



## Paul Young Retires

After a distinguished and influential career, 15 years of which were spent on the UW faculty, Paul Young has decided to retire. At 62 years, Young explained his objective as “wanting to spend more time doing only the things I want to do.” He will leave Seattle for his 80 acre farm in Wisconsin, where he and his wife, Debbie Joseph, a computer science professor at the University of Wisconsin, will restore much of the land to its original prairie habitat.

Young, a graduate of Antioch College ('59) who earned his PhD from MIT ('63), joined the UW faculty in 1983 from Purdue, where he had spent most of his early career. He was UW Computer Science chair from 1983 to 1988. Though his leadership style emphasized consensus and cooperation, Richard Ladner claimed at Young's retirement party, that it was nevertheless difficult having Paul as chair. “None of us who worked with him ever learned to read Paul's handwriting,” he quipped. A sampling of Young's memos and marginalia were circulated to the mystification of the partiers.

Young, whose dissertation advisor was Hartley Rogers, made seminal contributions to recursion theory and abstract complexity theory.

At the transition between the Young and Baer administrations, the department moved from the College of Arts and Sciences to the College of Engineering. Shortly after the move, Dean of Engineering J. Ray Bowen named Young Associate Dean of Engineering for Research, Facilities and External Affairs. By reor-

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### Profiles of New Faculty pages 6 and 7:

Tom Anderson  
Brian Curless  
Chris Diorio  
Alon Levy

## Karp Receives Technion's Harvey Prize

In May Prof. Richard Karp was awarded the Leo M. Harvey Prize in Science and Engineering by the Technion - Israel Institute of Technology. Karp was recognized for his “leadership and achievements in the areas of theoretical computer science and operations research.” His fundamental contributions to combinatorial algorithms were specifically cited.

The Harvey Prize recognizes breakthroughs in science, technology and medicine as well as contributions to peace in the Middle East. Along with luminaries such as Mikhail S. Gorbachev and Freeman Dyson, there have been several other computational pioneers recognized: Claude E. Shannon, Michael O. Rabin, George B. Dantzig, Benoit B. Mandelbrot and Donald E. Knuth.

Born in Lithuania in 1887, Harvey emigrated to the US in 1907, attended Cooper Union School in New York City, and moved to Southern California in 1911, where he became a successful industrialist. After World War II he developed a worldwide aluminum processing business. The Prize has been awarded annually since 1972 “to celebrate the advancements of humanity and outstanding efforts towards peace.”

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dering his responsibilities, Young became known around the department as the Dean of F.E.A.R.

Young was also instrumental in founding the Computer Research Association (CRA). CRA, whose membership includes the PhD-granting computer science and engineering departments of the US and Canada as well as industrial labs and computer related societies, is the principal advocate for the computer research agenda in North America. Young served as its first chair and guided it in establishing its Washington, DC office. In recognition of his many contributions to the field, Young was awarded CRA's 1996 Distinguished Service Award.

In 1994, Young was drafted to be Assistant Director of the National Science Foundation's Computer and Information Science and Engineering (CISE) directorate. He was responsible for new initiatives, and implemented needed reforms. Characteristic of his public spirit and at the expense of his well-earned sabbatical, Young stayed on after his CISE term was completed to oversee the "NPACI re-competition," which selected the next generation NSF Supercomputer sites.

Young characterized his UW administration as having continued the department's research momentum, hired the best and the brightest and enhanced undergraduate instruction:

- The research "momentum," begun during his predecessor Bob Ritchie's administration, referred to sustaining the department's large projects, including the Eden Project, Blue CHiP Project and the VLSI Consortium. The department under Young landed two more coordinated experimental research (CER) awards and greatly enhanced its experimental portfolio.
- In faculty recruiting, Robert Henry, David Notkin, Ken Sloan, Richard Pattis, Tony DeRose, Richard Anderson, Carl Ebeling, Martine Schlag, Paul Beame, Gaetano Borriello, Dan Weld and Susan Eggers were hired. To emphasize that

## Transitions

**Tom Anderson** returned to UW from Berkeley to join the faculty as Associate Professor.

**Richard Anderson, Gaetano Borriello** and **Anna Karlin** have been promoted to the rank of Professor.

**Brian Curless** joined the faculty after receiving his doctorate from Stanford.

**Chris Diorio** joined the faculty after receiving his doctorate from Caltech.

**Oren Etzioni** returned from a sabbatical spent in Israel.

**Alistair Holden** has retired.

**Nancy Leveson** has been on leave for the past year visiting MIT.

**Alon Levy** joined the faculty from AT&T Laboratories.

**David Notkin** returned from a sabbatical spent partly in Israel and Japan.

**Steve Tanimoto** returned from a sabbatical part of which was spent in Rome.

**Paul Young** has retired.

these were the "best and the brightest," nine of them won the prestigious Presidential Young Investigator Award, with UW scoring triple winners two years in a row.

- The undergraduate major was doubled in size during the Young administration, and there was a concerted effort to adopt a more lab-intensive curriculum.

Perhaps the most miraculous development of Young's tenure as chair occurred in May '87 when the Steam Powered Turing Machine mural appeared in the East stairwell of Sieg Hall. Taking action the moment he heard about it, Young called UW's physical plant, told them the painting was not graffiti and requested that they seal it. This departmental icon is a fitting reminder of the Young Administration since Turing Machines were critical to his research.



## Lazowska Receives Service Award

The 1998 UW Outstanding Public Service Award has been presented to CSE Chair Ed Lazowska for his contributions beyond the UDub campus. Praise for his tireless volunteer work poured in from community leaders such as Seattle Schools Superintendent John Stanford and State Representative Tom Huff. The top administrators who nominated Lazowska stated that "The range and impact of his public service is simply off the chart. His record of achievements is almost unbelievable. We are convinced he never sleeps."

The support and testimonials to Lazowska's contributions came from Seattle, the state and the nation. Stanford in his letter of support asserted that "the volunteer work that Dr. Lazowska has donated on behalf of the 47,000 students of the Seattle Public Schools is invaluable." The Alliance for Education gave Lazowska its first ever A+ Partnership Award for his contributions to the public schools. Huff asserted that "The scope and quality of his service in support of economic development, education programs and policy, telecommunications policy, land-use policy and tax policy is unprecedented in my experience."

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*EE/CSE Building Dedication, April 16, 1998. From left: Ed Lazowska, Greg Zick (EE), Dean Denice Denton, President Richard McCormick, Provost Lee Huntsman.*

## Phase I of EE/CSE Building Dedicated

It has 84,500 usable square feet, state-of-the-art labs, classrooms with full multimedia support, commons areas and office space. What the EE/CSE Building doesn't have yet is CSE. That's Phase II. For now the focus is on the just completed Phase I.

In April the handsome neo-Gothic building was dedicated by UW President Richard L. McCormick. Rhapsodizing about this "nexus between interrelated and complementary departments," the president said the "[completed] building will serve as a catalyst for major contributions to the development of information technology, and as a setting for excellence in education and research."

Other speakers at the dedication were Dean of Engineering Denice Denton and the two chairs, Greg Zick of EE and Ed Lazowska of CSE. Denton lauded two of her premier departments, and then quipped that the world is becoming so technological that an engineering degree will become the "liberal arts degree" of the next millennium. Following the ribbon cutting, guests were invited to tour the innovative, high-tech facility.

Built on the southeast side of Drumheller Fountain occupying a former parking lot behind the old EE building, EE/CSE was planned to have multiple construction phases. Phase I, built against the old EE building but without disturbing it, would allow EE to vacate their old premises into the new facility. Then the wrecking ball would make space for Phase II. Finally, when the whole project was completed



*EE/CSE Building*

the two departments would redistribute themselves to benefit from intellectual affinities in the closely allied fields.

Project implementation became rocky, however, and the EE/CSE Building construction became controversial. The building was completed months behind schedule, it could not be occupied initially because of a moldy ventilation system and there was a huge cost overrun. The Seattle Times reported that the final price tag for Phase I was \$90 million, which represented a \$20.5 million budget overage. There was considerable finger pointing among the university, the general contractor, Ellis-Don of Mercer Island, and the architects, Kallmann McKinnell & Wood of Boston. UW canceled Ellis-Don's contract for Phase II, and contested \$10 million in charges, though it only recovered \$3.3 million. The cancellation and overrun put Phase II construction in jeopardy, and prompted UW to reexamine its construction contracting procedures. But, at the dedication McCormick committed UW to completing the project so that CSE will have high quality space.

Since Spring Quarter, various CSE classes were scheduled in the new building. In the technology-loaded classrooms, it is possible for a professor to dispense with physical transparencies, and simply project the lecture from a laptop or the WWW.

## Steam Powered Databases?

Scott Johnson (BS '90), who is on the senior technical staff at Oracle, reports having recently killed off a tedious internal email discussion about the finer points of Turing Machines by circulating a hyperlink to UW's Steam Powered Turing Machine mural. Along with a couple replies to Johnson that it was the "most enlightening contribution" of all, there came a flurry of questions from the overseas sales force: "What's a Turing Machine, what version of Oracle ships on it, and do we have TPC-C [benchmark performance] results yet?"

# DeRose at Oscars as Geri's Game Wins

Former CSE professor Tony DeRose was one of five Pixar filmmakers in attendance at the 1998 Academy Awards when their film "Geri's game" won the Oscar for "Best Animated Short Film." The film is indeed short, just 4.5 minutes, but it pioneered new techniques in graphical rendering of cloth and skin. The film premiered in Los Angeles in November, little more than a week before this year's award deadline. According to Tony, he and Cindy "went crazy when they announced the winner!"

The film stars an old man — Geri is short for geriatric — who spends his days playing chess with himself in the park. It has not yet been theatrically released, but has been a hit at animation festivals, including the famous Spike and Mike's Animation Festival.

DeRose, who joined Pixar two years ago after a decade as a CSE faculty member, said "There were two objectives in making Geri's Game. First, the film was to develop new creative talent, and Jan Pinkava, the writer and director, contributed to that goal. Second, the film was to improve the technology for human animation beyond what was possible in Toy Story. Michael Kass, who developed a simulated cloth system, and I contributed to that goal." DeRose modeled human motion and the skin. The other two filmmakers on the award were producer Karen Dufilo and supervising technical director David Haumann. At the peak of production 25 people were working on the film.

A key technology is DeRose's subdivision surfaces, which keeps a skin surface together as a whole. It also helps to create the digital puppet which animators use to control the character's motion. Portions of this technology will be presented this summer in a SIGGRAPH paper, "Subdivision Surfaces in Character Animation."

DeRose said "The original plan was to develop new technology in the context of Geri's Game, then migrate it into the rest of the company after the film was completed. It turned out that much of what we developed spread like wildfire and will be heavily used in all our upcoming feature films, including A Bug's Life due in November."

DeRose described working on the film as a "blast." "It's wonderful to work in an environment where what you do will be enjoyed by millions of people."



## Ellis Tours Northwest With Buddy

Sabbaticals give faculty an opportunity to recharge their batteries and to think about new research ideas. UW alum Carla Ellis (PhD '79) has discovered a brilliant way to combine both. She has invented a new device, called Hiker's Buddy, that allows her to study operating systems problems while hiking in the Cascades.

Hiker's Buddy assists outdoors enthusiasts in the field by combining a PalmPilot hand-held computer, digitized topographical maps, a Global Positioning System (GPS) and a wireless communication link back to a "homebase" computer. Ellis envisions many applications for the unit ranging from showing lost

hikers their position on an internally stored topo map, to searching a plant database for alpine flowers with pink blossoms. The base station could even raise an alarm in the event of an emergency. Field testing the Buddy in the Cascades is obviously an essential part of the research.

Ellis, who is on Duke University's computer science faculty, is the fifth visitor to UW sponsored by NSF's Professional Opportunities for Women in Research and Education (POWRE) program. The program is designed to enrich the opportunities for graduate students to meet successful women researchers who may serve as role models and mentors.

The Hiker's Buddy raises many interesting operating systems questions in the context of a truly mobile application operating in a "difficult" environment. Among these Ellis identifies power management, satellite accessibility, map resolution, route deviations and wireless connectivity.

Earlier visitors to UW under the POWRE program included another UW alum, Anne Condon (PhD '87) from the University of Wisconsin, Anna Karlin from Digital Equipment who joined the UW faculty after her visit, Mary Vernon also from Wisconsin, and Donna Quamen from George Mason University.

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# Datagrams

## Jaechs Give Diversity A Generous Assist

**The Best TAs** The Bob Bandes Memorial Award for Outstanding Teaching Assistant was awarded to Brian Dewey and Craig Kaplan. Sung-Eun Choi received honorable mention.

**UW Alums Promoted** Soma Chaudhuri and Akhilesh Tyagi have been promoted to Associate Professor of Computer Science with tenure at Iowa State University. Soma (PhD '90) studied with Richard Ladner, and Akhilesh (PhD '88) studied with Larry Snyder. Carla Ellis (PhD '79) has been promoted to the rank of Professor at Duke University. Carla studied with Jean-Loup Baer.

**The Reign Continues** Ed Lazowska, having completed a five year term as chair of the department was reappointed by Dean of Engineering Denice Denton for three more years. Denton cited Lazowska's effectiveness as chair. With an eye towards a long delayed sabbatical, Ed requested an abbreviated second term.

**Best Staffer** Senior Administrator Chris Cunnington has been awarded the 1998 College of Engineering Outstanding Staff Award. During her 18 years at UW Chris has assisted—or perhaps endured—departmental chairs Bob Ritchie, Paul Young, Jean-Loup Baer and Ed Lazowska. Lazowska credits her with having on occasion “saved the department from collapse.”

**Top Prof I** University of Virginia Assistant Professor Kevin Sullivan (PhD '94) has been named one of seven UVa Teaching Fellows for 1998-99 in recognition of his teaching excellence at the undergraduate level. He was also voted “the top undergraduate professor” by the UVa student ACM Chapter. Sullivan was advised by David Notkin.

**Top Prof II** UW's Student ACM Chapter, perhaps following UVa's lead, inaugurated a “top prof” award. Martin Tompa was the first winner of their Distinguished Teaching Award. One hundred undergraduates filled out nominations for their favorite teachers, according to Vincent Lam, chapter president. Other high scoring faculty were Gaetano Borriello, Anna Karlin, Dick Karp and Larry Ruzzo. In an apparent reference to the fact that all of the high scoring faculty except Borriello are theoreticians, Tompa accepted the award with the cry, “Theory Rules!”

**Celebrating Women** Professor Linda Shapiro was the featured speaker at the University of Iowa's Celebration of Excellence and Achievement Among Women. Shapiro, who received her PhD in 1974, was the first woman to receive a doctorate from Iowa's Computer Science Department. The CS Department's Women In Computer Science organization hosted the celebration this year. Shapiro's presentation, “Computer Vision: From the 70's to the 90's,” related work from her dissertation with current practice.

**Distinguished Professor** UW-Bothell campus CS Department chair Bill Erdly has won the first annual UW-Bothell Worthington Distinguished Professor Award.

**200th PhD** In June CSE graduated Soha Hassoun, the 200th PhD since the program began awarding degrees in 1967. Soha, who was advised by Carl Ebeling, is an Assistant Professor at Tufts University in Boston. CSE's first PhD was John Quinlan. Brian Bershada was the 100th doctorate.

In a very affirmative action Jeremy and Linda Jaech have pledged \$240,000 to CSE to attract and maintain a more diverse student body. The focus will be on stepped-up recruitment, tutoring and mentoring programs directed at underrepresented and disadvantaged students.

Jeremy Jaech is a CS grad (MS '80), and is founder and CEO of Visio Corporation, a maker of graphics software for businesses. But, that is his present career. Earlier, in July 1985, Jaech and the two co-founders of Aldus Corporation launched PageMaker, the pioneering desktop publishing software.

The Jaech's commitment drew praise from CSE Chair Ed Lazowska. “Demand for top computer talent increases daily, so we must educate the greatest number of the best minds. White males will be only one component. The Jaechs are helping us to reach the largest possible talent pool.”

Jaech acknowledges that “This is an experiment;” but adds, “If it works, we'll do more of it.”

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Lazowska serves on numerous national panels including the Computer Research Association which he chairs, the Computer Science and Telecommunications Board of the National Research Council, and National Science Foundation's CISE Advisory Board, also a chairmanship.

The award, presented at a University-wide ceremony on June 11, carried with it a \$3500 check. In celebration Lazowska chartered the Argosy's Queen Mary for a cruise of Lake Washington for the faculty, students and staff of the department.

Duplication of faculty first names has long been a CSE curiosity. In 1992 **MSB** noted several duplicates over CSE's brief history: Alans: Shaw and Borning; Larrys: Ruzzo and Snyder; Pauls: Young and Beame; Richards: Ladner, Anderson and Pattis; Davids: Dekker, Notkin and Salesin; Roberts: Ritchie, Herriot and Henry; Steves: Tanimoto, Hanks and Burns. Though we've added a pair of Brians and another Martin, the big news this year is duplicate last names. We now have two Levys, Hank and Alon, and two Andersons, Richard and Tom. It's just a matter of time before we hire another Zahorjan!—Ed.

## New Faculty Appointments



### Tom Anderson Returns to UDub

UW alum Tom Anderson (PhD '91) returned to *alma mater* as an Associate Professor after a half dozen years at Berkeley's EECS department. "Tom was extremely successful at Berkeley," said Ed Lazowska, who with Hank Levy co-advised Anderson's doctoral research. "We're delighted to have him back."

Anderson has been recognized for his research and his teaching. As a new assistant professor he received the NSF's Presidential Young Investigator Award in 1992. Two years later he was recognized with NSF's even more selective award, the Presidential Faculty Fellowship. A further honor, also in 1994, was the Alfred P. Sloan Research Fellowship. Emphasizing that Anderson is as effective in the classroom as he is in the lab, he was awarded the Diane S. McEntyre Award for Excellence in Teaching in 1995. In addition he has written several award winning papers.

Anderson, whose bachelors degree is from Harvard ('83) in Philosophy, wrote a doctoral dissertation titled, *Operating System Support for High Performance Multiprocessors*, but his interests have evolved. At Berkeley he was a principal investigator on the Network of Workstations or NOW Project. The effort interconnected commodity engineering workstations to build a cost-effective high performance parallel computer. More recently he has been a PI on the IRAM Project, which combines DRAM technology with processor technology. Berkeley has also allowed him to develop his interest in networking. He has graduated five MS students and five PhDs.

### Brian Curless Brings Us Closer to Michelangelo

Just a year after joining UW, Brian Curless will be leaving. His destination will be Italy, and the task will be to assist his doctoral research advisor, Stanford's Marc Levoy, in creating a high resolution 3D digitization of Michelangelo's sculptures. The effort, known as the Digital Michelangelo Project, applies Curless's dissertation research to constructing digital representations of these Renaissance masterpieces.

"We hope to get quarter millimeter resolution," says Curless, "That should be good enough to see Michelangelo's chisel marks clearly." A whole team of students and staff headed by Curless, Levoy and UW alum Kari Pulli (PhD '97) will digitize the statues *in situ* after hours. The Vatican authorization for the project required Cardinal-level approval.

Curless, who received his BS in EE in 1988 from the University of Texas at Austin, works in an area of graphics called 3D scanning and modeling. Using a motorized apparatus with a camera recording the sweeps of a laser across a 3-dimensional object, he gathers depth data about the object's surface from one point of view. Combining the information from many points of view, he constructs a polygonal model of the object, which can be used directly or converted into other graphics representations.

Recalling that the Pieta was attacked by a chisel-wielding visitor some years ago, Curless observes that one obvious application of the digitization is as a permanent record of the sculpture's form. But it could also be displayed by a 3-D rendering device, used by scholars for detailed analysis off site and at their leisure, or even be the basis for exact reproductions.

Pulli, whose doctoral advisor was Linda Shapiro, is constructing a special scanner for the project. Though this scanner



Brian Curless

will record most of the surface given enough points of view, there may be places where a handheld scanner will be needed for exact detail. Curless anticipates that this could be the hardest, most user-intensive part of the project.

The Digital Michelangelo Project is co-funded by the Interval Corporation and by the Paul Allen Foundation.



## Diorio Inventor of Silicon Synapse

In the 1950's computers were so unusual that press accounts described them as "electronic brains," probably a useless analogy to the layman and ridiculous to anyone who knew how brainless computers actually are. Now, four decades later the public has some idea what a computer is, and Chris Diorio is intent on building an electronic brain. Or almost. He wants "to design fundamentally different computing systems inspired by neurobiology."

Diorio's vision is that humans are good at certain computational problems—we are expert at face recognition almost from birth—but these problems are intractable with conventional technology. Diorio wonders if the processes that are so effective for the brain can be used in electronics.

Chris Diorio joined the CSE after completing his PhD under the direction of Carver Mead at Caltech. He is a 1983 Physics major from Occidental College.

*The Silicon Synapse.* As part of his doctoral dissertation, Diorio created a single-transistor floating-gate MOS device he dubbed the "silicon synapse." The device was applicable to designing certain analog circuits, to constructing silicon neural networks and to modeling neurobiology. He demonstrated a local learning rule for an array of the silicon synapses, and showed that they could be self-stabilizing.

Diorio and his co-authors won the prestigious 1996 Paul Rappaport Award from the Electron Devices Society for the best paper in any EDS publication. The award, which carried a \$1000 prize, was presented at the annual International Electron Devices Meeting in December. The paper "A single-transistor silicon synapse," by C. Diorio, P. Hasler, B.A. Minch and C.A. Mead appeared in *IEEE Transactions on Electronic Devices* 43(11):1172-1180.

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## Relevance Is Critical to Alon Levy

Given prevailing views about ivory-tower academics, it is perhaps surprising to find that relevance is a key component of Alon Levy's research. And when he is not concerned about relevance, he's equally interested in irrelevance. In fact, his doctoral dissertation was titled, *Irrelevance Reasoning in Knowledge Based Systems*. "Relevance," according to Levy, "means that a tuple is actually used in answering a query in a database or other reasoning system. Pruning irrelevant tuples early in query evaluation leads to significant performance improvements."

In 1988 Levy received his BS in Computer Science and Mathematics from Hebrew University in Jerusalem, graduating Summa Cum Laude. He joined the CSE faculty from AT&T Bell Laborato-



*Alon Levy*

ries, where he had been on the technical staff since receiving his PhD from Stanford in 1993.

As a Stanford research assistant he contributed to the How Things Work group headed by Prof. Richard Fikes, and it was here that he developed relevance reasoning and applied it to the domain of modeling physical devices and to query optimization in database systems. Fikes was also Levy's dissertation co-supervisor with Prof. Edward Feigenbaum.

Levy's research concentrates in the overlap between the areas of artificial intelligence and databases. At AT&T he worked on information integration and mediator systems, and also hybrid knowledge representation languages and description logics. Most recently he has developed a novel Web-site management system based on concepts from database systems.

Over the past several years Levy has spent time collaborating with researchers at the University of Paris-Sud in Orsay, France. The projects have involved hybrid knowledge representations and verification of knowledge bases. In 1996 Levy and co-author Marie-Christine Rousset received the Best Paper Award at AAAI's National Conference on Artificial Intelligence for "Verification of knowledge bases based on containment checking."



## Ted Kehl Now Professor Emeritus

In the summer of 1979 Ted Kehl, always enthusiastic about the next hot electronic technology, arranged to have Carver Mead, the guru of the VLSI revolution, give a course on chip design at UW. Looking back on it, that event initiated changes transforming the department, university and the State of Washington. For Ted Kehl and UW, Very Large Scale Integration was very large.

Kehl, who designed his first chip that summer, had been designing hardware for years. But he didn't start out as an electrical engineer. Rather, he received all of his degrees in Zoology, all from the University of Wisconsin: BS in 1956, MS in 1958 and PhD in 1961. In 1967 after a post-doc, instructorship and assistant professorship in the Physiology Department at the UW Medical School, Kehl joined the Computer Science Group half time. He was promoted to Associate Professor ('68) and Professor ('76) in Computer Science and in Physiology. In 1992 he switched to full time in CSE. Kehl retired this past year, but is staying on the faculty to teach part-time.

The Mead class at UDub came about because Boeing was eager to learn chip design from the master who'd taught the intensive class at CMU, MIT, Stanford, Berkeley and Xerox PARC. But Mead

wanted to teach teachers, so Kehl arranged a class with students drawn from UW—faculty and grad students—as well as local industry. Despite the complete lack of chip design tools, the class members were sending their designs off to be fabricated in a 6 $\mu$  nMOS process in just a couple of months. Appreciating the need for design assistance, Kehl directed his research towards layout tools. The class had the effect of redirecting the research interests of several students and faculty towards hardware and CAD tools, shifting CS's intellectual center of gravity away from mathematics towards engineering.

Another result of this foray into VLSI derived from the mix of university and industry participation in the class. It showed the benefits of collaboration, and it spawned the idea for the "VLSI Consortium." Founded by Kehl and then CS chair Bob Ritchie, the UW Northwest VLSI Consortium was a partnership of UW, the federal government in the form of a DARPA research contract, and five northwest companies: Boeing, Fluke, Honeywell, Microtel Pacific Research of Vancouver, BC and Tektronix. The initial goal was to acquire, develop and in-

tegrate CAD tools for chip design. Hundreds of copies of the Consortium's CAD tools were distributed free of charge over the years. The Consortium became the model for the Washington Technology Center's original structure.

Over the years Kehl's research interests touched on many more topics than just CAD tools, including processor design, divider logic and self-timed memory buses. In Autumn 1997 he offered a course on the latest hot electronic technology to grab his attention, Telephony.

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*Diorio continued from page 7*

Exploring the computational connections to neurobiology may make Diorio seem like some fuzzy headed dreamer, but he is an accomplished design engineer. His thesis produced six patents or patent applications. For more than a dozen years following his 1984 Caltech MS in EE, he was an IC designer, primarily at TRW. He produced numerous aggressive designs in GaAs. In addition, he studied the quantum effects in two-dimensional electron gas GaAs, InAs and InSb devices.

## UW Animations Viewings

"Whose Hat is That?", the project for the 1997 offering of CSE 458 Computer Animation has been accepted as a short animation for ACM SIGGRAPH's Computer Animation Festival at the annual SIGGRAPH Conference. The one minute animation was one of a handful of winners selected from over 600 entrants.

CSE 458 is taught to teams of students from CSE, Architecture, Art, and Music by Associate Professor David Salesin and Cassidy Curtis, from Pacific Data Images, augmented with various guest lecturers.

"Fish Shtick," the project from the 1996 offering of Computer Animation, and "Whose Hat is That?" have been appearing regularly together: They were included in the first annual Motion Graphics Animation Arts Festival in Eugene, Oregon, held in April and in "Videotheque," a video library with screenings at the Vital International Animation Festival (VIAF) in Cardiff, Wales. In September they will be included in the "1 Reel Film Festival" at Bumbershoot, Seattle's Art Festival at Seattle Center.

CSE 458's 1998 project, "The Art of Survival," was one of 80 films, out of 1200 submissions, accepted to the Ottawa International Film Festival. All projects can be viewed at [www.cs.washington.edu/homes/lazowska/press](http://www.cs.washington.edu/homes/lazowska/press).



## Alistair Holden Retires

Professor Alistair Holden, a founder and early participant in the computer science program at UW, has retired. Holden was on the faculty of the Electrical Engineering department throughout his career, but was an active participant during the department's "Committee" and "Group" Periods. Since 1989, his appointment has been joint between EE and CSE.

Holden received his BS from the University of Glasgow, Scotland, in 1955 and a ME degree from Yale University in 1958. In that year he came to graduate school in UW's EE department, where he received his PhD in 1964. Throughout his career, Holden's research interests focused in artificial intelligence and knowledge-based systems. He was the originator of IJCAI, the International Joint Conference on Artificial Intelligence, and served on its board of directors for three decades.

As a recent PhD Holden joined the Computer Science Committee that formed in 1965. This committee was a self-selected group of about a dozen computer enthusiasts from EE, mathematics, physics and business departments who wanted UDub to create a computer science department. By 1967 they successfully convinced the Graduate School to establish a Computer Science Group to build a graduate program in computer science. Holden, though retaining his appointment in EE,

## Lecture Series: Live and On File

CSE's Distinguished Lecturer Series has for more than fifteen years presented computer science's most eminent researchers and visionaries. In recent years the lectures have been taped and available on UWTV. Now, the DLS series along with the normal Tuesday/Thursday colloquia and other special series are broadcast live over the Internet. All lectures are archived and can be replayed. For details visit: [www.cs.washington.edu/news/colloq.info.html#MBONE](http://www.cs.washington.edu/news/colloq.info.html#MBONE).

In addition to the DLS lectures, listed below, CSE added a Technology Lecture Series to inaugurate its new Professional Masters Program. A High-Technology Entrepreneurship Speaker Series was also initiated this year with other campus units.

**CSE Distinguished Lecturer Series 1997/98:** David Patterson, UC Berkeley; Christos Papadimitriou, UC Berkeley; Forest Baskett, Silicon Graphics; Jeannette Wing, Carnegie Mellon University.

**CSE Technology Lecture Series for 1997/98:** Jeremy Jaech, President and CEO, Visio; Rob Glaser, Chairman and CEO, Progressive Networks; Glenn Entis, Head of Dream Works Interactive.

**High-Technology Entrepreneurship Speaker Series 1998:** Edward Fritsky, Chairman and CEO, Immunex; Leroy Hood, Chairman of UW's Molecular Biotechnology Dept; George Rathmann, Chairman and CEO, ICOS; Brent Frei, Co-founder of ONYX Software; Anthony Naughtin, President and CEO, InterNAP; Peter Adkison, President, CEO and Janitor, Wizards of the Coast; Thomas Cable, Vice-Chair and Co-Founder of Cable and Howse; Russell Daggatt, President and COO, Teledesic.

### CSE Distinguished Lecturer Series 1998/99

October 8, 1998

**Jim Foley**, Mitsubishi Electric Research Laboratory  
"There's More to Computing Than Computer Science"

November 12, 1998

**Michael Stonebraker**, Informix Software  
"A DBMS View of Middleware"

December 3, 1998

**Randy Katz**, University of California, Berkeley  
"Beyond Third Generation Cellular Networks: The Integration of Internet and Telephone Technology"

March 4, 1999

**David D. Clark**, Massachusetts Institute of Technology  
"Internet Telephony: Will it kill the telephone companies, the Internet, or both?"

Lectures are presented at 3:30 p.m. in 210 Kane Hall, University of Washington, and are open to the public. A reception follows each lecture.

taught courses offered by the CS Group. From its tenuous beginning the CS Group became a full-fledged department in 1975. In 1989 when CS moved from the College of Arts and Sciences to the College of Engineering to become CSE, Holden's appointment became joint between EE (.33) and CSE (.66).

Holden recalls how IJCAI got started. "I gave a paper at the 1967 national ACM conference and attended a meeting of SIGART, the Special Interest Group for Artificial Intelligence. They wanted a

national AI conference and I agreed to arrange it. I contacted the well known people in the field, such as Minsky, McCarthy, Newell, etc., who were enthusiastic and agreed to contribute. I also got cooperation from the computer societies in Britain, France, Germany, Russia (all countries active in computer science at the time), making it international. I recruited Don Walker (program chair) and the rest of the conference committee. ACM's Washington, DC, chapter agreed to host it, so we held the first IJCAI in Washington, DC, in 1969."

# CSE ARCHIVE

The unusually long time interval since the last issue of *MSB* has left us with a backlog of accomplishments and achievements, which though no longer late breaking news, are nevertheless notable and worthy of recognition.

## Faculty Promoted:

Craig Chambers was promoted to the rank of Associate Professor with tenure, and Carl Ebeling and Dan Weld were promoted to Professor.

## Programming Contest Silver Medalists:

Of the 1000+ programming teams worldwide that entered ACM's 21st Annual Collegiate Programming Contest CSE's team finished second. The final competition, held in San Jose CA as part of the annual ACM Conference pitted the top 50 teams from around the world in a grueling five hour competition. The only team to do better than UW was Harvey Mudd College in Pomona CA; UW tied for second with the University of Queensland in Brisbane Australia.

## Karp Wins Harvard Medal:

Professor Dick Karp was one of four recipients of the 1997 Centennial Medal of the Harvard Graduate School of Arts and Sciences. The medal has been awarded annually since 1989 "for contributions to society that have emerged from their graduate education at Harvard." Karp received his AB ('55), MS ('56) and PhD ('59) degrees from Harvard.

## Lazowska Chairs National Panels:

The Computer Research Association's Board of Directors has elected Ed Lazowska to chair the board, succeeding Dave Patterson of Berkeley. The CRA advocates for computer related research in the US and Canada. Lazowska has also been selected to chair the Advisory Board for NSF's Computer and Information Sciences and Engineering (CISE) directorate, succeeding Bob Sproull of Sun. The CISE Advisory Board oversees policy and implementation in the directorate.

## Salesin Chosen Distinguished Teacher:

Associate Professor David Salesin has won the UW's Distinguished Teaching Award, the third CSE professor to do so. Salesin's most impressive achievement is to have developed CSE458, Computer Animation. This interdisciplinary course brings computer scientists and art and music students together to create a short animation in the style of *Toy Story*. The class is co-taught with a computer animation professional, including Ronen Barzell of Pixar and Cassidy Curtis of Pacific Data Images. Outside the classroom, Salesin works closely with undergraduates, giving them research opportunities and co-authoring papers with them. In congratulating Salesin, Dean of Engineering Denice Denton summed up the characteristics of Salesin's approach to teaching, "I personally appreciate all

of the creativity, intellectual energy and leadership you bring to educational scholarship in the college and university."

## Notkin Recognition:

Professor David Notkin has been named Fellow of the Association for Computing Machinery. In addition, he was recently elected chair of ACM's Special Interest Group in Software Engineering, SIGSOFT.

## Wilma Bradley Fellowship Announced:

A new departmental fellowship, The Wilma Bradley Dissertation Fellowship, has been initiated by a departmental friend who became interested in CSE from Ed Lazowska's Faculty Lecture last year. The first recipient of the Fellowship is Sung-Eun Choi, who is writing her dissertation with Larry Snyder.

## Departmental Fellowship Awardees for 1997/98:

The Minority and Women Endowment fellowship was awarded to Sean Sandys, who is working with Nancy Leveson. Craig Kaplan, who is working with David Salesin, has received the Hellmut Golde Educator's Fellowship. The Microsoft Endowment Fellowship went to Eric Anderson, who is working with Anna Karlin.

## Excite Buys Netbot:

Netbot, the start-up company founded on technologies invented by Oren Etzioni's and Dan Weld's research projects, was sold to Excite for \$35 million. Netbot's main product was Jango, the Web shopping software. Other start-ups based on intellectual property from CSE faculty include Inklination and Numinous, both licensing technology derived from David Salesin's group, Applicant, founded on work by Brian Bershad's group, and SafeSoft, applying Nancy Leveson's research.

## Governor Locke Looks In:

Governor Gary Locke stopped by CSE to gather firsthand data on UW's educational programs. In the photo below, which ran in *The Daily*, CSE junior Mel Eriksen shows Locke some of her work.



# Doctorate Degrees Awarded

Congratulations to our recent PhD graduates, listed below with their research advisor, initial appointment, and dissertation title:

**Gail Murphy** Notkin UBC  
*Lightweight Structural Summarization as an Aid to Software Evolution*

**Kingsum Chow** Notkin Intel  
*Supporting Library Interface Changes in Open System Software Evolution*

**Adam Finkelstein** Salesin Princeton  
*Multiresolution Applications in Computer Graphics: Curves, Images and Video*

**George Forman** Zahorjan HP Labs  
*Obtaining Responsiveness in Resource-Variable Environments*

**James Ahrens** Tanimoto/Shapiro Los Alamos NL  
*Scientific Experiment Management with High-Performance Distributed Computation*

**Jeff Dean** Chambers DEC WRL  
*Whole-Program Optimization of Object-Oriented Languages*

**Suzanne Bunton** Ladner/Borriello UW, Molecular Biotechnology  
*On Line Stochastic Processes in Data Compression*

**Dylan McNamee** Lazowska/Levy Oregon Grad Inst  
*Virtual Memory Alternatives for Transaction Buffer Management in a Single-Level Store*

**Michael Feeley** Levy UBC  
*Global Memory Management for Workstation Networks*

**Neil McKenzie** Ebeling Mitsubishi Research  
*The Cranium Network Interface Architecture: Support for Message Passing on Adaptive Packet Routing Networks*

**Yoshito Yamane** Notkin iCAT Corp.  
*Event Query Based Debugging*

**Gus Lopez** Borning NorthWestNet  
*The Design and Implementation of Kaleidoscope, A Constraint Imperative Programming Language*

**David Johnson** Tanimoto US West  
*Enabling the Reuse of World Wide Web Documents in Tutorials*

**Michael Salisbury** Salesin Xerox PARC  
*Image-Based Pen-and-Ink Illustration*

**Ton Ngo** Snyder IBM T.J. Watson  
*The Role of Performance Models in Parallel Programming and Languages*

**Tracy Kimbrel** Karlin/Tompa IBM T. J. Watson  
*Parallel Prefetching and Caching*

**Brendan Mume** Ruzzo Montana State  
*Cluster Finding, Clone Overlap Detection, and DNA Probe-Location: Three Applied Algorithmic Problems*

**Richard Segal** Etzioni IBM T.J. Watson  
*Machine Learning as Massive Search*

**Keith Golden** Weld NASA-Ames Research Lab  
*Planning Support for Softbots*

**Michael VanHilst** Notkin HP Labs  
*Role Oriented Programming for Evolvable Software*

**Juan Alemany** Karlin Ipsilon Networks  
*Data Placement Algorithms for News-on-Demand Servers*

**Melanie Fulgham** Snyder Quantum Corp.  
*Multicomputer Routing Techniques*

**Nicholas Kushmerick** Weld Dublin City University, Ireland  
*Wrapper Induction for Information Extraction*

**Xiaohan Qin** Baer IBM T.J. Watson  
*On the Use and Performance of Communication Primitives in Software Controlled Cache-Coherent Clusters*

**Kari Pulli** Shapiro Stanford Post-doc  
*Surface Reconstruction and Display From Range and Color Data*

**Anthony Barrett** Weld JPL, Pasadena  
*Frugal Hierarchical Task Network Planning*

**Soha Hassoun** Ebeling Tufts University  
*Architectural Retiming: A Technique for Optimizing Latency-Constrained Circuits*

**Neal Lesh** Etzioni Mitsubishi Research  
*Scalable and Adaptive Goal Recognition*

**Ted Romer** Bershad HP Labs  
*Using Virtual Memory to Improve Cache and TLB Performance*

**Lauren Bricker** Tanimoto  
*Cooperatively Controlled Objects in Support of Collaboration*

**Jack Lo** Eggers/H. Levy Transmeta Corp.  
*Exploiting Thread-Level Parallelism on Simultaneous Multithreaded Processors: Hardware and Software Techniques for Effectively Managing Shared Resources*

## UW's Hits Rank 4th

According to the *Chronicle of Higher Education*, a Web version of the Nielsen ratings has statistically sampled academic Web sights. MIT is first with 1.9 million hits estimated in May. Next came the Universities of Illinois and Michigan tied (1.8) followed by UW, tied with Texas at Austin (1.3). Harvard had about 1.1 million hits, and CMU and the University of North Carolina, Chapel Hill, rounded out the schools with a million or more.

# Undergraduate Scholarship Memorializes Gary Kildall

UW alum Gary Kildall (BS '67, MS '69, PhD '72) is credited as the first person to couple a microprocessor and disk drive to create a personal-sized computer. He built the first disk operating system, CP/M, for the machine, and sold a quarter of a million copies of it at the dawn of the PC age. Kildall died in July 1994 at age 52. His daughter Kristin has donated \$50,000 to CSE to establish an undergraduate scholarship in memory of her father.

The first recipient of the Kildall Memorial Scholarship is William "Bo" Brinkman, a Computer Science major who is also majoring in Mathematics.

Kildall started out his career, not as an entrepreneur, but as an academic. After completing his masters degree at the height of the Vietnam War, he taught at the Naval Postgraduate School in Monterey, CA. While at NPS he was able to continue his work on his doctorate, completing his dissertation, *Global Expression Optimization During Compilation*, under Hellmut Golde's direction. In 1975 he started Digital Research Inc., the first microcomputer software company.

Kildall is credited with numerous other contributions to personal computing. These include a preemptive multitasking

operating system with menu-driven user interfaces, the first computer interface for video disks to allow automatic nonlinear playback, an essential for today's multimedia applications, and the first diskette buffering scheme with read-ahead and file directory caches. He also developed a simple dialect of PL/I for early microprocessors, including Intel's 4004 and the 8080.



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