from Wyeth Labs were inspired to develop an improved delivery system for the vaccine, which was immediately made available for worldwide distribution.

Meanwhile, on the frontlines, thousands of international volunteers came forward, spreading out across the globe—by foot, by bus, by donkey—reaching even the remotest villages. Within just 5 years, the seemingly impossible was accomplished: Of the 44 countries still affected by the disease in 1967, just 4 countries still had reported outbreaks by 1972. Five years later, in October of 1977, the world's last official natural victim, a Somali man, contracted the disease. Fortunately he survived, becoming a living symbol to one of the world's most extraordinary accomplishments. For the first time in history, humankind had destroyed a disease that had been one of the longest standing scourges since time immemorial.

This groundbreaking achievement was truly the product of an internationally coordinated effort, involving a combination of dedicated leadership, political will, and respectful interaction between medical and scientific communities.

Now, not to be the one to close the curtain on this happy tale of triumph, but I would like to share another story that unfolds as an unfortunate example of broad-scale disunity.

When Ignaz Semmelweis began his obstetric residency in 1844 at Vienna's General Hospital in Austria, maternal death rates were still extraordinarily high. In fact, in his ward alone, close to 20% of the young mothers would ultimately die from the mysterious illness commonly known back then as "childbirth fever." During this mid-19th century timeframe, other sources throughout Europe reported rates as high as 30%. Semmelweis was especially troubled by the extreme disparity in death rates between deliveries made by surgeons in hospitals versus those made by midwives in homes. Over 30 prevailing theories existed about childbirth fever at the time, yet each one failed to adequately explain these differences in outcomes.

Advances in germ theory introduced by Lister and Pasteur were still years away. Consequently, practices we take for granted today, such as washing hands and sterilizing instruments before surgery, were simply not in place. The crucial breakthrough for Semmelweis came in 1847, as a result of his close friend's death, a colleague who had cut his finger while performing an autopsy. Within a few days, his friend succumbed to a raging infection. Full of grief, Semmelweis was determined to understand what happened and obsessively retraced the steps leading up to his friend's death.

The autopsy results revealed that the infection bore strik-

ing resemblance to childbirth fever, an observation that finally allowed Semmelweis to make the connection that so many others had missed. Unwittingly, surgeons and medical students, going directly from dissection lab to delivery room, had been infecting young mothers with cadaver residue from their tainted instruments and unwashed hands. Semmelweis immediately coordinated a vigilant campaign to educate his colleagues. He implemented procedures to ensure that all medical personnel thoroughly washed their hands and instruments in a solution of chlorinated lime before entering the OR. Just as Semmelweis had hypothesized, these actions proved instantly successful. Through these simple changes, within 1 year the maternal death rates in his ward were reduced from a high of 18.3% to 1.2%.

Despite the astonishing reduction in deaths resulting from his discovery, despite the clear evidence and simple solution, Semmelweiss met with persistent resistance and scorn from all corners of the established medical community in Vienna. His superiors at the hospital, anxious to rid themselves of his muckraking ways, chose not to rehire Semmelweis after his residency expired. He and his theory were repeatedly denounced in a series of public debates that lasted for several years. Facing such hostility unraveled Semmelweis, eventually causing him to retreat back to his home country of Hungary, a forgotten man. Years later, a growing depression degenerated into full-scale mental illness, consequently forcing his family to commit him to a mental asylum. There, according to medical historian Sherwin Nuland, Semmelweiss died, apparently at the hands of asylum staff attempting to forcibly subdue him. It was only after Pasteur and Lister's discoveries that Semmelweiss posthumously gained the deserved recognition for his work.

Now, certainly other circumstances can help explain the differences between these 2 stories; there were of course worlds of difference between 1848 and 1958, too numerous to mention. Even so, a spirit of collaboration is not time-dependent. The power to invoke its force is within the grasp of each generation; it resides within all of us. But like all things human, much of our potential must be nourished and nudged along.

Speaking of nourishment, my own journey was indeed nourished by a lifetime of inspiration gleaned from my fellow colleagues and my family. This is one aspect of my life for which I am especially grateful, for it seems that inquiring minds are often accompanied by controversy, and a little friendship goes a long way in helping overcome such obstacles.[1]

For me, the impulse to question traditional surgical practices began in earnest in 1974, when I started my residency at the State University of New York in Buffalo. Of course at this time, throughout the 70s and early 80s, even mild endometriosis was treated via laparotomy, although other abdominal procedures, such as tubal ligation, ectopic pregnancy and salpingoovariolysis, had been accomplished laparoscopically. In fact, those procedures stood out in my mind back then as some of the best surgical innovations of the day, driven along by the pioneering vision of physicians, such as Palmer, Semm, Gomel, and Bruhat, to name just a few among so many others.

However, the fact that we stopped short and limited the scope's use to only those few procedures in only a few centers worldwide, and even then sporadically, seemed to me a perplexing incongruency. It appeared on the one hand that the main barriers hindering the scope's operative potential could be overcome by just a few technological improvements. Yet, the adage "so close, yet so far away" was an apt description for the times, because I soon discovered that confronting psychological resistance to change was the far more difficult task.

Fortunately, my mentors during residency Drs. Ron Batt and Marvin Pleskow and later Drs. Robert Greenblatt and Don Gambrell during my fellowship in Reproductive Endocrinology and Infertility in Georgia, continued to believe in me and welcomed the spirit of discovery. With their encouragement, I was therefore able to explore various techniques while still a resident and fellow.

Sometimes the results of my earnest enthusiasm were rather comical. My early efforts to work off the monitor using outdated black and white video equipment provided murky images of the abdomen remarkably reminiscent of Jackson Pollack's *Number 8*. Indeed, someone once said that if it's green, it's biology; if it stinks, it's chemistry; and if it doesn't work, it must be technology. And believe me, this is certainly how it seemed at the time. With such disappointing preliminary results, it was terribly difficult to convince anyone that operative laparoscopy had a future—indeed, would be the future of surgery. More often than not, I felt like the laughing stock of the OR, as the available technology of the day simply would not cooperate with the visions in my head **(Figure 3)**.

A crucial breakthrough came through the collaborative support from colleagues in a different discipline. The positive outcomes stemming from such interdisciplinary exchange truly spurred progress along, and I cannot emphasize enough just how crucial this element was for videolaparoscopy's development. Early on, vascular and neurosurgeons had success using cameras for microsur-

Figure 3.

Figure 4.

gery. So, hoping to learn from their successes, I approached my colleagues in these disciplines. Their willingness to spend time demonstrating this technology was very fruitful. I was able to convert an old camera used in their disciplines into an awkward but nevertheless functioning addition to the scope. Of course, we ran into unusual logistical dilemmas trying to adapt this technology. Many strange configurations were attempted before achieving any degree of success.[2]

At one point, to help stabilize the now substantially heavier array of instrumentation, I lugged myself and the camera equipment up a ladder and somehow got the whole system to securely suspend from the ceiling, rigged together using the advanced technology of duct tape. Words cannot describe just how ridiculous this hanging, swinging contraption looked protruding so flagrantly in the air. By this time, just about everyone was either laughing or crying. Well, suffice it to say, the days were long back then. And despite all our best efforts, we still were faced with the stubborn issue of poor resolution **(Figure 4)**.

Meanwhile, on another front were the medical device companies. Monitoring systems were being developed, but they were still being designed with only photo documentation in mind, a fact that perpetuated the problem of poor resolution. Dr. Phillip Brooks and George Berci from Cedar Sinai Hospital in Los Angeles were involved in developing early recording for photo documentation. And since perception is often more powerful than any facts on the ground, without a perceived need for better resolution, the dilemma of poor visualization continued to thwart attempts to work exclusively off the monitor.

It was through collaboration with Karl Storz and other such companies that a conceptual breakthrough was finally achieved. Using those same old clunky cameras borrowed from the neurosurgeons and vascular surgeons, we were able to show the company reps that operating off the monitor could in fact work—not just in our dreams, but in reality too. After hours in the OR, eventually Storz reps were convinced of the scope's greater potential too, and they began producing new cameras and light sources customized for working off the monitor. These days, working together with companies in this fashion might be discouraged. Yet, without this early support and free-spirited exchange of ideas between engineers and surgeons, poor visualization certainly would have persisted as a formidable conceptual and technological divide.[3]

With new technology finally trickling in, we were able to progress to the next level. For my subspecialty in reproductive endocrinology and infertility, this meant working with infertility patients, many of whom were afflicted with high levels of endometriosis, rates as high as 60% to 70%. Like today, the gold standard for diagnosing endometriosis back then was also by laparoscopy or laparotomy. But with the new technology finally available, we did everything we could to convert procedures so that we could operate off the monitor laparoscopically, avoiding laparotomy.

Following the same microsurgical techniques taught by pioneers in treating endometriosis, such as Drs. Robert Frankling of Houston and Ron Batt of Buffalo, gradually the potential of operative video-laparoscope was revealed, which finally allowed us to treat more advanced diseases without the need for large incisions.

Of course, endometriosis itself led me to work with other specialties, as it commonly affects many different organs, especially the GI and GU systems. Therefore, collaboration with experts in these fields started early on. The contributions of Dr. Earl Pennington, a pioneering colorectal surgeon, and Drs. Rottenberg and Green, both urologists, were especially noteworthy, as they guided us through very challenging procedures that had never been achieved laparoscopically before. These included laparoscopic bowel, bladder, and ureter resection among others.[4–15]

Patients with endometriosis have high rates of endometriomas as well, which sometimes can have the appearance of malignancy. Therefore, from the very beginning, contributions from colleagues in gyn-oncology were of critical importance. In this area, the work of Drs. Benedict Benigno **(Figure 5)** and Matthew Burrell were absolutely invaluable.

Through their vision and willingness to share their exper-

tise, a better understanding of how to recognize and manage malignancies laparoscopically was achieved. In fact, the first time we did a radical hysterectomy laparoscopically, with paraaortic and pelvic node dissection, they worked side by side with us for the entire 7 hours that this operation took. An entirely new frontier of knowledge was therefore unlocked, ushering in even greater advancements for our discipline.[16–18]

There is just not enough time to mention all the colleagues whose work and collaborative spirit contributed to our discipline's progress. Dr. Dan Martin of Memphis provided tremendous guidance and expertise with the use of the CO_2 laser, while further advancements with the laser were spearheaded by Drs. Maurice Bruhat in France and Yona Tadir in Israel. At Stanford, there are so many names to mention. With the help of Carl Levinson's excellent insight and leadership, the Center for Minimally Invasive Surgery was found. And the encouragement and collaboration of Dr. Tom Krummel, Chairman of the Department of Surgery, has been crucial. Dr. Krummel **(Figure 6)** is guiding the department into the future with great vision, by establishing partnerships with not only various surgical disciplines, but with bioengineering and other branches of science as well.

At Stanford, collaboration with Dr. Mark Vierra **(Figure 7)**, a leading gastrointestinal endoscopic surgeon, along with Drs. Chris Zarins and Tom Fogherty, pioneering endovascular and thoracic surgeons, respectively, paved the way for remarkable achievements in those specialties.

Knowing and working with Dr. John Adler, a visionary in neurosurgery, Mahmood Razavi in interventional radiology, Andrew Shelton, Mark Welton, and David Gregg in gastrointestinal surgery, who all practice at Stanford, has been a great privilege. And in urology, Drs. Freiha, Payne, and Gill, also at Stanford, are all pioneers who have made outstanding contributions.[19]

Figure 5. Benedict Benigno.

Figure 6. Tom Krummel.

Figure 7. Mark Vierra.

Finally, innovations in Surgical Simulators by Drs. Heinrichs and Hasson have helped to open up whole new vistas.

Of course, I cannot imagine life without the dedicated support from all my brothers, Drs. Farr and Ceana, as well as Ali and Rastin. Through them, I learned about brotherly collaboration, a relationship that thrives on the usual degrees of affection, but also upon ample doses of constructive criticism and invigorating debates.[20]

Were it not for this network of friends and family **(Figure 8)**, without the generous encouragement and inspiration from so many of you here today who extended your expertise, support, and kindness along the way, my own life work would surely ring hollow.

As for the future of the laparoscope, the era for large incisions to the body cavity for sure has passed, as more radical procedures will be done endoscopically; and innovative partnerships between different disciplines, such as genomics, robotics, MRIs, interventional radiology, chemo- and photodynamic therapy, will change the face of surgery drastically. Working together will allow us to tap into these hidden reserves of potential. After all, humankind achieves space flight routinely now. Yet, much of that

Figure 8. Camran Nezhat and family.

technology still has not been fully utilized for the advancement of medicine. When that door is finally unlocked, the benefits reaped will be truly breathtaking, for the potential to help humanity will advance into ever-new and exhilarating heights.

Let me conclude by indulging in just one more brief exhortation. It was Einstein who stated, "Imagination is more important than knowledge." Indeed, during those early years, when the scope was just beginning its evolutionary migration from diagnostic to operative procedures, when so many of us were encountering resistance to our efforts to hasten that shift, surely it was imagination that helped sustain us through those times of uncertainty. Yet imagination itself certainly is fired by our shared energies, nourished along by the transformative experiences of creative collaboration.

Imagine then, we cannot walk alone. We can—and do—learn so much from one another. Each of our specialties brings unique and complementary perspectives to the same fundamental objective of medicine: restoring health—and therefore hope—to humankind.

Again, thank you so much for the privilege. Thank you.

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