

**Presidential Address:**  
**4<sup>th</sup> Annual Meeting of the International**  
**Society of Minimally Invasive Cardiac Surgery**

## What Is ISMICS and Why Does It Exist?

Michael J. Mack, MD

Cardiopulmonary Research Science and Technology Institute (CRSTI), Dallas, Texas

*"The only thing constant is change... and the nature of change is exponential. For people who find change something they are not content with, I could image that being a real problem. The collective effect of change is large and generally positive."*

*Gordon E. Moore (Moore's Law) Reflection of his retirement from Intel/ New York Times, May 27, 2001*

The International Society for Minimally Invasive Cardiac Surgery (ISMICS) was formally founded in 1998. It was the coalescence of early meetings in the field of minimally invasive cardiac surgery and was founded to provide a forum for new ideas in the emerging field of minimally invasive cardiac surgery. These concepts and experiences were largely in the early stages of development, and innovative – but were not necessarily ready for “primetime”.

The first annual meeting was held in Minneapolis in 1998 with Robert Emery serving as the first President. The second meeting was in Paris, France in 1999 with Patrick Nataf as the presiding President. Atlanta, Georgia served as the site of the third meeting and I have had the honor of serving as the President over this past year. At this our fourth annual meeting in Munich, Herman Reichenspurner will be installed as the new President. He will preside over the Society until the fifth annual meeting in New York, New York in June 2002 when W. Randall Chitwood, the new President-elect, will be installed.

The past year has been an eventful one for ISMICS. The Society elected new management, PRRI, Manchester, Massachusetts, USA with a new Executive Director. ISMICS also became a member of CTSNet ([www.ctsnet.org](http://www.ctsnet.org)), with a direct link to ISMICS from the CTSNet website. We also signed a new five-year contract with The Heart Surgery Forum® as the official journal of ISMICS. Membership ranks swelled to its current 558 members. Extensive planning went into this Munich meeting with Herman Reichenspurner and Rex Standbridge serving as co-chairs of the program committee and Herman as local arrangement chairperson. Six hundred thirty-nine individuals attended this meeting.

As I conclude my year of President at ISMICS, I feel privileged to have served its membership. At the end of my career, when I will reflect upon the highlights, I feel confident that I will view the year I spent as President of ISMICS as one of the accomplishments of which I am most proud. The year began with ISMICS in an identity crisis with the question being asked: “What is that “rasion d’être” for ISMICS?” Why does ISMICS need to still exist? The main body of work in the field, beating heart surgery, was being rapidly assimilated into mainstream cardiac surgery. The programs of the established societies were now replete with presentations of minimally invasive surgery. Wasn’t ISMICS job now complete?

To answer this question, one needs to look to the field of technology in a work called *The Innovator’s Dilemma* by Clayton M. Christensen. He describes the evolution that occurs when innovative companies become successful and mainstream. The tendency is to lose the creative spirit that originally gave birth to the innovation. One must always seek to recapture that creative spirit and continue the innovation. Innovation in cardiac surgery does not begin and end with beating heart surgery; there is fertile field for continued innovation in which ISMICS should serve as the “incubator” of new ideas.

To understand how new technology and techniques are introduced and evolve, one needs to understand the difference between *disruptive* technology and *sustaining* technology. Disruptive technology is breakthroughs that significantly change or “disrupt” the way things have previously been done. Examples of disruptive technology are all around us and significantly upset the “apple cart” of the establishment norm. Some examples include:

Established Technology	Disruptive Technology
Silverfilm	Digital Photography
Wireline Telephone	Mobile Cellular Communications
Offset Printing	Digital Printing
M.D.	Nurse Practitioners
Microsoft Windows	Internet Protocols (IP, Java)
Open Surgery	Endoscopic Surgery
Conventional CABG	Angioplasty, Beating Heart Surgery

*Address correspondence and reprint requests to: Michael J. Mack, MD, Cardiopulmonary Research Science and Technology Institute (CRSTI), 7777 Forest Lane, Suite A-323, Dallas, TX 75230-2507, Phone: (972) 490-5457, Fax: (972) 566-5457, Email: [mjmack@earthlink.net](mailto:mjmack@earthlink.net)*

However, *disruptive* technology in and of itself is not sufficient. The ultimate value of a breakthrough is determined largely by the refinements and the enhancements that occur after the breakthrough. Take for example the field of portable

communication technology; it took 50 years to evolve from the portable battle field communications of World War II to the universality of cellular communications today. This evolution occurred only because of the enhancements that have endowed user friendliness upon the original disruptive technology. The technology has its value and broad applicability because of the enhancing sustaining technology. In a similar manner, there has been a century of *sustaining* technology between the Wright Brother's first airplane and the Boeing Sonic Cruiser introduced last month at the Paris air show. On the other hand, the wireless Internet is so far disappointing, not reaching its anticipated value. But we are still in the very early stages of evolution of the wireless Internet and when the costs decrease, the readability of screens improve, and the speed of transmission increases, there is no doubt that the wireless internet will contribute significant value.

Closer to home is the paradigm shift in coronary revascularization by catheter-based therapy. The original introduction of coronary balloon angioplasty by Greuntzig in 1979 was clearly *disruptive* technology. But in the 22 years since, the *sustaining* technology of guiding catheters, steerable wires, low profile delivery, and exchange systems, closure devices, stents, IVUS, antiplatelet therapy, 2b3a agents, brachytherapy and drug eluting stents have significantly improved the original value of Greuntzig's disruption.

One can view beating heart surgery as disruptive, but it is the sustaining technology that will ultimately create the value to beating heart surgery. Sustaining technology such as stabilizers, now in their second and third generation, carbon dioxide blowers, shunts, pericardial stay-sutures, suction exposure devices, anastomotic connectors, and possibly robotics. We are really only five years into the evolution of beating heart surgery and sustaining technology and techniques will ultimately make the procedure more patient friendly, more surgeon friendly and therefore of value. The members of ISMICS should develop that sustaining technology.

One should also realize that in the field of minimally invasive cardiac surgery the "low hanging fruit" has already been picked. However, there is a lot of other fruit ripe for picking, but "higher up" on the cardiac surgery tree. Those areas

include new treatments for atrial fibrillation, gene therapy delivery, congestive heart failure management, percutaneous valve surgery, muscle and stem cell transplantation, tissue engineered valves and conduits, distal anastomotic connectors, artificial small vessel conduits and image-guided surgery.

When one contemplates the future of surgery in general, the following concepts should be kept in mind:

- Ablation will largely replace excision as a method of treatment
- Image guided surgery will ultimately replace direct vision
- Reconstruction will be performed increasingly without suturing
- Any therapy that can be accessed by a natural orifice or a blood vessel will be preferable to surgery through an incision

Despite what the world of catheter-based intervention may believe, this is not the beginning of the end of cardiac surgery, but the end of a new beginning. The mandate for the members of ISMICS is to continue to innovate, continue to incubate, continue to change and to cause change. In order to effect these changes, the members should be cognizant of the drivers of adoption:

- Validation of clinical outcomes
- New technology to create ease of use
- Training and education in new technology and techniques

Members of ISMICS should focus on these three areas to enhance the value of technology and techniques already incubated and should look to the "new" new thing so that ISMICS can fulfill its role as the "incubator of cardiac surgery".

It has been an honor and a privilege to serve as your President and I look forward to being a proud member and contributor to ISMICS in the years to come.

## REFERENCES

1. Christensen CM. *The Innovator's Dilemma*. Harper Collins Publishers, Inc., New York, New York, 2000.
2. Lewis M. *The New New Thing*. Penguin Putman Inc., London, England, 2001.