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An Essay on 35 Years of the Society of Cardiovascular Anesthesiologists

J. G. Reves, MD

This is an historical account of the accomplishments of the Society of Cardiovascular Anesthesiologists from its founding in 1989 to the present. It is written on the occasion of the 35th anniversary of the founding of this organization. The society accomplishments include providing a means to educate anesthesiologists and others about the perioperative care of patients undergoing cardiac, thoracic, and vascular surgery. The society has led accreditation of transesophageal echocardiography and education in cardiothoracic anesthesia. The society publishes a section within *Anesthesia & Analgesia* and supports investigation by providing a forum for the discussion of research and funding peer-reviewed projects. The first 35 years of the Society of Cardiovascular Anesthesiologists has been remarkable in all that has been accomplished. (Anesth Analg 2014;XXX:00–00)

BACKGROUND AND FOUNDING

The year was 1979, a time in medicine during which cardiac surgery was becoming widely practiced, especially in the United States. The advent of the surgical procedure to treat ischemic heart disease, the coronary artery bypass operation, was transformational in the care of ischemic heart disease patients as a novel method of treating the leading cause of death in men. This surgical procedure required the use of cardiopulmonary bypass technology, a technique heretofore reserved for use in only a limited number of tertiary care medical centers. The operation's success meant it was being offered more generally in large community hospitals and most academic centers. It became clear that anesthesiologists would need to begin to specialize in this burgeoning field as surgeons were doing. Indeed, in some centers such as the Massachusetts General Hospital (MGH), groups of anesthesiologists were being formed to meet the highly specialized clinical, educational, and scientific needs of anesthesia for cardiac surgery.[1]

There were several pivotal factors that justified the specialization of anesthesiologists in cardiac anesthesiology. First, most anesthesiologists in practice in the 1970s had very little formal education during their 2-year residency period in cardiac surgical procedures. Also, most heart surgery had involved modest numbers of congenital heart defect repairs or valve replacements, not adult patients who had coronary artery disease. These patients brought a whole new pathophysiology and very different sets of risk factors and management dilemmas in abundant numbers to the unprepared anesthesiologists. The entire technology of the pump-oxygenator and invasive monitoring posed problems in which anesthesiologists caring for these patients had little experience. Finally, and importantly in a historically unprecedented way, cardiac surgeons were asking or demanding that their colleagues in anesthesiology be trained in this new field so that they would have partners to establish vibrant new surgical programs all over the country and indeed the world.

In 1970, the MGH had formed an international special interest group entitled the Association of Cardiac Anesthetists (ACA). As a result of this group's formation, the founder of the group, Brian Dalton, published a survey of cardiac anesthesiology at the time.[2] This group discussed the gaps in knowledge and the education and the clinical experiences that were rapidly being acquired and had great influence at the annual meeting of the American Society of Anesthesiologists. However, because they limited membership in the group to <50 members, most of whom had roots at the MGH, University of Pennsylvania, and Columbia University as well as the Mayo Clinic and Cleveland Clinic, the many excluded cardiac anesthesiologists seemed to have no voice. When others expressed interest in joining the ACA, they were denied membership. This was the impetus for George Burgess, Robert Marino, and Martin Peuler, all of the Oschner Clinic in New Orleans, to form a new national organization for all those anesthesiologists and others interested in cardiac anesthesiology.

In the Spring of 1979, at the annual meeting of the Southern Society of Anesthesiologists in Williamsburg, VA, the Oschner group asked the newly formed cardiac anesthesiology groups at the University of Alabama, Birmingham and Emory University to join them and others in a Fall meeting in New Orleans for the dual purpose of holding the first national educational meeting on cardiac anesthesiology and creating the Society of Cardiovascular Anesthesiologists (SCA). It was an idea that was timely, widely embraced, and "the rest is history" as the saying goes.[3–8]

On November 16, 1979, the SCA held its inaugural meeting at the Royal Sonesta Hotel in New Orleans. The typed program has been archived (Fig. 1), and discussion leaders and presenters were from the Cleveland Clinic, Columbia F1

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Reprints will not be available from the author.

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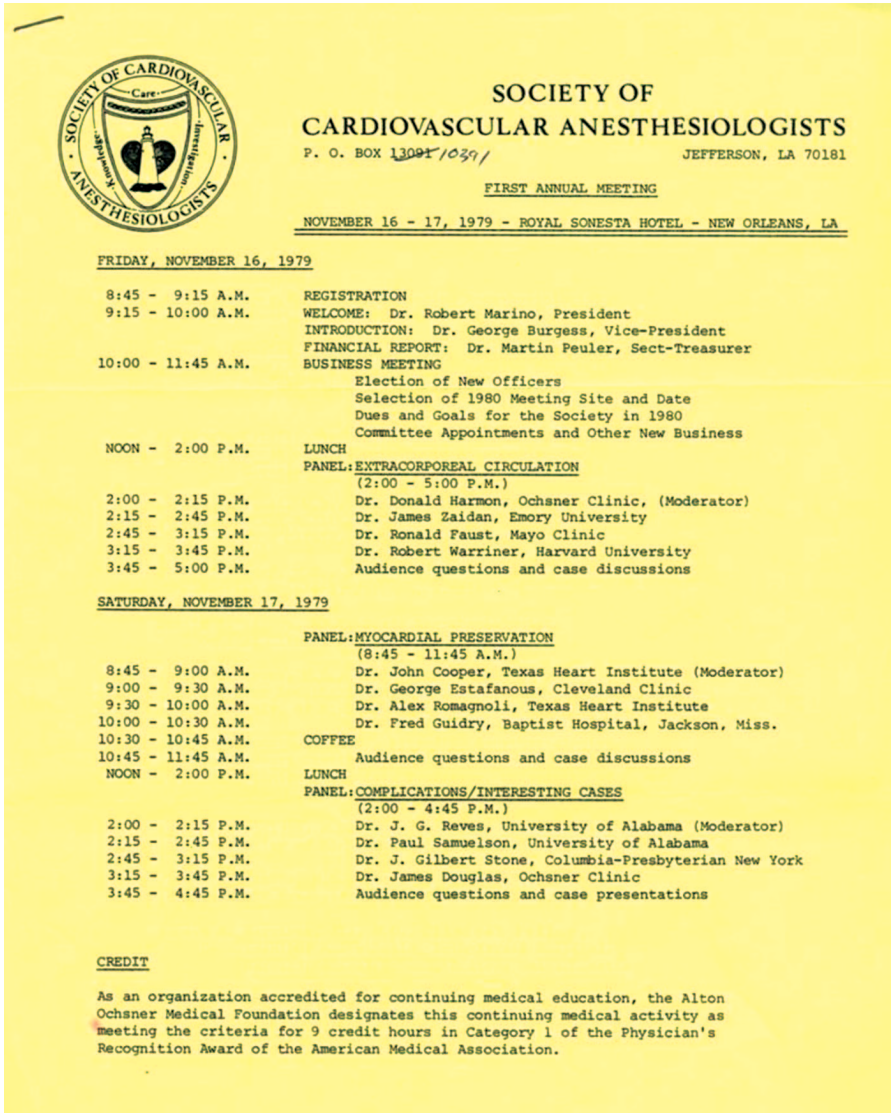

SOCIETY OF
CARDIOVASCULAR ANESTHESIOLOGISTS

P. O. BOX 13091/0391 JEFFERSON, LA 70181

FIRST ANNUAL MEETING

NOVEMBER 16 - 17, 1979 - ROYAL SONESTA HOTEL - NEW ORLEANS, LA

FRIDAY, NOVEMBER 16, 1979

8:45 - 9:15 A.M. REGISTRATION
9:15 - 10:00 A.M. WELCOME: Dr. Robert Marino, President
INTRODUCTION: Dr. George Burgess, Vice-President
FINANCIAL REPORT: Dr. Martin Peuler, Sect-Treasurer
10:00 - 11:45 A.M. BUSINESS MEETING
Election of New Officers
Selection of 1980 Meeting Site and Date
Dues and Goals for the Society in 1980
Committee Appointments and Other New Business
NOON - 2:00 P.M. LUNCH
PANEL: EXTRACORPOREAL CIRCULATION
(2:00 - 5:00 P.M.)
2:00 - 2:15 P.M. Dr. Donald Harmon, Ochsner Clinic, (Moderator)
2:15 - 2:45 P.M. Dr. James Zaidan, Emory University
2:45 - 3:15 P.M. Dr. Ronald Faust, Mayo Clinic
3:15 - 3:45 P.M. Dr. Robert Warriner, Harvard University
3:45 - 5:00 P.M. Audience questions and case discussions

SATURDAY, NOVEMBER 17, 1979

PANEL: MYOCARDIAL PRESERVATION
(8:45 - 11:45 A.M.)
8:45 - 9:00 A.M. Dr. John Cooper, Texas Heart Institute (Moderator)
9:00 - 9:30 A.M. Dr. George Estafanous, Cleveland Clinic
9:30 - 10:00 A.M. Dr. Alex Romagnoli, Texas Heart Institute
10:00 - 10:30 A.M. Dr. Fred Guidry, Baptist Hospital, Jackson, Miss.
10:30 - 10:45 A.M. COFFEE
10:45 - 11:45 A.M. Audience questions and case discussions
NOON - 2:00 P.M. LUNCH
PANEL: COMPLICATIONS/INTERESTING CASES
(2:00 - 4:45 P.M.)
2:00 - 2:15 P.M. Dr. J. G. Reves, University of Alabama (Moderator)
2:15 - 2:45 P.M. Dr. Paul Samuelson, University of Alabama
2:45 - 3:15 P.M. Dr. J. Gilbert Stone, Columbia-Presbyterian New York
3:15 - 3:45 P.M. Dr. James Douglas, Ochsner Clinic
3:45 - 4:45 P.M. Audience questions and case presentations

CREDIT

As an organization accredited for continuing medical education, the Alton Ochsner Medical Foundation designates this continuing medical activity as meeting the criteria for 9 credit hours in Category 1 of the Physician's Recognition Award of the American Medical Association.

Figure 1. Photograph of the Program of the First Meeting of the Society of Cardiovascular Anesthesiologists. AQ18

University Presbyterian Hospital, Emory University, Harvard University, the Mayo Clinic, the Oschner Clinic, the University of Alabama at Birmingham, the University of Mississippi, and the Texas Heart Institute in Houston. This list included most of the places where cardiac surgery was flourishing and influencing the world. The SCA was launched as stated in the bylaws: "to hold frequent meetings for the exchange of scientific information and other matters of professional, technical, and ethical interest to practitioners of cardiovascular anesthesiology, and to enhance and improve the quality of cardiovascular anesthesiology care rendered. The SCA is composed of physicians and cardiovascular anesthesiologists and other health care professionals."[9]

Thus, in contrast to the ACA, the SCA was open to anyone who shared the goals of the organization. This open door philosophy, as well as the aforementioned factors justifying the creation of the subspecialty, suggested it was a necessary step in the development of cardiothoracic anesthesiology and vital to the advancement of cardiac surgery and the practice of anesthesiology. SCA's birth time in American medicine when cardiac surgery was exploding, (Fig. 2) and the enthusiastic and capable leaders (including officers, education program chairs, and the board of directors) who produced innovative and challenging educational initiatives and pertinent publications explain the exponential membership growth during the first 30 years (Fig. 3). The membership today is 6000 to 7000, and 20% of the members are from countries other than the United States. F2 F3

In 1982, because of the size and administrative needs that volunteer officers could not provide, the SCA engaged the administrative support of Ruggles Service Corporation run by John Hinckley who proved a gifted manager and executive director for the society meetings and finances.[10] Mr. Hinckley was thanked in a letter dated May 11, 1982: "you brought a new era to our Society with regard to professional management. It is long overdue and I welcome you and the professionalism you bring to our Society. I'm sure it will be a long and mutually satisfactory relationship."[11] Hinckley was able to keep the presidents of the SCA and board focused on strategic aims and did not allow the strong and persuasive personalities of the early presidents

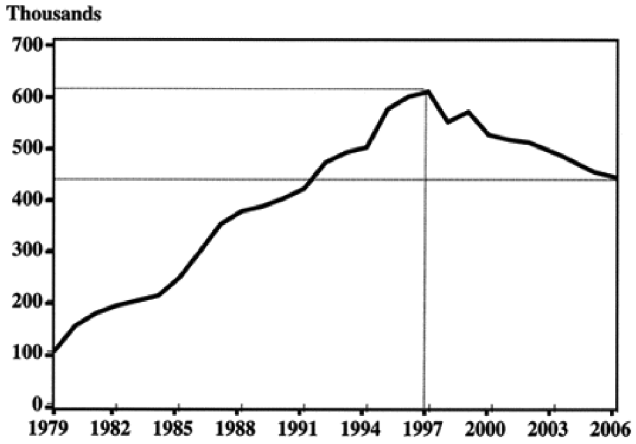

Figure 2. There was a steady growth in number of coronary artery bypass graft (CABG) surgical procedures that in part has contributed to the growth in membership of the Society of Cardiovascular Anesthesiologists. Vertical axis is number of CABG in 100 thousands, and horizontal axis is the year. From Reference 6, published with permission from Wolters Kluwer Health.

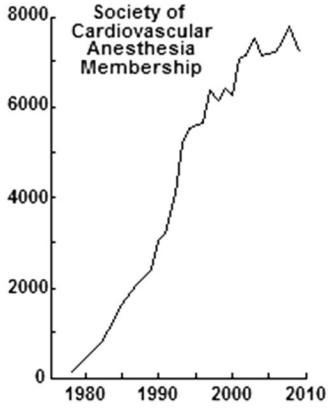

Figure 3. The remarkable growth of the Society of Cardiovascular Anesthesiologists (SCA) during the first 30 years of its existence. Vertical axis is number of SCA members, and horizontal axis is the year. Data from the Society of Cardiovascular Anesthesia.

to change the focus on the importance of building a broadly based organization. Ruggles Service Corporation managed the SCA until November 1, 2013, when the Association Management Center of Chicago, IL, became the management firm.

EDUCATIONAL INITIATIVES AND ACCOMPLISHMENTS

Education is the SCA's raison d'être and explains the truly remarkable achievements of the SCA over the first 35 years. In the beginning and to this day, the primary goal of the SCA has been to provide focused, current information in the field of cardiac, thoracic, and major vascular anesthesia. A time line graph (Fig. 4) shows many of the accomplishments in education beginning with the inaugural annual meeting in 1979. The annual meeting is the premiere educational event sponsored by the SCA, and just as with the membership, it has greatly expanded over the years. In this setting, refresher course lectures, workshops on timely and needed topics, and research abstracts are presented. The goal of the meeting is to provide something for everyone. For the novice, there are the general overviews of the current state of cardiac anesthesiology knowledge; the workshops are tailored to teach skills and techniques such as invasive monitoring or transesophageal echocardiography (TEE) for practitioners, and the research is clustered into scientific areas, such as coagulation, for those engaged in or interested in emerging scientific knowledge. The 35 annual meetings have been in 15 different states and 2 provinces of Canada (with many sites hosting >1 meeting) (Table 1). From the outset, a goal of the SCA was to involve international members and Americans. This has been quite successful, and to facilitate this, beginning in 1986 in Munich, Germany, there have been 10 meetings outside North America (Fig. 5).

During the formative, early stages of the educational offerings, the officers and program chairs received feedback on the society. One particularly memorable admonition was from Arthur Keats of Houston, TX, who warned me when I was president, and I later passed to George Burgess "that the perception of an elite group running the meeting was of concern to him, and the meetings seemed to be monopolized by a few centers rather than many."[12] These constructive thoughts were used in planning future meetings. Keats also recommended that "we invite more cardiologists and surgeons to speak at the meetings (people that anesthesiologists do not ordinarily get to hear at annual anesthesiology meetings)...."[12] Great efforts were made to be broad and inclusive in the educational meeting, and the idea of having the annual keynote address provided by nonanesthesiologists was 1 method. In the first 10 years, it was delivered by 6 scientists, surgeons, or cardiologists. Among those who presented this address were the physiologist Arthur Guyton, cardiologist Jeremy Swan, and surgeons John Kirklin and Denton Cooley. This type of intellectual cross-fertilization did much to keep the meetings vibrant and to build the interdisciplinary peer relationships that have marked cardiovascular medicine teamwork at the local level. The SCA capitalized on the fact that anesthesiologists, surgeons, and cardiologists who worked closely daily in the operating room now had a national educational expression of this relationship.

An interesting anecdote regarding the early annual meetings is that they were tenuous financially, and under the leadership of Paul Barash and Michael Roizen, it was discovered that the tipping point financially had to do with food served, especially prepared fried food. Roizen suggested and Barash implemented a healthy food service for the meetings which in turn eliminated the expensive fried food. Thus, the SCA became an early leader in "heart-healthy food" that accomplished better health of the members and the finances! All of this was good for the SCA.

In 1996, the SCA, under the leadership of Christine Mora-Mangano and Frederick Hensley, began an annual "stand-alone" workshop and meeting devoted to cardiopulmonary bypass. This meeting is multidisciplinary but intended to address aspects of this technology that is solely in the province of cardiac anesthesiology. In 1998, the SCA launched its annual stand-alone meeting on echocardiography, another technology that was principally in the domain of the cardiac anesthesiologist in the operating room but which has become a useful intraoperative modality during other kinds of surgery as well. A new annual symposium on thoracic

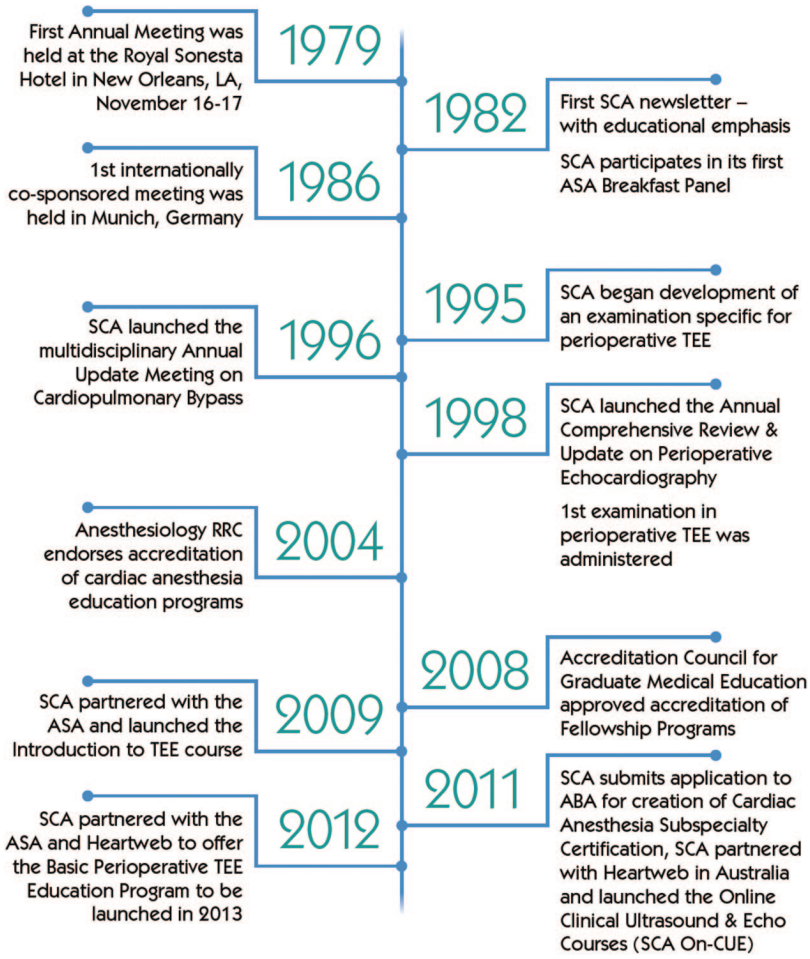

Figure 4. Timeline of major accomplishments in education made by the Society of Cardiovascular Anesthesiologists.

anesthesia was initiated at the annual meeting in 2012, and it now appears that an annual Society of Thoracic Surgeons (STS)/SCA symposium on the joint database project will be forthcoming.[13]

One of the many educational initiatives of the SCA has been the compilation of best practices in discrete areas of cardiothoracic anesthesiology. This form of education has resulted in the publication of several practice guidelines, and they can all be found on the SCA website at: http://www.scahq.org/ClinicalPracticeGuidelines/Guidelines.aspx.

TEE is a technology that cardiac anesthesiologists pioneered in the operating room, and many practitioners have mastered. The SCA recognized early on that this body of knowledge and skill could and should be tested to demonstrate proficiency. Thus, in 1995, the SCA began the development of an examination specifically for TEE, and the first examination in perioperative TEE was administered in 1998. Leaders in this effort have been Michael Cahalan, Jack Shanewise, Sol Aronson, and Dan Thys.[14–16] The National Board of Echocardiography was formed in 1998 to certify physician competency in perioperative TEE, and in 2002, the American Heart Association (AHA) and the SCA created a task force to update and revise the 1990 requirements for certification in adult echocardiography. Cardiac anesthesiologists served on this task force, and the SCA endorsed the new guidelines published in 2003.[17,18] In short, the new criteria by which cardiac anesthesiologists and nonanesthesiologists (primarily cardiologists) would be certified set forth new specifications for the required amount of training and a qualifying examination. This guaranteed 2 things: a minimum educational standard that training in echocardiography needed to meet and a national examination that had at least 2 pathways for anesthesiologists to qualify as competent. Now cardiac anesthesiologists will be able to earn the cardiothoracic certification, including demonstrated competency in perioperative TEE, that can be used to strengthen this aspect of our subspecialty practice.

Over the past 15 years, the SCA's primary educational goal has been to create a discipline in anesthesiology that is recognized as a distinct subspecialty within the specialty of anesthesiology, like those of critical care, pain medicine, and pediatric anesthesiology. This involves having standardized educational criteria, accredited programs, and ultimately subspecialty certification by examination for cardiac anesthesiologists. This goal, while not a historic priority for the SCA, became more formalized and widely discussed in 1998 when SCA President Richard Davis requested that the SCA Board of Directors devote a full day to the issue at their midyear meeting, as reported by Dan Thys.[19] When I was past SCA President, I addressed the Board at this meeting on the need to move toward accreditation, I stated: "I view accreditation of our training programs as necessary because it formalizes the anesthesiology subspecialty and to some degree would standardize the education more likely than any other

Table 1. Annual Meeting Site and Program Committee Chairs

1979	New Orleans, LA–83
1980	Kiawah Island, SC
1981	San Francisco, CA–Paul Barash
1982	Washington, DC–Paul Barash
1983	San Diego, CA–Paul Barash
1984	Boston, MA–Paul Barash
1985	Phoenix, AZ–Earl Wynands
1986	Montreal, Quebec, Canada–Earl Wynands
1987	Palm Desert, CA–Richard Buckingham
1988	New Orleans, LA–Richard Buckingham
1989	Seattle, WA–Richard Davis
1990	Orlando, FL–Richard Davis
1991	San Antonio, TX–Daniel Thys
1992	Boston, MA–Daniel Thys
1993	San Diego, CA–Roger Moore
1994	Montreal, Quebec, Canada–Roger Moore
1995	Philadelphia, PA–James Ramsay
1996	Salt Lake City, UT–James Ramsay
1997	Baltimore, MD–1000–Jay Horrow
1998	Seattle, WA–1065–Jay Horrow
1999	Chicago, IL–1079–Gary Roach
2000	Orlando, FL–951–Gary Roach
2001	Vancouver, BC, Canada–1054–Christina Mora Mangano
2002	New York, NY–899–Christina Mora Mangano
2003	Miami, FL–861–Sol Aronson
2004	Honolulu, HI–518–Sol Aronson
2005	Baltimore, MD–752–Linda Shore-Lesserson
2006	San Diego, CA–589–Linda Shore-Lesserson
2007	Montreal, Quebec, Canada–829–Scott Reeves
2008	Vancouver, BC, Canada–671 (June)–Scott Reeves
2009	San Antonio, TX–575–David Zvara
2010	New Orleans, LA–685–David Zvara
2011	Savannah, GA–765–Colleen Koch
2012	Boston, MA–922–Colleen Koch
2013	Miami, FL Kathy Glas

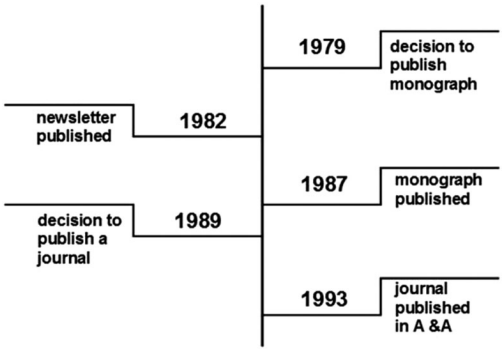

Figure 5. A world map indicating the various locations for international meetings of the Society of Cardiovascular Anesthesiologists.

method would become a vehicle to ensure improved educational quality that our patients and colleagues in cardiovascular medicine expect and demand… If the SCA Board decides to pursue this—and I hope that it will—there will be loud and formidable opposition from many corners. I have seen opposition to other good ideas, but if the idea is truly good, the goals lofty enough, the implementation well planned, and the need great, the idea will prevail."[20] Those remarks of 1998 have proven prophetic.

That mid-year strategic planning board retreat resulted in the creation of an SCA—designated working group headed by Alan Schwartz in February 1999. There has followed the long, tedious, difficult task of creating a formally recognized new cardiac anesthesiology subspecialty within anesthesiology. The first step was to submit a proposal to the Anesthesia Residency Review Commission (RRC). This was done in 2000, and in 2001, Alan Schwartz and SCA President Dan Thys attended a meeting with the Anesthesia RRC to plead the case for accreditation of cardiothoracic training programs, but it was not approved. In 2002, then SCA President Roger Moore wrote: "By developing accreditation standards, all anesthesiologists emerging from accredited Cardiac Anesthesiology Fellowship Programs could be assured to have experienced the minimum standards outlined in the accreditation process. Such an assurance of educational standards would be good for the fellows in training, but more importantly, it would be good for patient care. Without the accreditation approval, Cardiac Fellowships would likely vary extensively in the quality and depth of the training experience they provided."[21]

Subspecialization within anesthesiology was not new in 1998 when the decision to seek accreditation of cardiac anesthesiology fellowships was made. In 1988, the Accreditation Council for Graduate Medical Education (ACGME), on the recommendation of the Anesthesia RRC, approved the recognition and accreditation of Critical Care Medicine Fellowship Programs. Accreditation of Pain Management Fellowship Programs followed in 1992, and Pediatric Anesthesiology Fellowships received accredited status in 1998.[21] Using these arguments and others, the SCA resubmitted a revised application to the Anesthesia RRC that was turned down again in a March 6, 2002, letter from the Anesthesia RRC. The SCA Board of Directors and officers believed this educational step was too important to let it go and hired legal counsel to assist in another application.[21,22] SCA President Glenn Gravlee stated in 2003 that obtaining ACGME accreditation of the approximately 70 cardiac anesthesiology fellowship programs would mean that the "gold standard"[22] in medical education had been attained. In 2003, a third and realistically focused application written by Alan Schwartz, Steven J. Thomas, and Glenn Gravlee was submitted to the Anesthesia RRC, and the Anesthesia RRC sent the application forward to the national RRC in 2004. Throughout this process, the SCA leadership maintained that "fellowship accreditation does not require future implementation of certification in cardiothoracic anesthesiology."[23]

At the February 14, 2006 meeting of the ACGME, the program requirements were approved, and the ACGME approved the accreditation of education in cardiothoracic anesthesiology.[24] This meant that individual programs could apply to the ACGME for approval of their educational program in adult cardiothoracic anesthesiology. The requirements for program accreditation may be found at the ACGME Web site,[25] and there were 58 ACGME-approved programs of the 74 fellowships in the United States in 2012.[26] The ACGME requirements for adult cardiothoracic fellowship training include minimum numbers of anesthetics for valve replacement, coronary artery bypass grafts, and thoracic aortic procedures, plus training in TEE examination and rotations through the critical care units as well as options in other related areas (perfusion, invasive cardiology, outpatient cardiology, pulmonary medicine, research, or pediatric cardiothoracic anesthesiology).[25,26]

Another step in the creation of the subspecialty occurred in 2012 when the SCA contracted for the management of a match program for fellowships in cardiothoracic anesthesiology. Just as with residency education, there is now a cardiac anesthesiology match for fellows in participating programs throughout the country.

The final formal step for the subspecialty is to establish educational certification that is approved by the American Board of Medical Specialties (ABMS). This work continues today, but a great deal of progress has been made. In August 2012, SCA President Sol Aronson submitted a proposal on behalf of the SCA, and all the ACGME-accredited fellowship programs requesting that the American Board of Anesthesiology (ABA) certify all graduates of the ACGME-accredited cardiothoracic anesthesiology fellowship programs. If the ABA approves the application, it will then go to the ABMS that would finally approve subspecialty certification in cardiothoracic anesthesiology. The 400-page application effort was "brilliantly led" by Mark Stafford-Smith with assistance from Albert Cheung, Glenn Gravlee, and Alan Schwartz.[26]

Unfortunately, the ABA in a letter dated April 22, 2013, reported that it did not endorse nor would it pursue a certification submission to the ABMS at this time. A most surprising comment in the rejection letter was that there is no distinct and definable patient population. This statement ignores the reality of the thousands of patients who undergo cardiac surgery as well as the dedicated literature and textbooks devoted to this distinct and well-defined population. The application will have to be resubmitted to the ABA, addressing all comments made justifying the application rejection, since it is clear that having certified clinicians in adult cardiothoracic anesthesia will be a concrete step in assuring that the subspecialty education in approved training programs meets the national standards that certification brings. This should improve the quality of care, just as ABA certification of general and other anesthesiology subspecialties has been accompanied by better patient outcomes.

If certification is ultimately approved by the ABMS, there will be a mechanism for board-certified anesthesiologists to be certified in adult cardiothoracic anesthesiology just as anesthesiologists may be certified in critical care, pain medicine, and pediatric anesthesiology. As past SCA President Sol Aronson states: "With regard to the more tangible skills a cardiothoracic anesthesiologist demonstrates, the establishment of fellowships in the subspecialty led inevitably toward accreditation of those fellowships. Board certification, as a tool to gain credibility within a larger community of practitioners who have obtained certification from Boards in their respective fields, has not previously been encouraged for subspecialties of anesthesiology. The purpose of Board certification has also to do with defining nationally recognized educational and professional standards of training and, perhaps most importantly, continuing education of practitioners within a subspecialty. These standards become increasingly necessary as national health care policy is reevaluated."[26] Many have labored at this, but some who have worked the longest are Alan Schwartz, Richard Davis, Dan Thys, Roger Moore, Michael Roizen, Glenn Gravlee, Linda Shore-Lesserson, and Fred Campbell.[13,21–23,26,27] Figure 4 details some of the most important milestones along the road to subspecialty certification for practitioners of cardiac anesthesia.

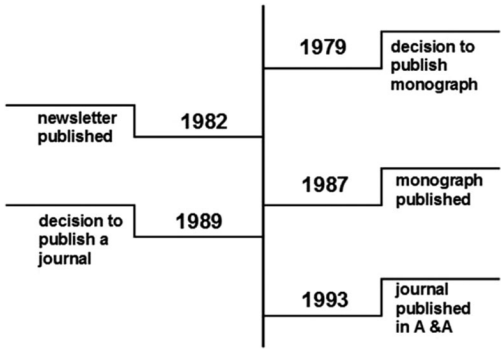

Figure 6. Timeline of decisions to publish and publication year of major publications of the Society of Cardiovascular Anesthesiologists.

SOCIETY PUBLICATIONS

Organizations whose goal is the exchange of information inevitably must rely on communications to be certain that members and others have access to educational content, scientific information, and notice of member benefits. The SCA formed a Publications Committee in the first year of its existence, and this committee began the systematic study of ways to communicate with the members. Figure 6 shows F6
the timeline of various publications that the SCA has created, and especially, noteworthy is the lag between the decision to do so and the actual first publication date. The delays seemed more related to logistics than enthusiasm for publication. For example, at the first meeting in New Orleans in 1979, there was discussion about creating a monograph that covered the meeting. This was a simple idea but difficult to accomplish. Reasons for this were that with a membership of only about 75 people, but growing, publishers were mindful of the financial risk of publishing the proceedings of a meeting that only a few might purchase. Next came the idea of publishing a monograph on some important topic covered at the annual meeting and of general interest beyond members only. This idea also was not easy to implement, but ultimately, the Publications Committee found a publisher, and the first monograph entitled *Acute Revascularization of the Infarcted Heart* was published by Grune and Stratton in 1987.[28] It took a full 9 years after the decision to publish a monograph until it happened in 1987 (Fig. 6).

From Table 2, it is also clear that cementing a long-term T2
relationship with a publisher has been a problem reflecting more instability in the publishing world than the lack of material or financial commitment that the SCA and its members have made to the monograph. As hardbound books are becoming an increasingly threatened species in science publications, in 2011 the SCA decided to publish the monograph electronically. This, too, reflects more the trends in publishing: the financial risk of publication of a real book overrides the desires of the members. One can only ponder how long journals and books will remain something one can hold in one's hand. The realities of the digital world and the expense of books, article, and other items no doubt mean a future without nearly as many books. Although the monograph is now only available to members at a password-protected location on the SCA website (http://www.scahq.org/), this

Table 2. List of the Monograph Titles, (Editors), and Publisher

1987	Acute Revascularization of the Infarcted Heart (J. G. Reves)	G&S
1988	Effective Hemostasis in Cardiac Surgery (Norig Ellison/David R. Jobes)	Saunders
1989	CPB: Current Concepts and Controversies (John Tinker)	Saunders
1990	Preoperative Cardiac Assessment (Dennis Mangano)	Lippincott
1991	Intraoperative Use of Echocardiography (Norbert deBruijn/Fiona Clements)	Lippincott
1992	Anesthesia for Organ Transplantation (Judith Fabian)	Lippincott
1993	Pain Control in Cardiothoracic Surgery (Glenn Gravlee)	Lippincott
1994	Clinical Cardiac Electrophysiology (Carl Lynch)	Lippincott
1995	Ventricular Function (David Warltier)	W & W
1996	Perioperative Mgmt of the Patient w/Congenital Heart Disease (William Greeley)	W & W
1997	Neuroprotection (Thomas Blanck)	W & W
1998	New Advances in Vascular Biology & Molecular Medicine (Debra Schwinn)	W & W
1999	Outcomes in Cardiovascular Medicine (Kenneth Tuman)	LWW
2000	Relationship Between Coagulation, Inflammation & Endothelium (Bruce Spiess)	LWW
2001	Minimally Invasive Cardiac & Vascular Surgical Techniques (John Shanewise/Fiona Clements)	LWW
2002	Regional Anesthesia for Cardiothoracic Surgery (Mark Chaney)	LWW
2003	Perioperative Organ Protection (Mark Newman)	LWW
2004	Progress in Thoracic Anesthesia (Peter D. Slinger)	LWW
2005	Fundamental Applications of TEE DVD (Scott Reeves/John Shanewise)	LWW
2006	Innovations in Cardiovascular Care DVD (David J. Cook)	LWW
2007	Chronic Heart Failure: Current & Future Treatments DVD (John F. Butterworth)	LWW
2008	Advances in Cardiovascular Pharmacology (Philippe Housmans/Gregory A. Nuttall)	LWW
2009	Medically Challenging Patients Undergoing CT Surgery (Neal Cohen)	LWW
2010	Postoperative Cardiac Care (Rob Sladen) '10 monograph but published in '11	LWW

G & S = Grune and Stratton Publisher; W&W = Williams and Wilkins; LWW= Lippincott Williams and Wilkins.

development probably preserves the monograph concept. Nonetheless, something is lost when space is not made on the desk or bookshelf each year for a new monograph.

The SCA first published a newsletter in 1982. The newsletter is published 6 times a year and is now called the "SCA Bulletin." It is open to all and, like the monograph, beginning in February 2001, has become available only electronically. The newsletter from the first issue has transmitted information regarding the SCA, but the major emphasis has been on education. Among the more interesting features of the newsletter are the literature reviews and provocative "pro and con debate" by 2 experts on polar opposites of a clinical question. Many topics have been addressed through the years, but none more ardently than whether to monitor the cardiac patient routinely with the Swan-Ganz catheter. It is not clear whether clinicians changed their practice after reading these debates, but it was high-level educational entertainment. The newsletter today presents timely announcements, and importantly, the president reports in each issue so that communication from the "top" is clear and prompt.[29]

The decision as to whether or not to publish a scientific journal was and from time to time remains perhaps the single most divisive issue for SCA leadership and members. Probably nothing has been more difficult or uncertain in the publications arena than whether the SCA should sponsor a scientific journal. In one of the better Rovenstein Lectures, Arthur Keats in 1984 made it clear that anesthesiologists spend most of their journal time exchanging information in the relatively circumscribed field of anesthesiology.[30] Put another way, most anesthesiology literature is read and quoted by anesthesiologists. Keats made an emphatic recommendation in a letter written to the new SCA President in 1980: "As a young organization the SCVA [sic] has a lot to do toward establishing its credentials, its stability and its quality. A new journal should be given the lowest priority."[31]

Indeed, there was much work to be done in the early years, but the subject of publication of a scientific journal seemed always in the discussion. In 1978, Joel Kaplan, the fourth SCA President, had begun publication of what is now entitled the *Journal of Cardiothoracic and Vascular Anesthesia*.[32] As it was 1 year older than the SCA, there was some mutual interest in having the new journal be the scientific organ for the new society. However, the Publications Committee and Board of Directors of the SCA thought it best to concentrate first on the viability and growth of the organization rather than on sponsoring a journal that at the time was not indexed and whose future was uncertain. However, in 1989, it was decided that the time was appropriate to sponsor a journal or to affiliate with an existing one (Fig. 6). This represented a major change in the SCA's publication direction and proved to be a most difficult thing to do.

The first question that had to be settled was whether to publish a new journal or to join an existing one. After a great deal of discussion, but with the full support of the Publications Committee and the Officers and Board of Directors, it was decided that the best option for the SCA would be to join an existing journal. The first idea was to request that the American Society of Anesthesiologists include SCA manuscripts in the annual symposium issue of *Anesthesiology* (at that time in August) devoted to subspecialty publications. The Editor-in-Chief of *Anesthesiology* declined.

The SCA next decided to join surgeons in the publication of an existing surgical journal that wished to have the SCA as a new joint sponsor. The rationale for this was that anesthesiologists and surgeons worked together on a daily basis, as their worlds were inseparable clinically, so their journal should be combined. The Editor-in-Chief of the *Journal of Thoracic and Cardiovascular Surgery* (JTCS), John Kirklin, in correspondence expressed strong interest in this venture explaining: "you know of my long-standing and profound interest in promoting a close and evenhanded relation between cardiac surgeons and cardiac anesthesiologists. I confess to a deep bias in that regard, based upon my experience and conviction that cardiac surgery is at its best when cardiac anesthesiologists and cardiac surgeons both feel responsible for every aspect of the intraoperative and perioperative management of the patient….the patient is best served and science moves forward most effectively when they unselfishly pool their knowledge and effort in

pursuit of the common goals of superb patient care and the development of the science…"[33]

Earl Wynands, President of the SCA, in November 1989 appointed me, Alan Schwartz, and Paul Barash along with John Hinckley of the SCA to meet with John Kirklin, William Gay, Thomas McMeester, and William Maloney representing the American Association for Thoracic Surgery (AATS) to develop a mutually acceptable contract for the SCA and the AATS to jointly sponsor the JTCS. This was done and negotiations were completed. All that remained was for the Council of the AATS to approve the contract at their May 1991 meeting. However, the council disapproved the contract apparently for 2 principal reasons: 1, that JTCS was well established and did not need the affiliation for an enhanced authority position, and 2, fear that the much greater size of the SCA at some point in the future might present problems with ultimate editorial and financial control of the JTCS. This was 2 years of hard work at journal publication whose ultimate failure was enormously disappointing to the SCA after the Board of Directors had approved the joint publication.

The SCA still had to decide whether to publish alone or seek another existing journal. At this time (1991), it appeared that the SCA would be best served by joining the oldest anesthesiology journal, *Anesthesia & Analgesia*, that is sponsored by the International Anesthesia Research Society (IARS). *Anesthesia & Analgesia* was an indexed journal with wide readership and an excellent reputation in the field of anesthesiology. The goals of the SCA and those of the IARS are almost identical except for the SCA's singular focus on cardiac anesthesia. Ronald Miller, as Editor-in-Chief of *Anesthesia & Analgesia*, was very enthusiastic about having the SCA cosponsor *Anesthesia & Analgesia* as was the board of the IARS. Negotiations moved quickly and uneventfully, and SCA President John Waller announced that, beginning in 1993, *Anesthesia & Analgesia* would become the official journal of the SCA. The concept of "a Journal within a Journal" was born, and editors for the SCA have been: Jerry Reves (1994–1995), Kenneth Tuman (1996–2004), and Charles Hogue Jr (2004-present) as Associate Editors-in-Chief, with current SCA section editors Martin London for perioperative echocardiography and cardiovascular education, and Jerry Levy for hemostasis and transfusion.[34–36]

However, the affiliation between the IARS and the SCA has required constant attention, and the joint publication decision has been revisited on at least 2 occasions. The first time was in 2003 when the contract renewal was due. Arguments advanced for having the SCA's own journal were that it would give the SCA full editorial control and total access to financial rewards. However, the SCA Board of Directors realized that the goal: "of improving patient safety and improving the quality of care could best be accomplished by being in a journal with a wide distribution and a high impact factor [i.e., the way journals are rated based on how often the articles published in them are referenced in future journal articles]. *Anesthesia & Analgesia*, our official journal, did fulfill these requirements for the SCA. Since *Anesthesia & Analgesia* has a subscription of over 25,000 and has the third highest impact factor of any anesthesiology journal, the SCA message would reach a much wider audience than in a journal that only went out to the SCA's 7000 members."[37] The Board of Directors decided it best to remain a section within the journal *Anesthesia & Analgesia*: it is noteworthy that the contract has led to a million dollars during the past 5 years accrued by the SCA that has passed the money over to the SCA Foundation (SCAF) for funding of research.

The second major revisitation on journal publication occurred during 2007 and 2008. The fundamental question was whether the SCA and its members were better served by being affiliated with a prominent anesthesiology journal, *Anesthesia & Analgesia*, or would it be better to be affiliated with a fine cardiothoracic surgical journal such as that sponsored by the STS, *Annals of Thoracic Surgery*. Al Cheung, David Reich, Steve Konstadt, Scott Reeves, and President Mora-Mangano were part of a Board of Directors task force that studied the 2 options.[38] Despite SCA President Mora-Mangano's apparent desire to switch to the *Annals of Thoracic Surgery*,[39,40] the Board of Directors determined it was best to remain with *Anesthesia & Analgesia*.[41] In interpreting the public information about this debate, it appears that the then-current Board of Directors was not aware of the SCA's decision in 1989 to join the surgeons in publishing a SCA journal almost 20 years earlier or that during the elapsed time reasons for joining surgeons in 1991 did not apply in 2008 or that the IARS had become a desirable journal publication partner. The new contract with the IARS was negotiated by Scott Reeves and Sol Aronson and should prove financially better than previous ones. However, it seems that it will be a nagging question over time for the SCA whether it is best to publish a journal alone or with anesthesiologists or surgeons. As long as there is healthy debate on this topic, the periodic review of journal publication is a good thing; however, it would be most unfortunate if repeated reviews end up straining important relationships between the SCA and other organizations.

SCIENCE AND LEADERSHIP OPPORTUNITIES

From the outset, scholarship in the form of scientific inquiry and its annual presentation has been an important element in the function of the SCA. Both clinical and laboratory investigation have been fostered by the SCA. Annual meetings have been the primary forum for this activity. A Committee on Research was created in 1982 and first chaired by John Tinker. Importantly in 1983, the SCA began giving an annual Residents Research Award ($500 each) to encourage young members of the SCA to do research. The first winners were RA Alpert and PN Beaupre from the University of California, San Francisco. In 1985, Starter Research Awards were begun, and the first recipient was Phillipe Housmans of the Mayo Clinic. Beginning in 1993, 2-year Young Investigator Awards were commissioned, and the first 2 to receive them were Timothy Connelly of the University of Wisconsin and Arthur Wallace of the University of California, San Francisco. In 2003, the SCA initiated Mid-Career Grants at a time when it was clear that even successful investigators needed extramural funding to continue fruitful research. The 2 inaugural awards went to basic scientists Yaacov Gozal of Hebrew University, Hadassah Medical Center, in Israel and John Hayes of the University of Virginia.

Significantly, in 2007, the SCA realized that the source of funds for the awards could be broadened and enhanced by creating the SCAF whose primary purpose was to solicit and steward philanthropic funds to further the scholarship and leadership initiatives of the SCA. The SCAF is ably led by

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its first and only Chair of the SCAF Board, Joyce Wahr. The SCAF has since its inception provided 2 starter grants a year ($50,000 each over 2 years), 1 mid-career grant (100,000 over 2 years), 1 in-training research grant ($15,000 for 1 year), and 2 Kaplan grants ($2000 each for 1 year) for leadership development. The Kaplan Award (generously funded by Joel Kaplan) is given to cardiac anesthesiologists early in their careers to further their leadership development. All SCAF awards are given to recipients judged by the SCA peer review committees to be the best applicants. In 2013, the SCAF began an "honor your mentor program" to help raise the funds required for the annual awards and at the same time to permit members to recognize anyone in their career who has assisted them professionally. This is a thoughtful way for practicing anesthesiologists to acknowledge a mentor and sustain funding for the SCA's scholarship award programs.

As in education, the SCA has been innovative and creative in its approach to supporting research to improve the clinical practice of cardiac anesthesia. There are 2 current initiatives that merit mention: one is the Flawless Operative Cardiovascular Unified Systems (FOCUS) initiative, and the other is creation of an outcomes database in conjunction with the STS.

FOCUS led by Bruce Speiss is an extraordinary program on patient safety that the SCA began in 2004. The SCA has contributed over $2,000,000 to the SCAF to support this patient safety initiative and others. The idea of FOCUS is to analyze what is done in the cardiac operating rooms and determine, primarily through human engineering systems analysis, how to improve on our patient care processes with the expectation that errors can be reduced to zero (flawless)! Expertise in patient safety was available for this initiative via Johns Hopkins University Quality and Safety Research Group (JHUQSRG) that helped pick representative sites and assist in the scientific process. The Hopkins team consists of experts in human factors engineering, organizational sociology, cardiovascular clinical care, applied organizational psychology, and health services research. This team has devised and tested sociologic and observational methodology and developed specific tools for the FOCUS project.[42,43]

On August 13, 2009, members of the FOCUS Steering Committee and the JHUQSRG team met in Baltimore for an early look at the data. At this meeting, the goal of making FOCUS a cardiovascular team effort was realized when anesthesiologists were joined by 2 STS members, as well as 1 representative from the American Society of Extra Corporeal Technology, the Association of Operating Room Nurses, and the American Society of Human Factors Engineers. This multispecialty collaborative effort to improve patient safety is critical to the success of FOCUS. The ambitious program is now well underway and should improve patient care in the cardiac operating rooms by identifying better systems of communication, team duties, equipment use, and other factors.[43–45] It is noteworthy that Joyce Wahr[43] is only the second anesthesiologist to chair an AHA working group (Lee Fleisher was the first), and Martinez et al.'s work[44] is considered a very important, novel contribution to the patient safety literature. Patient safety research has led to lay recognition of the anesthesiologist as a leader in reducing patient care mistakes,[46] and the interdisciplinary team focused on cardiac surgery should have early and important lessons to improve patient safety and clinical outcome. T4

Table 3. Possible Benefits of the Society of Thoracic Surgeons/Society Cardiovascular Anesthesiologists Database Collaboration

A standardized format for data collection to assess the care of adult patients undergoing cardiothoracic operations;
Quarterly performance outcomes reports in a risk-adjusted format which allows comparison of local outcomes to regional benchmarks and national standards;
Report section dedicated to anesthesia;
Analysis of major surgical outcomes and process-of-care measures that impact adult cardiac surgery patients;
Composite quality measure scores for coronary artery bypass graft and aortic valve replacement and associated ratings;
Risk profiles of patients in your practice benchmarked against national standards;
Feedback reports to identify areas for quality improvement;
Feedback reports to document outcomes for quality improvement initiatives;
Assessment data on new technology and techniques;
Documentation of the quality of care delivered by your practice for interested third-party entities;
Participation in a national quality improvement effort for adult cardiac surgery that has an impact at the local, regional, and national levels.

Modified from: Reference 51. AQ2

Similarly, the SCA has created an exciting collaboration with the STS in their ongoing clinical database project.[47] The STS began gathering surgical data in 1989. There are >5.1 million cases in the dataset and hundreds added each day. In 2011, the database began including international sites and in the same year made composite data available to the public.[48] More than 100 scientific articles have been generated from the database.[49] The anesthesia database module is Web-based and has been available for use since August 2013. It consists of 3 pages of data fields to be completed during or at the end of each case.[50] Participation is voluntary (by group) and has a nominal cost ($2500) per center plus the surgical team participation and fee. To date, 10 programs have signed up, and another 50 are in the contractual process. A list of the potential benefits from participation in this program is in Table 3.[51,52] The information derived T3 from this form of research is mainly of value in generating a hypothesis to test in prospective trials because it is known that just because a practice is done a certain way by the majority, it does not mean it is the best method of practice. Cardiac anesthesia groups across the world should join in this effort because the data will be more robust with a large number of centers participating. Enrollment of data has not started as of this writing, but it is imminent and it has the potential to marry surgical and anesthesia data with patient risk factors and outcome. The potential for the creation and testing of hypotheses in clinical research is enormous.

PROFESSIONAL AFFILIATIONS

There is an irony in the fact that an organization created to focus on a well-defined subset of the entire practice of anesthesiology, namely cardiac and major vascular surgery, has become stronger by diversifying. The SCA has at least 7 major affiliate organizations and participates through invited editorship in 4 scientific journals (Table 4). The late publisher Malcom Forbes wrote "*Diversity: the art of thinking independently together.*"[53] This concept has worked well for the SCA and in part explains the

Table 4. Formal Affiliations with the Society of Cardiovascular Anesthesiologists

American Society of Anesthesiology (ASA)
International Anesthesia Research Society (IARS)
American Heart Association (AHA)
National Board of Echocardiography (NBE)
Society of EEE echocardiography (SBE)
American Society of Extracorporeal Technology (AmSECT)
Anesthesia and Analgesia
Annals of Thoracic Surgery
Journal of Thoracic and Cardiovascular Surgery

SCA's ability to accomplish as much as it has in the 35 years of its existence. From the start, the founders of the SCA and its members acknowledged that for cardiac surgery to be successful, perhaps more than in most other realms of medicine, it takes a team of talented experts in various fields working closely together to get good results. This is true of any operating room where anesthesiologists, surgeons, nurses, and technicians work together, but in the cardiac arena, there is also often input from cardiologists, and certainly there are perfusionists, intensive care physicians, and monitoring engineers collaborating on a single patient each day. Recognizing and capturing this intimate interrelationship are what the SCA has done well in embracing and bringing together in various scientific meetings, committees, publications, and other collegial settings nonanesthesiologists to enrich the programs. At least 2 of the SCA presidents have remarked on these ties and the tangible impact that they have had on the SCA and the practice of cardiac anesthesia. President Jamie Ramsay[54] pointed out the value of the SCA's relationship with the IARS (publishers of *Anesthesia & Analgesia* with >25,000 subscribers), and the SCA's creation along with the American Society of Echocardiography, of the National Board of Echocardiography. This remarkable union settled what could have been at best a confusing certification process and at worst a very competitive and mutually destructive process.

Although officers and members of the SCA have served on the AHA Councils, much has been done to formalize this participation. For example, the AHA Council of Cardiovascular Surgery is now named the Council of Cardiovascular Surgery and Anesthesia, and the annual supplement to *Circulation* on cardiac surgery, formerly edited by a cardiac surgeon, will now be coedited by a surgeon and anesthesiologist, the first being Jerry Levy. Also, SCA member Debra Schwinn helped the AHA decide to include the word "perioperative" in the naming of one of its councils, the Council on Cardiopulmonary, Perioperative, and Critical Care. More recently, President Mora-Mangano[55] commented on the fact that 2 cardiothoracic surgery journals have invited SCA editors to serve on *the Annals of Thoracic Surgery* and the *JTCS* editorial boards. The STS has a representative on the FOCUS Steering Committee, and SCA members Linda Shore-Lesserson and Michael D'Ambra established a task force along with STS and American Society of Extra Corporeal Technology members to write practice guidelines for the management of cardiopulmonary bypass. Finally, Joseph Mathew led a task force that included Sol Aronson and David Reich who worked with the STS on the anesthesia module for the STS database.[50,51] That the SCA and its members are an integral part of the AHA, and cardiac surgical journals speaks as well as anything about the collegial role played by cardiac anesthesiologists in the general world of cardiovascular medicine.

CONCLUSION

The SCA's creation 35 years ago and its growth and success as the organization that represents a new medical subspecialty are the product of formative vision, a unique time in medicine when 1 operation changed the entire landscape in cardiovascular medicine and an unswerving dedication to foundation principles. Those guiding ideals have been to offer education in a new subspecialty and to render that education accountable through rigorous curricula and testing. Other goals have been to open the organization to all who wish to join and to welcome new and different ideas, even those that challenge the status quo in anesthesiology. Initiatives have been undertaken with the knowledge that they might involve frustratingly long intervals from decision to fruition such as the publication of monographs and ABA approval of the certification of cardiac anesthesiology as a new medical subspecialty.

The history of the SCA could well serve as a roadmap for other medical subspecialties as they inevitably develop. The founders and leaders of the SCA never shied away from the difficult, knowing that projects worth doing may take time. All anesthesiologists have benefited from the educational programs and research that the SCA has championed. The SCA has contributed significantly to the teaching and learning in anesthesiology and has greatly facilitated the remarkable improvement in cardiovascular surgery. It has been a tremendous experience to watch all this unfold during the past third of a century!

DISCLOSURES

Name: J. G. Reves, MD.
Contribution: This author wrote the article.
Attestation: J. G. Reves approved the final manuscript.
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AQ9—Please provide a valid URL for reference 19.

AQ10—Please provide a valid URL for reference 21, 22, 23, and 24.

AQ11—Please provide a valid URL for reference 26 and 27.

AQ12—Please provide a valid URL for reference 29.

AQ13—Please provide a valid URL for references 37 to 42.

AQ14—Please provide a valid URL for reference 47.

AQ15—Please provide a valid URL for reference 51 and 52.

AQ16—Please provide a valid URL for reference 54 and 55.

AQ17—Please provide accessed date for reference 55.

AQ18—Figures 1–6 are not reproducing well. Please provide higher resolution figures 1–6.