

Notes for a History of the IEEE Society on Social Implications of Technology

On a warm April day in 1955, three men walked up to the porch of 112 Mercer Street in Princeton, New Jersey. One of them was Victor Paschkis, a Vienna-born professor of mechanical engineering at Columbia University. Seven years earlier, Paschkis, a Quaker, had talked with the Quaker chaplain at Columbia about the incredible dangers of wars fought with advanced technologies such as nuclear and biological weapons. That talk had moved Paschkis to found the Society for Social Responsibility in Science in 1948. Now, he and two other officers of his organization were about to meet with their most famous member [1].

An old man with straggling white hair sat on the porch. Although the day was not cold, he was wrapped in a blanket. Paschkis explained the purpose of their visit: to request the member's signature on an open letter calling for scientists around the world to refrain from using their knowledge for war. The old man explained that he and Bertrand Russell were in the process of issuing a similar declaration already, and that he was letting Russell take the lead. However, he indicated that he was in sympathy with the Society's goals. The visitors thanked

him and turned away. Paschkis later recalled that "the air of parting was around" (Paschkis quoted in [2]). Less than three weeks later, Albert Einstein was dead. But in the last month of his life, he and Russell issued the Russell-Einstein Declaration calling for the governments of the world to find peaceful means to settle their disputes.

The example of the Quaker pacifist Paschkis inspired many of the founders of the Committee for the Social Implications of

Technology (CSIT) in 1971, which became the IEEE Society on Social Implications of Technology in 1982. Paschkis was one of the few U.S. engineers of his era who were concerned about the social effects of the rapid changes that science and technology were bringing about. As historian Matthew Wisnioski has shown, many engineering statesmen of the period acknowledged that the accelerating changes due to technology were socially disruptive. But in the view of James R. Killian, President Eisenhower's science advisor (quoted in [3, pp. 122-123]), this meant only that engineers faced the even greater challenge of solving the problems that their technology caused — presumably through better engineering.



Fig. 1. CSIT co-founder Mal Benjamin, demonstrates a laser cane obstacle detector for the blind to a mobility trainer. The device was developed by Benjamin's company, Bionic Instruments Inc. in the early 1970s.

Committee on Social Responsibility in Engineering

In the 1960s, Paschkis's anti-war stance became less unusual as the highly divisive Vietnam War dragged on. A small but growing minority, including a few engineers, vocally opposed the war for a variety of reasons. In 1969, Paschkis began a campaign to form a "Technology and Society" division within the American Society of Mechanical Engineers [3, p. 138]. Paschkis was friends with the electrical engineers Mal Benjamin and Stephen Unger. Impressed by Paschkis's example, Unger and a few like-minded compatriots decided to do something similar within their own professional society, the Institute of Electrical and Electronics Engineers (IEEE).

Both Benjamin and Unger had thought long and hard about the relationship between their professional lives and their innermost convictions, about how science and technology should be used. Benjamin decided to major in electrical engineering at the University of Pennsylvania and graduated in 1942, just in time to contribute his newly-found skills to the war effort. At the Johns Hopkins Radiation Lab, he worked on the famous proximity fuze used in antiaircraft shells — the first electronic circuit made with a printed wiring board. Mal's feelings were mixed about doing war work, since as a teenager he considered himself something of a pacifist. But as he puts it, "I bought the line that says, 'When the house is on fire, that's no time to be talking about fire prevention.' You put the fire out first and then worry about fire prevention." After further graduate work at Johns Hopkins and several research jobs, Mal gravitated toward the new field of biomedical engineering. Eventually, he set up a company called Bionic Instruments, which developed unique instrumentation for biological and psychological research — a considerable shift from proximity fuzes.

Stephen Unger credits his father Julius, a CPA, and his mother Rebecca for his own concern about societal issues. Unger's upbringing in New York City gave him his distinctive accent, and perhaps his willingness to speak out about matters he disagrees with as well. After taking an undergraduate degree at the Polytechnic Institute of Brooklyn, Unger obtained the Sc.D. degree from the Massachusetts Institute of Technology. He then joined Bell Telephone Laboratories, where he worked on a variety of projects in digital electronics. In 1961, he left industry to join the faculty of Columbia University, where he is now Professor of Computer Science and Electrical Engineering. At the time Unger

joined Columbia, he recalls that there were at least half a dozen or so members of the engineering school who were concerned with matters of engineering ethics. He came to know Victor Paschkis, whom Unger considers "almost the founder of engineering ethics, as far as I'm concerned." Another key figure in the social-responsibility movement at that time was Ted Werntz, who Unger characterizes as a "militant civil rights advocate, and opponent of big business and the Vietnam War." According to Unger, Werntz was the principal "spark-plug" for the Committee on Social Responsibility in Engineering (CSRE), an organization of engineers who were concerned about the ways technology was being used. Unger hired Werntz as the chief engineer on an NSF-sponsored project to "apply technology to the democratic process." (Unger's co-principal investigator on the project was Amitai Etzioni, who went on to become famous for his involvement in the communitarian movement.)

Unger recalls that the CSRE was founded around 1969, and never exceeded about 200 members. In 1971, CSRE published the first number of *Spark*, a newsletter in which the organization said it "seeks to challenge the present orientation of engineering and to explore ways in which engineering skills can be used to solve the obvious and growing ills of our society" ([4], quoted in [3, p. 139]). It was a free-standing group, not associated with any particular branch of the engineering profession.

Around 1971, someone came up with the idea of affiliating CSRE with the IEEE. The advantages of such a connection were obvious, bringing with it the opportunity to access the much larger body of IEEE members. The original plan was for the CSRE to become a "technical group" (the equivalent of today's Society) within IEEE. Unger recalls that the requirement for starting such a group was to gather signatures of at least one hundred IEEE members. The drive that Unger and his colleagues mounted produced over eight hundred names. Unger remembers

that besides the many volunteers who collected signatures, Richard Emberson, the staff secretary of the IEEE Technical Activities Board (TAB) at the time, helped the CSRE (and later SSIT) overcome bureaucratic obstacles time and again. Norm Balabanian adds that a similarly helpful IEEE staff member was Esmi Bistrup.

Discussions with the IEEE President and other officials led to the decision to form a TAB Committee on Social Implications of Technology (CSIT), rather than a technical

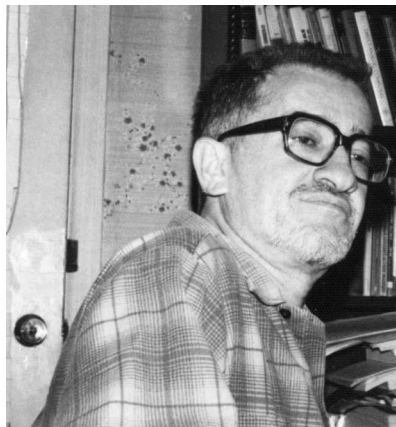


Fig. 2. Steve Unger in 1975.

group. By 1972, CSIT was up and running, although its administrative structure was somewhat unusual. By the rules of its founding, the vice-chairman of TAB also chaired CSIT, and only the vice-chairman of CSIT could be elected by its members. This gave the TAB officer some control over CSIT's activities, which allayed concerns about CSIT's possible behavior.

CSIT's Stormy Decade

In late 1972, the Vietnam War continued to provoke protests and controversy. In connection with a large IEEE meeting called INTERCON '73 to be held the following March, members of CSIT wanted to sponsor "a session 'Conversion to a Peacetime Economy,' a workshop on 'The Engineer and Military Technology,' and an 'Open Forum'" [5].¹ CSIT requested space for these activities in December of 1972. The IEEE convention manager turned them down. At the January 8, 1973, CSIT meeting, Unger inquired "if the IEEE is an organization of hired hacks in bondage to exhibit at INTERCON for fear of incurring economic disadvantage" [6]. Frank Stoller, who was listed in the minutes as the "Chairman, Working Group on IEEE Activists," protested that "his attempts to work within 'the IEEE system' had produced only frustration and that by design, not by accident" [7]. Eventually, IEEE Executive Director Donald Fink did allocate some space in the meeting's hotel for CSIT activities, but in an out-of-the-way location.

One of the landmark achievements of CSIT in its early years was its involvement in the BART case. This case involved three engineers working on the design of San Francisco's Bay Area Rapid Transit (BART) system. Believing (with justification) that the electronic design of certain safety-critical components was inadequate, they approached a member of BART's board of directors after their own managers refused to pursue the matter, and the board member made their concerns public. Then the engineers were fired. Later investigation fully validated the engineers' concerns after the automatic train control system failed on Oct. 2, 1972 and a BART train overshot its station and plowed into the barricade beyond it. In 1974 CSIT was instrumental in persuading the IEEE to file an amicus curiae brief in the engineers' civil suit against BART [8]. This was one of the first times that a professional engineering organization of IEEE's stature had intervened on the side of engineers in such a public fashion.

¹The SSIT secretary (currently Bradley Kjell) maintains a set of microfiche copies of CSIT and SSIT minutes covering the period from 1971 to 1999.

Both Benjamin and Unger had thought long and hard about the relationship between their professional lives and their innermost convictions, about how science and technology should be used.

Another achievement Unger recalls with pleasure is CSIT's efforts to free Enrique Kirberg, a Chilean university rector imprisoned by the Pinochet regime in 1975. At the direction of CSIT, Vice-Chairman Jeff Bogumil drafted a letter [9] calling attention to the fact that Kirberg "has not received treatment consistent with our proposed employment practices guidelines. ..." It was sent to General Augusto Pinochet, head of the Chilean military junta, over the signature of Robert C. Hansen, the CSIT chairman. Six months later, Kirberg himself showed up at a CSIT meeting and thanked the group for their efforts on his behalf. An interview with Kirberg was published in the CSIT Newsletter.

CSIT members also helped to set up the IEEE Member Conduct Committee, which eventually took over the task of dealing with ethics cases that CSIT had handled previously.

In 1978, the Committee decided to establish a monetary award for outstanding service in the public interest. The first recipients of this award were Max Blankensee, Robert Bruder, and

Holger Hjortzvang, the three engineers who went public in the BART case. A year later, a computer engineer named Virginia Edgerton received the award for her efforts to bring attention to a potentially hazardous defect in the New York City police emergency dispatch software system. (In 1985, Carl Barus became chair of what was by then the SSIT awards committee, leading the efforts to "vet" each candidate carefully. In 1995, a few years after Barus' death, the award was renamed the Carl Barus Award for Outstanding Service in the Public Interest in his honor. Table I lists the Barus Award recipients to date.)



Fig. 3. Attendees at a 1989 SSIT cosponsored conference in Los Angeles, CA. From left: Toni Robbi, M. Pessah, Leon Zelby.

Table I**Barus Award Recipients**

Year	Name(s)	Reason for award
1978	Max Blankensee, Robert Bruder, Holger Hjortzvang	Reported BART rail system problems
1979	Virginia Edgerton	Raised awareness of New York City emergency response system problems
1986	Rick Parks	Challenged unsafe conditions on nuclear power industry
1988	Benjamin Linder	Advanced appropriate technology in Nicaragua
1991	Demetrios L. Basdekas	Worked for improvements in nuclear power regulation
1997	Rebecca Leaf	Worked for improvements in Nicaraguan power system and access
2001	Salvador Castro	Reported hazardous product to U.S. Food and Drug Administration
2003	David Monts	Reported safety issues in Univ. of New Orleans physical plant
2006	Nancy Kymn Harvin	Reported hazards at Salem and Hope Creek nuclear power plants

From the start, most CSIT members wanted their organization to be a society within IEEE, and accepted committee status only as a compromise. Eventually, the limitations of CSIT's committee structure became a serious hindrance to the organization. Although CSIT published a newsletter which was sent to a mailing list numbering around 2000, it collected no dues. For this and other reasons, in 1980 CSIT members mounted another petition drive, collected over 600 signatures, and requested that the IEEE grant them Society status.

Three major hurdles stood in the way: the Executive Committee of TAB, the entire Technical Activities Board, and the Executive Committee of the IEEE all had to vote independently to approve the application. Unger, who was then CSIT vice-chairman, recalls going to several TAB meetings at which the application was discussed. After approval by TAB's executive committee, TAB itself took up the issue in a heated discussion at a meeting in July of 1980. On the first vote, the motion to make CSIT a Society was defeated, with a number of Society presidents opposing it. Unger recounts that after the initial July defeat, IEEE President Leo Young proposed that each of the IEEE Divisional Directors

appoint a member to the SSIT Administrative Committee or Adcom (which is now known as the Board of Governors or BOG), the main governing body of the organization. Unger believes this unprecedented provision, which he thinks Young proposed to "assuage the fears that these wild guys would do something to embarrass the IEEE," helped turn the tide in favor of SSIT. That provision remains in effect to this day. Ironically, it has been the means by which SSIT has acquired some of its most helpful and productive board members.

After doing "spadework" with various TAB members that fall, Unger raised the issue of changing CSIT to a Society a second time at the December 1980 TAB meeting. Again, arguments were voiced on both sides. Then the TAB chairman called for a show of hands. In favor, he counted 16. Opposed: 17! Unger was "thunderstruck." At this point, a TAB member named Bernie Mannheimer, who chaired the TAB Environmental Quality Committee, raised his hand and asked for a roll-call vote. At the end of the roll call, the count was 16 in favor, 15 opposed. This time, the motion passed. Afterwards, Mannheim told Unger that both the Presidents and the past Presidents of some Societies voted in the show of hands, which wasn't allowed. But the roll-

call vote put a stop to that. With IEEE's Executive Committee approval, CSIT became history and the new IEEE Society on Social Implications of Technology (SSIT) joined twenty-nine other IEEE Societies in 1982. Unger was succeeded by R. J. (Jeff) Bogumil, who served both as the last Vice-Chairman of CSIT and as the first President of SSIT. Table II lists the Vice-Chairs of CSIT and Presidents of SSIT from 1972 to the present.

SSIT's Early Years

One of the most important changes that took place when CSIT became SSIT was the transformation of the CSIT newsletter into the *IEEE Technology*

Table II**CSIT Vice-Chairmen and SSIT Presidents**

CSIT Vice-Chairmen	SSIT Presidents
Toni Robbi (1972-73)	R. J. Bogumil (1982-1984)
H.S. Goldberg (1974)	Steve Unger (1985-1986)
R.C. Hansen (1975)	Toni Robbi (1987-1988)
Mal Benjamin (1976-1979)	Norm Balabanian (1989-1990)
Steve Unger (1980)	Ron Kline (1991-1992)
R. J. Bogumil (1981)	Christine Nielsen (1993-1994)
	Joe Herkert (1995-1996)
	Ken Foster (1997-1998)
	Jerry Engel (1999-2000)
	Karl Perusich (2001)
	Clint Andrews (2002-2003)
	Brian O'Connell (2004-2005)
	Karl Perusich (2006-)

and *Society Magazine* (hereinafter referred to as *T&S*). The current managing editor of *T&S*, Terri Bookman, has written a history of the magazine that appears elsewhere in this issue [19]. The magazine began as a quarterly of 32 pages and carried a two-page history of CSIT in the December 1984 issue [10].

In the early 1980s, the new Society continued to take part in engineering ethics controversies to the extent possible. However, in Unger's estimation, the IEEE as a whole became more reluctant to engage in actions in support of individual engineers who were trying to uphold the principles of the IEEE ethics code, even to the extent of giving them informal advice.

While SSIT did not sponsor a stand-alone conference on its own until 1991, in 1984 President Jeff Bogumil worked with the Society of Photovoltaic Instrumentation Engineers (SPIE) to sponsor a conference called "Electro-culture '84." Held on May 1 and 2, 1984, it featured a well-attended session on "Weapons in Space" concerned with the controversial Strategic Defense Initiative ("Star Wars") proposals that were then in the news [11].²

Another controversy that took many of those involved by surprise began with the publication of the June 1989 issue of *T&S*. The magazine's editor was then Robert Whelchel, a professor of electrical engineering at Tri-State University in Angola, Indiana, who says he was (and is) a "strong supporter" of feminism. He had received for review an article by an independent scholar, Rachel Maines, on an aspect of the history of technology that pertained to women. *T&S* editors had published historical articles in the past, and this particular subject unquestionably had social implications. Whelchel sent it out for review, the reviews were positive, and when subscribers opened their issues of *T&S* in the summer of 1989, they found Maines' article on page 3, entitled "Socially Camouflaged Technologies: The Case of the Electromechanical Vibrator" [13].

SSIT draws its members from an eclectic variety of engineering specializations, as well as from professions outside engineering.

Maines' research in the Bakken Library of Electricity in Life had uncovered the surprisingly long and complex history of a device the appearance of which causes movies to receive at least a PG rating even today. While *T&S* carried many other articles of more lasting importance in that period, it is safe to say that what came to be called "the vibrator article" attracted the most attention, much of it unfavorable. Joe Herkert, the present editor of *T&S*, recalls that five years after the article appeared, during a job interview he met a prominent IEEE volunteer whose first

words to him were, "I want you to know, I think that vibrator article was a disgrace!" Herkert got the job anyway. Terri Bookman, who was then a staff editor for IEEE Transactions, recalls that the article made something of a stir even within her office.

As SSIT President, Norm Balabanian attended a TAB meeting in the Fall of 1989. When someone brought up the fact of the vibrator article's appearance in an IEEE publication, Balabanian recalls that many of the Society presidents "went ballistic." The minutes of the SSIT Adcom meeting of Mar. 17, 1990 record that "at the previous TAB Mtg. their upset at



Fig. 4. June 1991, Audience members at the first ISTAS, Toronto, Ontario, Canada, "Preparing for a Sustainable Society." Conference organizer Walter Zessner is visible in the front row.

the 'Vibrator' article' in *T&S* resulted in the decision to review all Societies every 5 years" [14]. These reviews got under way the following year, and, not surprisingly, SSIT was one of the first Societies selected for review. Ron Kline, a historian of science and technology at Cornell and SSIT President in 1991-1992, recalls that the review, which he conducted with Vice-President Christine Nielsen, managed to

²Bogumil's summary of some of the conference sessions appears in [12].

Table III
International Symposia on Technology and Society

Date	Location	Theme	Chair
June 21-22, 1991	Toronto, Canada	Preparing for a Sustainable Society	Walter Zessner
Oct. 22-23, 1993	Washington, DC	Technology: whose costs? Whose benefits?	Bill Kelly
June 21-22, 1996	Princeton, NJ	Technical Expertise and Public Decisions	Clint Andrews
June 20-21, 1997	Glasgow, Scotland	Technology and Society at a Time of Sweeping Change	Simon Burne
June 12-13, 1998	South Bend, IN	Wiring the World: The Impact of Information Technology on Society	Karl Perusich
July 29-31, 1999	New Brunswick, NJ	Women and Technology: Historical, Societal, and Professional Perspectives	David Morton
Sept. 6-8, 2000	Rome, Italy	University as a Bridge from Technology to Society	Valerio Cimagalli/ Marco Balsi
July 6-7, 2001	Stamford, CT	Ethical and Social Issues Criteria in Academic Accreditation	Jerry Engel/ Brian O'Connell
June 6-8, 2002	Raleigh, NC	Social Implications of Information and Communication Technology	Joe Herkert
Sept. 26-28, 2003	Amsterdam, The Netherlands	Technology, Crime Prevention, and Security	Hin Oey
June 17-19, 2004	Worcester, MA	Globalizing Technological Education	Lance Schachterle/ Rick Vaz
June 8-10, 2005	Los Angeles, CA	Weapons and Wires: Social Implications of ICT and Global Security	Philip Chmielewski
June 8-10, 2006	New York, NY	Disaster Preparedness and Recovery	Roberta Brody

satisfy IEEE that SSIT was in fact doing a creditable job of scholarly and professional service to the technical community. TAB has continued this practice of five-year reviews with every Society and has found it to be a valuable exercise in promoting best practices within the IEEE.

One important new activity that Kline could point to as evidence in favor of SSIT's continued existence was its conference, the International Symposium on Technology and Society. Although CSIT sponsored sessions at IEEE technical meetings, it never organized a conference entirely on its own. During the 1980s, many SSIT members attended the annual Carnahan Conference, named after the University of Kentucky confer-

ence center where the first such conference on security technology was held in 1967. On Oct. 21-22, 1989, Chantal Toporow chaired a Carnahan-like conference at California State University, Los Angeles [15]. It was co-sponsored by the IEEE Los Angeles Council and SSIT, and can be considered a precursor to the SSIT-sponsored conferences that followed.

1990s: SSIT and ISTAS

The first conference to be called the International Symposium on Technology and Society was held at the Ryerson Polytechnic Institute in Toronto, Canada, on June 21-22, 1991. Subtitled "Preparing for a Sustainable Society," it was chaired by SSIT member Walter Zessner. Two years later, SSIT president Christine Nielsen led efforts to organize a second ISTAS in 1993, which was chaired by Bill Kelly and held at George Washington University in Washington, DC. After the third ISTAS, held at Princeton University's Woodrow Wilson School of Public and International Affairs on June 21 and 22, 1996, the conference became an annual event [16].

ISTAS has since become one of SSIT's most important ongoing activities. Typical attendance figures range from 40 to over 100, and the conference has been held at a wide variety of venues both in the U. S. and abroad. Table III lists the dates and locations of all ISTAS conferences to date.

The University of Strathclyde, founded in 1796, was the site of one of the most colorful meetings so far:



Fig. 5. ISTAS 1997, Glasgow, Scotland. From left, Joe Herkert, conference chair Simon Burne, SSIT President Ken Foster.



Fig. 6. New Brunswick, NJ, ISTAS 1999. David Morton, conference organizer, with Joe Herkert.



Fig. 7. ISTAS 1999: Author and 1999 conference presenter Rachel Maines, with Jonathan Coopersmith, another presenter.

ISTAS 1997. Joe Herkert remembers the rather Spartan room accommodations in what was evidently an aged dormitory. But these were more than outweighed by the elegant meeting facilities and an official greeting by the Lord Mayor of Glasgow. The Mayor, dressed in historic regalia, treated attendees to an elaborate reception in the municipal hall—the first building in Scotland to be illuminated with electric light.

In addition to providing a forum where people from many disciplines can come together to discuss wide-ranging topics about technology and society, ISTAS conferences have helped to recruit many SSIT leaders. Unlike most technically-focused IEEE Societies, whose scopes match the primary professional expertise of their members, SSIT draws its members from an eclectic variety of specializations, as well as from professions outside engineering such as political science, science and technology studies, law, medicine, public policy, and history. In the course of interviews for this article, I asked several present and former officers of the organization how each became involved in SSIT. In nearly every case, there was a personal connection, often forged at an Adcom meeting or ISTAS conference, between those who were

already active in the organization and the newcomer.

As we have seen, Mal Benjamin and Steve Unger were inspired by Victor Paschkis' example to create an organization within IEEE concerned with social implications. Around 1989, Ron Kline was nominated by a Cornell colleague of his, Terry Fine, who was then President of the IEEE Information Theory Society, to be that Society's representative to the SSIT Adcom. Kline made the trip from Ithaca to New York City where the Adcom meetings were held, met Steve Unger and his colleagues, and ended up as SSIT President himself only a couple of years later. At about the same time, Joe Herkert was teaching at Lafayette College in Easton, PA. Herkert, whose background included both a B.S.E.E. degree and a D.Sc. in engineering and policy, had joined SSIT earlier and invited Unger to speak about engineering ethics at Lafayette. While there, Unger invited Herkert to attend an SSIT Adcom meeting. Herkert showed up for the first time at the December 1990 meeting and left as chair of the Publications Committee. Brian O'Connell, who has been active in many SSIT roles including a 2004-2005 term as President, first met SSIT leaders at the 1996 ISTAS conference held in Princeton. He was favorably impressed by the fact that people with a



Fig. 8. Pictured at April 2004 IEEE-SSIT Board of Governors meeting held in Austin, TX, from left, Terri Bookman, Joe Herkert, Clint Andrews, Bradley Kjell, Michael Loui, Brian O'Connell, Gerry Engel, Janet Rochester.



Fig. 9. At ISTAS'06, in Queens, NY, from left: Jeff Bogumil, Walter Zessner, Bob Brook, Jeff Robbins.

variety of different backgrounds were “actually talking about . . . technology and ethics and social implications in the same breath, which was just tremendous.” As a new faculty member with little reputation, he had doubts about how he would be received. O’Connell continues, “I went down to dinner, just expecting to be eating alone, and a guy comes up to me and remembers me from the



Fig. 10. ISTAS 2004, Worcester, MA - SSIT President Brian O’Connell takes a spin on a WPI campus security Segway.

conference ... So we started talking and sharing some ideas. His name was Joe Herkert. We had dinner together and spent a great deal of time talking about the same stuff.” Fortunately, the subject of baseball didn’t come up, because if it had, one of the great SSIT friendships might have been nipped in the bud. (Joe is a Yankees fan, and Brian’s team is the Red Sox.)

Clinton Andrews, SSIT President from 2002 to 2003, has a background in mechanical engineering as well as technology and policy. In 1995, while teaching at Princeton University, Andrews learned that SSIT Adcom meetings were held just a few miles away

in New York. He attended one and was so favorably impressed by this “interesting and slightly wacky group” that he allowed himself to be talked into hosting ISTAS 1996 at Princeton.

Janet Rochester, currently SSIT Vice-President, was an SSIT member when IEEE Division Six director Merrill Buckley asked her to be that Division’s representative to SSIT’s Adcom. She liked it so much that she later ran successfully for a position on the Adcom and has made important contributions since, especially where the interests of women in engineering are concerned.

The point of these tales is not so much to emphasize that anyone showing up for the first time at a board meeting is likely to leave as chair of a committee — although that has happened — as to reveal some of the personal connections among those who later became leaders in the organization. While networks like these are the way most volunteer organizations carry on, the relatively small size of SSIT means that it is easy to become acquainted with the leadership on short notice.

SSIT Since 2000

Around 2001, IEEE as a whole found itself in fiscal difficulties, which impacted SSIT’s financial situation as well. SSIT has never had more than about 2500 members, which makes it one of the smallest IEEE societies. IEEE is structured financially so that there is only an indirect relationship between membership figures, dues, and the amount of revenue under a given Society’s control. Since IEEE holds its substantial cash reserves in various investment securities, the aftereffects of the stock market crash of 2001 put IEEE into serious financial trouble. The consequence



Fig. 11. Christine Nielsen, SSIT President in 1993 and 1994.

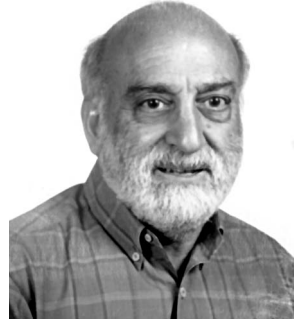


Fig. 12. Norman Balabanian, SSIT President in 1989 and 1990; *CSIT Newsletter* and *T&S Magazine* editor 1976, 1979-1986, and in 1993-1995.



Fig. 13. Ron Kline, SSIT President 1991-1992 and *T&S Magazine* editor 1995-1997.

of this for SSIT was that for a year or two, IEEE took a large and non-negotiable chunk out of the SSIT cash reserve. Fortunately, there were enough reserve funds to sustain this, but extrapolations of circumstances in 2002 showed SSIT going bankrupt in about three years. In the event, the stock market rebounded, the annual infrastructure charges fell to more reasonable levels, and SSIT's financial picture for the last two years or so has been relatively benign.

In addition to rather modest income from dues, SSIT receives an increasing proportion of its revenues from its share of charges that libraries and other institutional users pay for receiving print and electronic publications from IEEE. Changes recently made in the way this income as well as expenses are allocated within IEEE threaten to reduce SSIT's net revenues to the point that its fiscal stability may again be in doubt in the future.

In 2005, for the first time, three members of SSIT were named IEEE Fellows for their professional activities in the area of technology and society. (For many years, SSIT has counted several new Fellows annually in its membership, but their Fellow status had been conferred through other Societies.) In 2005, this prestigious honor was awarded to Luis Kun, Michael Loui, and Swamy Laxminarayan. Kun, a professor at the U.S. National Defense University, was honored for his contributions to health care infrastructure. Loui, a professor at the University of Illinois Urbana-Champaign and current chair of the SSIT Publications Committee, was cited for his leadership in the teaching of engineering ethics. Swamy Laxminarayan's honor was for his work in the social and ethical implications of biomedical engineering [17]. Sadly, Swamy passed away shortly after being named a Fellow. SSIT's increasing participation in the Fellows nomination process may contribute to greater awareness and recognition of the organization within IEEE in years to come.

Especially in recent years, SSIT has reached out to other Societies and entities within IEEE to co-sponsor

conferences and other activities of mutual interest. Past SSIT President Brian O'Connell points out that SSIT co-sponsored the April 2-4, 2004, conference "The Hydrogen Economy: Its Impact on the Future of Electricity" with three other IEEE Societies: Power Electronics, Industry Applications, and Power Engineering. Other cooperative work has been undertaken with the Oceanic Engineering Society, the Product Safety Engineering Society, and the Computer Society. On the regional level, there are numerous active SSIT Chapters both in the U.S. and abroad, and through connections with IEEE's Regional Activities Board (RAB), and the IEEE Distinguished Lecturer's Program, SSIT officers have benefited IEEE Section and SSIT Chapter members through visits and other support. As awareness of ethical and social implications of new technologies rises, it will make sense for more technically focused Societies to participate in further collaborative ventures with SSIT.

Future Directions

In principle, every member of IEEE should find something of interest in the activities of SSIT, since it is hard to think of a technology without social implications. But the same factor that makes SSIT such an interesting mix of people with various technical and professional backgrounds also means that SSIT membership is usually not the primary reason that professionals join IEEE. Besides this difference between SSIT and most other IEEE societies, there is a basic philosophical difference as well, at least according to some.

When I asked founding member Unger about the direction SSIT has taken in recent years, he recalled that Frank Kotasek, one of the principal founders of CSIT, opposed the proposal for CSIT to become a Society. Kotasek was concerned that the rigidity and bureaucratic structure needed to run a Society would reduce the "militancy" that CSIT had as a committee. In several cases where CSIT members disagreed with various actions the IEEE took, its standing as a committee of

TAB meant that the IEEE leadership had to respond somehow. Unger says, "Looking back, I'm not sure that Frank wasn't right." In Unger's view, CSIT's influence on matters such as the IEEE Code of Ethics and the establishment of the Member Conduct Committee has not been matched by anything SSIT has done along the same lines, although he credits SSIT for such acts as speaking out during the Wen Ho Lee incident in which the Los Alamos National Laboratories engineer was jailed for alleged violations of security laws [18].

Former SSIT President Clint Andrews also thinks that the emphasis and focus of SSIT's activities has changed over time. In his view, CSIT and SSIT began as part of the "critical science" movement, in which technical experts were concerned with the ways that society used the fruits of their expertise. These lines of thought, which use phrases such as "technology assessment," "precautionary appraisal," and so on, "tend to focus on the adverse effects of science and technical change," says Andrews. On the other hand, a second intellectual current is more closely aligned with most of the IEEE technical societies, as well as economics and business. The proponents of this mode participate in "technology foresight" and "roadmapping" activities, and view technology more optimistically, looking to foster innovation without being too concerned about its possible negative effects. Andrews feels that SSIT has made more contributions to the critical-science camp than to the technological-optimism camp, and wishes there were some way the organization could "embrace both possibilities" in the future. He admits this would be a significant change from SSIT's traditional role as the "loyal opposition" to the technical-progress mentality, which is often the underlying philosophical foundation for nearly everything the rest of the IEEE does. He believes there is tremendous interest in the IEEE at large in the social implications and context of technology, and thinks SSIT could play a much larger role if the Society can figure out a way to reach this larger audience.

Today, the leaders and members of SSIT face this issue along with the financial challenges and other problems that stand in the way of any institution's continued existence. The thing that has impressed me the most in compiling this record of SSIT and its predecessors is the passion that its founders, officers, and members bring to the matters they study, write about, and act on. "Engineering" and "passion" are words not often found in the same sentence, but I am convinced that they are both found in a high percentage of SSIT members. While IEEE functions mostly through the efforts of volunteers, most volunteers see their IEEE activities as at least indirectly connected with their own professional advancement. But as Joe Herkert found in his encounter with the hostile interviewer, involvement in SSIT is not a guaranteed way to

advance your career! I hope that SSIT members will take the best of what the organization has done in the past as an inspiration to do even better in the future.

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