

V WICSE: A Network of our Own by Sheila Humphreys

It just helped me feel more normal. Kathie Nichols, PhD 1984



WICSE Presidents at the WICSE 40th Anniversary, March 2018, Sutardja-Dai Hall, UC Berkeley

Since the 1970s the women's graduate student organization WICSE (Women in Computer Science and Electrical Engineering) has pursued the goal of increasing the number of women in that discipline and supporting their academic progress. The early days of WICSE were described in Chapter III. WICSE has become a permanent presence in the EECS Department, and, indeed, is the first such group in an American university with a disciplinary focus on computing or electrical engineering in a computer science department.¹ The faculty have come to recognize the value of their service to the departmental community and support WICSE with funding. During the 80s, WICSE students worked on graduate recruitment and pressed for hiring women faculty. In that decade twenty-three

¹ The national Society of Women Engineers was founded in 1950. UC Berkeley's student chapter of SWE was founded in 1975.

women earned doctoral degrees. Among the distinguished PhD graduates of that decade who were successful at universities and in industry were Barbara Simons, Belle Wei, Teresa Meng, Audrey Viterbi, Susan Eggers and Kathie Nichols.²

One of the organization's first activities was a reception for "Women in Engineering" at the Women's Faculty Club in 1979. The WICSE students identified the faculty who were particularly sympathetic to women. Students explained the purpose of what became annual receptions: "The reception has as its purpose to improve the quality of academic life for women students by offering professional role models and the chance to meet and form personal contacts with other engineering students." At the first reception, Paula Hawthorn, the first President of WICSE, recognized Statistics Professor Elizabeth Scott and two male allies, CS Professor Manuel Blum³ and EE alumnus Dr. Jean Paul Jacob⁴ of IBM Almaden Research Center as being extremely supportive of women in engineering.

Subsequent annual WICSE receptions honored other engineers and scientists: Dr. Thelma Estrin, UCLA,⁵ and Berkeley Biochemist Dr. Arlene Blum. With her husband Gerald, Estrin had worked in Israel on building the first electronic computer in the 1950s in the Middle East and pioneered the use of informatics in medicine. At the time of the WICSE reception, Estrin, the mother of three daughters,⁶ had just received the 1981 Achievement Award of the Society of Women Engineers. She strongly supported the creation of the Computer Science Reentry Program and met with the student organizers whenever she came to Berkeley.

Arlene Blum, a biophysical chemist and public health advocate, earned a PhD in 1971 at Berkeley in physical chemistry. Her research and policy work have contributed to preventing the use of flame retardants and other harmful chemicals

² These alumnae were actively in touch with WICSE after graduation.

³ Professor of Computer Science Manuel Blum was an enthusiastic supporter of the CS Reentry Program.

⁴ Dr. Jean Paul Jacob, Berkeley alumnus, conducted a long research career at IBM Almaden Research Center. He received the EECS Department's Research Leader Award in 2003. He died in 2019.

<http://almaden.ibm.com/almaden/media/jpj.shtml>

⁵ Professor Thelma Estrin(1924-1914) was a pioneer in computing and strong advocate for women.

https://senate.universityofcalifornia.edu/_files/inmemoriam/html/ThelmaEstrin.html

⁶ Thelma and Gerald Estrin were the parents of alumna Deborah Estrin, Professor of Computer Science, Cornell, and 2018 MacArthur Fellow: <https://www.macfound.org/fellows/1009/>

<https://www.macfound.org/fellows/1009/>. Their daughter Judy Estrin is an internet pioneer and executive.

in children's sleepwear. A world famous mountaineer and feminist, Blum led the American Women's Himalayan Expedition to the summit of Annapurna in 1978.⁷



Dr. Jean-Paul Jacob receives WICSE award for 'supportive male faculty' 1979

WICSE Lunch Meetings

*For me the biggest on-going thing was being able to have lunch with other women every Friday. I was on the EE side and there were *very* few women. It just helped me feel more normal.* Kathie Nichols, PhD EE 1984

In 1983 WICSE President Kathie Nichols and Vice-President Joan Plumstead wrote a letter reaching out to all the graduate women enrolled in EE and CS. They explained how joining WICSE could provide information and social support to counter the isolation women graduate students might feel in their classes and research groups: *“As a fellow woman EECS graduate student, I’m sure you’ve noticed that women are quite a small minority in our field...The problems we encounter as we train and work in our profession are diverse, some are major and*

⁷ Blum, Arlene. *Annapurna: A Woman's Place* (Sierra Club Books, San Francisco, 1980)

some are minor. We think that many of these problems can be solved, or at least mitigated, by a peer support group. This is WICSE's primary function: to provide the opportunity for exchange of ideas and information between women graduate students of varied experience. As women, we often end up outside the 'informal information network,' so we have established a network of our own."



Kathie Nichols, WICSE President, 1983

WICSE's core activity had been a weekly lunch meeting, occurring regularly since 1978. The predictability of the lunch gatherings has given a continuous structure to the changing groups of students as they moved through their degree program. Women students of the 1980s spoke of the value of the lunches, which provide a forum for visiting scholars, industrial representatives, and alumnae. Marie desJardins, president of WICSE in 1989, put it this way, "*Our weekly lunches were part of what kept me on track during the tough times!*"

Through the WICSE lunches EECS students have interacted with a large number of prominent women computer scientists and electrical engineers, from Mildred Dresselhaus and Sheila Widnall (MIT), to Maria Klawe (then a Chair of Computer

Science at University of British Columbia)⁸ and Barbara Grosz (Harvard). The lunches also facilitated ongoing contact between Berkeley alumnae and enrolled women. This was especially helpful in the case of Leslie Field (Ph.D. EE, 1991), who called herself an “older woman,” who switched fields from Chemistry to Electrical Engineering as a re-entry doctoral student in the 80s after seven years working at Chevron. The WICSE community offered needed support during that transition to graduate school.

“I started Grad School at Berkeley in 1985 in the group that would later become Berkeley Sensor and Actuator Center as part of a career change from the R&D work I'd been doing in Catalysis at Chevron for 7 years, to go into Electrical Engineering in order to be able to have a more entrepreneurial R&D impact ... As a kind of re-entry student changing fields, it was a difficult transition to go from working in an area in which I had established great competence into an area I had to learn from almost-scratch. It was incredibly exciting to be learning something new again, and to find that the entrepreneurial passion was shared by others. There were few women in the EECS department at Berkeley when I entered the PhD program, but compared especially to my experience at MIT in the mid-seventies, the acceptance by fellow students and professors was a vast improvement over some of what I'd encountered there, with far more women on the Berkeley campus in general, and CS reentry program and WICSE, which all made the transitions due to being a woman (and an older woman, aged 28), and due to changing fields, much easier than it might have been.”⁹

Half the people she knew were women

An unexpected outcome of the WICSE lunches was related by Dr. Dawn Tilbury, PhD EE, 1994,¹⁰ a former president of WICSE, the following anecdote in an from her student days about how attendance at WICSE lunches created a perception of a larger number of women than was the case:

⁸ Prof. Klawe is currently President of Harvey Mudd College.

⁹ Dr. Leslie Field, Personal Communication, 2016. Dr. Field founded Ice911, a nonprofit research to save polar ice.

¹⁰ Dr. Tilbury is currently Assistant Director of National Science Foundation's Engineering Directorate, on leave from her Professorship of Mechanical Engineering at the University of Michigan.

One of the first-year women grad students came up to me and said ‘I’m having an argument with my office mate about the percentage of women in the Department. He thinks it is less than 10%, but I think it is more like 40-50%, isn’t it?’ I told her it’s really about 15%. What she didn’t realize was that because of the weekly WICSE lunches, she knew a large percentage of the women in the Department. In fact, half the people she knew were women.” Tilbury remembers “the WICSE alumnae guest speakers who were successful in academia or industry and came back to tell us their stories helped us to feel connected. Bringing groups of smart and determined women together is always a good recipe for inspiration, support, and action.”¹¹



Lisa Buckman, Dawn Tilbury, Ginger Ogle, Gitanjali Swamy, Sheila Humphreys, Ruth Rosenholz (horiz.) at a WICSE Lunch Meeting

WICSE has given students a vehicle for developing leadership skills, from soliciting funding to organizing conferences, to articulating publicly the concerns of women. Dr. Myra Boenke, PhD EE, 1988, explains the affirmation she felt giving back to peers: “...aside from the camaraderie and safe haven, WICSE

¹¹ WICSE Fortieth Anniversary Brochure, EECS Department, Berkeley, 2018.

helped me in yet another way. I found, and have since heard this repeated by psychologists, that to truly feel good about yourself, you have to be helping others. I found that lending the type of helping hand to other, newer women grad students that I so much needed and appreciated when I first arrived at Berkeley help me resolve and heal some of the turmoil and stress I carried from my first days and semesters. So I became President of WICSE and helped organize the weekly gatherings for several years. I found it to be a healing balm.”¹²

Dr. Kathie Nichols chaired a second WICSE engineering conference for women in 1988,¹³ and related how she gained from the leadership experience:

The thing that had the biggest effect on me personally was working on the conference and making things come together and learning some things about what it takes to make something happen. Whenever I was involved with an event in later years I always remembered your advice the day of the conference that all the work was done and now I should just ‘act like it’s a big party and you are the host.’. Wonderful advice. I put quarters in a speaker’s parking meter, smiled a lot and had a good time....

WICSE officers are annually invited to represent the collective voice of women students to the assembled faculty at the annual EECS Faculty Retreat. WICSE continues to play a major role in the recruitment of women students by contacting admitted women and hosting a women’s brunch on the prospective student Visit Day. Marie desJardins, WICSE President in 1988, initiated peer mentoring through a Big/Little Sister matching program in which first year women are paired with more senior students. That system continues today. Recruiters from industry have established collaborative relationships with WICSE since the late 1970s and have expressed their appreciation of the efficiency of working with a single organization to contact potential female employees.

Celebrating the History of WICSE

The ongoing contribution of WICSE leadership to the EECS community has been sustained for forty years. The organization has been celebrated during a succession

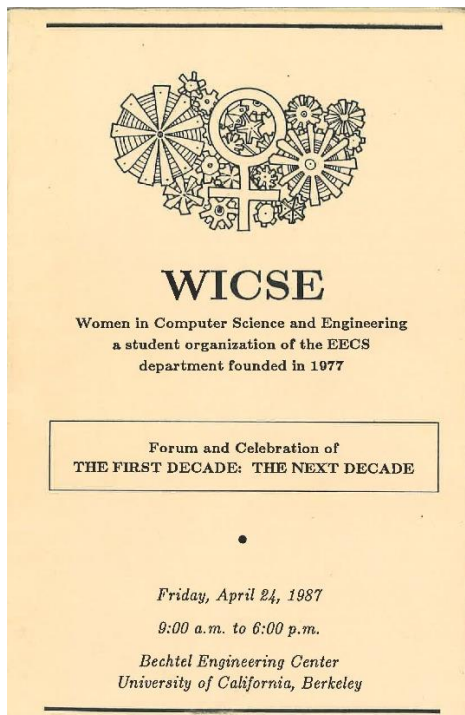
¹² Dr. Myra Boenke, Personal communication, 2016.

¹³ The first women in engineering conference at UC Berkeley occurred in 1978, described in Chapter III pp.15 ff.

of anniversaries. Students have marked the tenth, twentieth, twenty-fifth, thirtieth and fortieth anniversaries of WICSE by organizing major gatherings of students and prominent alumnae.

At WICSE's tenth anniversary in 1987 MIT Institute Professor Mildred Dresselhaus flew West on an overnight plane to lend her stature as keynote speaker.¹⁴ In her talk, Dresselhaus noted that even outstanding women students tend to underestimate themselves. She reported that, nevertheless, women doctoral students complete their degrees in about the same proportion as men and in the same number of years as men at MIT. She also pointed out the higher percentage of women at MIT (38% in 1987) as compared to only 20% in engineering at Berkeley. The day-long program featured talks by Professors Thelma Estrin (UCLA), her daughter, Deborah Estrin (USC), Mary Lou Soffa (University of Pittsburgh), and alumna Audrey Viterbi (UCI).

Thelma Estrin (1924-2014) Professor of Computer Science, UCLA



Dr. Anita Borg, a researcher at Xerox Palo Alto Research Center (PARC), gave the Keynote at the twentieth WICSE anniversary in 1997. Borg was already

¹⁴ WICSE Tenth Anniversary Brochure, EECS Department, Berkeley, 1987.

recognized as a visionary leader. Borg had founded the *Systemers* virtual community of women in computer science a decade earlier.¹⁵ Borg explained to Berkeley students that she created the Systemers group because she wanted to provide a space for women to discuss issues they experienced at work and share strategies.¹⁶ Systemers was a way to bring women together, a vast network in which women in technology could connect with each other. Initially Borg conducted research about the Systemers network at Palo Alto Research Center (PARC). She founded the Institute for Women in Technology in 1997 and served as its CEO until 2002. After Borg's early death from a brain tumor, the Institute was renamed in her honor. Anita Borg Institute (ABI) sponsors the annual Grace Murray Hopper Celebration of Women in Computing conferences, attended each year by Berkeley students. Richard Newton, Berkeley Dean of Engineering, developed a close relationship with Anita Borg and the Institute during Anita Borg's last years. While he was Dean, Newton showed his deep commitment by both attending and personally paying for Berkeley Engineering to be a sponsor of the "Hopper" Conferences. Like Borg, Newton died early. The Anita Borg Institute has since created the Educational Innovation Award in Honor of A. Richard Newton, which recognizes educators for developing innovative teaching practices and approaches that attract female students to computing, engineering, and math in K-12 or undergraduate education.¹⁷

In 2002, the EECS Department *Excellence and Diversity Student Programs* won a national award from the Women in Engineering Proactive Network (WEPAN), in the category of Women in Engineering Programs (WIEP). The WIEP award "recognizes an outstanding program or project that serves as a model for other institutions, and demonstrates improvements in the educational environment for

¹⁵ In 1987, Anita Borg founded [Systemers](#), an online community, with 12 fellow women technologists. To this day, Systemers offers a closed-network, safe community for women technologists.

¹⁶ <https://anitab.org/systemers/why-systemers/>

¹⁷ The Educational Innovation Abie Award honors the life and career of A. Richard Newton (1951-2007). <https://anitab.org/awards-grants/abie-awards/a-richard-newton-educator-abie-award/> Newton was a professor of electrical engineering and dean of the College of Engineering at the University of California, Berkeley, a pioneer in electronic design automation and integrated circuit design, and a visionary leader in the technology industry.

women in engineering.” WICSE’s activities were acknowledged for their importance.¹⁸

The Computer Research Association published an article in 2002 about EECS diversity programs at Berkeley in its national newsletter. “Twenty-five years ago a group of women students founded the graduate group WICSE (Women in Computer Science and Engineering), which continues to form the cornerstone of our programs for graduate women. The effectiveness of WICSE derives in part from its continuity, departmental support, and meaningful contact with CS alumnae and other prominent women in CS. The EECS Department provides WICSE with staff assistance, space, facilitation of conference travel, a guaranteed voice at the annual Faculty Retreat, and funding to support its activities.”¹⁹

At the twenty-fifth anniversary of WICSE in 2003, former presidents and alumnae traveled to campus from as far away as Michigan and Wisconsin to participate. An afternoon research symposium featured alumnae who were faculty: Professors Amy Wendt (Wisconsin), Dawn Tilbury (Michigan), and Valerie Taylor, (Texas A & M). Tilbury and Wendt were among the 18 former WICSE presidents who attended the celebration. A party followed the symposium which was enlivened by a loud salute from Cal’s Marching Band. Mary Ann Mason, Berkeley Graduate Division Dean, sent a congratulatory message: “You have raised issues and consciousness extending far beyond your starting point, helping change policies at Berkeley and across the nation. I consider it an honor indeed to congratulate WICSE and all who support it, not only for overcoming a variety of odds and surviving for a quarter-century.”²⁰

¹⁸ The WIEP Award recognized undergraduate and graduate programs for women in EECS: <http://mail.google/u/0/#search/WIEP+Award/162188a44336a3a0?projector=1&messagePartId=0.1>

¹⁹ Sheila M. Humphreys, “Award Validates Berkeley’s Diversity Programs.” *Computing Research News*, Vol. 14, No. 5, pp.2, 7. November 2002 <http://archive.cra.org/CRN/articles/nov02/humphreys.html>

²⁰ WICSE Twenty-fifth anniversary website: <http://eecs.berkeley.edu>



WICSE Twenty-fifth Anniversary, Soda Hall, UC Berkeley 2003

Thirtieth Anniversary Celebration: “a shining example”

WICSE celebrated a thirtieth anniversary in 2008, at an event organized by WICSE President Lynn Wang, PhD EE, 2009. At this celebration, Frances E. Allen, IBM Fellow, was honored as the first female to win the A. M. Turing Award, called “the Nobel Prize of computer science.” A pioneer in her field, Allen gave a public lecture on “The Challenge of the Multi-cores: Think Sequential, Run Parallel.”²² Fran Allen had spent time in the Computer Science Division in the 1980s as a Regent’s Lecturer, and interacted with the women students at that time. Allen, Teresa Meng, Stanford Professor of EE, and Belle Wei, Dean of Engineering at San Jose State University, engaged in “A Conversation about

²² https://amturing.acm.org/award_winners/allen_1012327.cfm

Women Engineers” at the Women’s Faculty Club. Professor Meng made after-dinner remarks in which she recounted the trouble she faced in founding a start-up company, after being turned down for venture capital. “...my conclusion was that if this was going to happen, I had no other option but to start a company and do it myself.” Professor Meng, a member of the National Academy of Engineering, said she learned a great deal from her startup experience and that she practiced “*the three F’s: Focus, Faith, and Fortitude.*”²³



Frances Allen, Belle Wei, Teresa Meng, Susan Graham, WICSE 30th Anniversary

Graduate Dean Andrew Szeri sent a message to participants at the 30th WICSE celebration, in which he acknowledged the group’s campus wide leadership: “In my view, effective mentoring systems are key to supporting women through the pipeline, and for 30 years, WICSE has been a shining example of women sharing knowledge for personal support and collective advancement. Your accomplishments have helped change not only your lives and workplaces but the character and quality of UC Berkeley overall, and beyond.”²⁴

²³ Teresa Meng, Professor of Electrical Engineering, Stanford University Emerita: Thirtieth Anniversary Brochure, EECS Department, Berkeley, March 2008.

²⁴ Andrew Szeri, Dean of Graduate Division, UC Berkeley. WICSE 30th Anniversary brochure, 2008.



WICSE Thirtieth Anniversary, Women's Faculty Club, UC Berkeley, March 2008

Fortieth Anniversary of WICSE: “filling the pipeline with qualified women”

EECS alumnae and current students celebrated the fortieth anniversary of WICSE on March 17, 2018, with a daylong program of research presentations, and reflections. Students created a website describing the alumnae speakers and capturing highlights of the day.²⁵ Senior faculty Tsu-Jae King Liu, Katherine Yelick and Marti Hearst participated as speakers. The WICSE co-founders Barbara Simons (PhD, 1981) and Paula Hawthorn (PhD 1979) were invited speakers. Simons opened the program with a talk about the history of WICSE, and what it

²⁵ <https://wicserereunion.wordpress.com/> The talks given at the 40th Reunion were recorded by the College of Engineering.

was like to return to school after nine years as a single mother with three young children. She thought more women could aim for graduate programs like Berkeley's, and she and Paula Hawthorn, her "co-conspirator" opened the door to women like them by co-founding the CS Reentry Program in the CS Division. The Reentry Program provided a fast track into graduate school competitiveness with two years of coursework in math and computer science. Then Simons, who is internationally known for her work on the integrity of American elections, urged the audience to share her concern about voter security, citing the disastrous results in the presidential election of 2000.²⁶

Panel discussions featured alumnae from each decade. Berkeley Professor Claire Tomlin (PhD EE 1998)²⁷ led a panel on the topic of diversity, asking panelists from different universities and companies to discuss the diversity efforts they had been involved in. Tomlin cited the "Girls in Engineering"²⁸ camp for middle school girls she started five years ago. Graduate student Regina Eckert talked about BiasBusters at Berkeley, a grass-roots group of men and women students, which offers workshops across campus to reduce bias.²⁹ Each of the speakers emphasized how important WICSE was to them as graduate students. Dr. Marie-Ange Eyoum-Tagne told of her constant involvement in outreach, from grad student days in BGESS and later at Intel. "It's very personal. I am always the only one, the only black woman." Tagne mentors young women in Africa through *Techwoman*.³⁰ Professor Chen-nee Chuah (PhD CS, 2001) recalled grad student days in her lab in which six out of seven students were women. She made the point that in this era *retaining* women is more critical than *recruitment*. At UC Davis, where she is a senior CS faculty member, Chuah has worked on creating policies supportive of women, by creating a culture in which females feel a "sense of belonging." She added that often students are exposed only to the successful women rather than those who have followed a nonlinear but equally viable path. During the afternoon, WICSE Co-Presidents Coline Devin and Alice Ye saluted Computer Science

²⁶ *The Computer Scientist Who Prefers Paper*. The Atlantic, December 2017.

<https://www.theatlantic.com/magazine/archive/2017/12/guardian-of-the-vote/544155/>

²⁷ Professor Claire Tomlin is a senior faculty member in Electrical Engineering.

<https://people.eecs.berkeley.edu/~tomlin/>

²⁸ <http://girlsengineering.berkeley.edu/about/>

²⁹ <https://callink.berkeley.edu/organization/biasbusters>

³⁰ <https://www.techwomen.org/>

Professor Ruzena Bajcsy as an inspiring pioneer for generations of women in robotics and computer science.³¹ Spontaneously, Professor Bajcsy took the microphone to make two points. First, she declared that “We, meaning UC Berkeley, are filling the pipeline with highly qualified women.” Second, she urged the students to think about the results of the technology they are developing. “Technology is disruptive. I beg of you,” she asked, “to think about the results and how the profits of the technology you develop should be shared,” stating that all the profits need not go back to industry.

A Fireside Chat between Associate Provost Tsu-Jae King Liu and Diane Greene, and former CEO of Google Cloud, concluded the program. Greene traced her path from windsurfing champion to a master’s degree in computer science from Berkeley, to founding VMWare, a very successful company, and recently managing Google ICloud. She connected her ability to take risks to the independence she was given as a child sailing on the Eastern shore of Maryland. Greene emphasized that she always tried to figure out what jobs would make her happy, and went after them. Her advice to students was: “Stay in touch with what it is that makes you happy. It is the hardest thing to figure out but it’s the best thing.”



Diane Greene and Professor Tsu-Jae King Liu, WICSE 40th Reunion

³¹ <https://people.eecs.berkeley.edu/~bajcsy/>

From successive celebrations of WICSE anniversaries since the 1980s, Berkeley alumnae have made it clear that the WICSE community has exerted a profound, beneficial impact on their Berkeley experience.

