Construction Begins On New Engineering & Computer Science Building Addition

It was indeed fitting that the guest speaker at the School of Engineering and Computer Science Ground-breaking Ceremony on October 15 was computer pioneer Dr. Gene Amdahl. The “ground breaking” that Dr. Amdahl has done during his career in the field of computer science will be recapitulated in many ways by countless students of engineering and computer science as they pursue their professional educations within the walls of the new Engineering and Computer Science Building addition.

Yes, the long-awaited beginning of construction for the new building addition commenced early in October with the sound of heavy earthmovers and the rhythmic beat of the pile driver. This is the first piece of major capital construction to take place on the CSUS campus since the Business and Public Administration Building was completed in 1979. The new structure will add more than 55,000 square feet of assignable space to the 48,000 square feet currently occupied in the present Engineering Building. Construction will take approximately 16 months and cost more than 13 million dollars. If the construction stays on schedule, the building will be ready to accommodate its first classes and laboratories in the Fall of 1989.

The addition will rise 5 stories and replace precious parking space off Jed Smith Drive, just east of the present building. Fortunately campus plans call for construction of a multi-story parking garage on campus within the next two years so that parking problems will subside rapidly. Dean Donald Gillott remains especially optimistic about the parking situation since his regular parking space was moved into his office at the start of construction.

A group of dedicated faculty, administrators, and staff have put in many long hours with the architects from Daniel, Mann, Johnson, and

PG&E Energy For MESA

Pacific Gas and Electric Company puts a lot of energy into MESA. The MESA Program was established in 1968 and targeted for underrepresented minorities — Black, Mexican-American, Puerto Rican, and American Indian students from 7th grade through university.

The MESA mission is to increase the number of underrepresented minority students who graduate from a four-year college with a degree in a math-based field such as engineering or computer science.

PG&E management is impressed with the effectiveness of the MESA Program and recently boosted its support for MESA in two ways: 1) substantially increased its corporate contributions to the statewide MESA office and 2) loaned Tim Kelley, Supervisor of College and University Programs, to the statewide office for one year. Tim will develop with MESA staff long-range planning strategies and evaluate the effectiveness of pre-college and university programs.

The support for the MESA program is equally impressive in the Sacramento area. Over the years the PG&E management employees in Sacramento have supported MESA and its mission through financial support, donated equipment, offering paid summer technical jobs at PG&E, hosting leadership retreats and giving time as mentors.

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Dean's Message

This issue of the school’s newsletter is significant since it describes some of the unique projects underway in our School of Engineering and Computer Science. Very important was the ground-breaking ceremony on Thursday, October 15, which marked the beginning of construction of the new Engineering and Computer Science Building. This structure represents the first major on-campus construction of an academic facility at California State University, Sacramento since 1979. With a gross area of 83,000 square feet, the new building will house administrative and faculty offices, as well as laboratories and classrooms.

As Dean of the School of Engineering and Computer Science at CSUS, I am proud of the progress we have made in engineering and computer science education. The new facility will significantly enhance our ability to offer state-of-the-art academic programs in the future. Dr. Gene Amdahl, guest speaker at the ground-breaking ceremony, gave a perspective of where we are and where we seem to be headed. With reference to the future, Dr. Amdahl stated, “It is fitting, since we are dedicating today the construction of a new Engineering and Computer Science Building, to note that this building is going to contribute many of the people who will implement that future.”

With Sacramento emerging as the new “high tech” region of California, we in the School of Engineering and Computer Science look forward to the exciting challenge presented to us. Our new building will play a major role as we meet the challenge of the future.

Soil-Structure Research in Progress

Professor Lester Gabriel is currently directing three sponsored research projects associated with his interest in soil-structure interaction. One of these is the design of wall cross-sections for 30” diameter and 36” diameter polyethylene drainage pipes. A second is a study of the abrasion resistance of steel, aluminum, concrete, PVC, and high density polyethylene pipes. The third is the study of 72” ID cast-in-place concrete pipe under freeways loads.

On the first project, Advanced Drainage Systems, Inc. of Columbus, Ohio has contracted with Professor Gabriel for the design of the wall section profiles of dual wall high-density polyethylene drainage pipe of 30” and 36” diameters. Two items of particular interest to this study are: (1) the material is highly visco-elastic (stress relaxation, a time-dependent property); and (2) the cost of the material represents approximately 80% of the cost of the drainage pipe delivered to a construction site.

The constraint of the material cost makes it necessary to optimize the wall profile within very narrow bounds: that is, the pipe must pass ASTM performance requirements (deflection being the most critical), and it must use a minimum of material in doing so. Added to this is the constraint that a production line must be designed and put into operation for the manufacture of these new designs before ASTM test may be run. Hand crafted sections are not acceptable for ASTM acceptance testing.

Associate Professor Vivek Wagle and two graduate students, James Mason and Muhammed Suhail are working with Professor Gabriel in this study. The team has developed two wall profiles, applicable to each of the new sizes. Optimization studies are now in progress.

News Briefs

Research Contract

A $29,500 research contract was awarded for 1987-88 by the Los Angeles Department of Water and Power for an electric power project in resources planning. This project will also fund graduate and undergraduate student assistantships.

Winter Graduation Scheduled

Building on the successful mid-year ceremony in 1986 (a first at CSUS), the School of Engineering and Computer Science will hold its second winter commencement on Saturday, December 19 at 10:00 a.m. in the South Gym. 221 Bachelor’s degrees and 43 Master’s degrees will be awarded.

Co-op Program Awarded $78,000

For the second year in a row, the co-op program has been awarded a federal grant. The funding received for the 1987-88 year is $78,000, while last year’s award was $74,000. The proposal reviewers must have been impressed with the school’s application and the progress of the program because they made no reduction in the amounts requested.

CONSTRUCTION BEGINS. Continued from page 3

Mendenhall to design a state-of-the-art instructional facility for engineering and computer science. The addition will include 7 lecture rooms, one large auditorium seating over 100, 24 laboratories for instruction and graduate research, 94 faculty offices, 31 administrative and support offices, and the CSUS Assistive Device Center. In excess of 2.5 million dollars in state supported new equipment will serve as a matching target for contributions from a community fund-raising program.

Some of the special highlights of the new addition include an automated structural laboratory with a scanning electron microscope, and laboratories for the new disciplines of robotics and computer engineering. In addition there are 14 self-instructional laboratories, each planned for a full complement of computer workstations for data processing, acquisition, and control applications. The centerpieces of the building will, of course, be the Dean’s Office where Don Gillott will finally have a well equipped conference room including one state-of-the-art, microprocessor-controlled control room for necessary applications. Floorplans and a model of the new addition are on display in the Engineering Building. Alumni are especially invited to drop by and view the displays.

E&CS News is published three times each year to inform our alumni and friends about student, faculty and alumni activities, curriculum developments, research, and other items of interest. We invite your comments, and suggestions. Please address communications to:

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E&CS Alumni Honored

On October 22nd, the CSUS Alumni Association held its Annual Alumni Luncheon in the University Union. The purpose of the luncheon was to provide an opportunity for departments throughout the university to recognize their alumni. From the School of Engineering and Computer Science, three were honored. They were Ken Butler from ME, Barney McCauley from CS and Clark Stanage from CE.

Ken Butler received his B.S. degree in 1961 from UC Berkeley and his M.S. degree in 1975 from CSUS in Mechanical Engineering with Biomedical Emphasis. During and following his graduate studies, he directed and Artificial Heart Team at Aerojet in developing an electric powered left ventricular assist system. He has become a leading expert in the artificial heart field, and has authored and co-authored a number of technical papers. Currently, he is Director of Engineering at Nimbus Inc, an organization he helped found. He also chairs a national committee to establish standard methods for testing artificial heart devices.

Clark Stanage earned his Bachelor’s degree in 1963 from CSUS in civil engineering. After he received his B.S. degree, he was employed with the State Department of Water Resources as a Junior Civil Engineer. Since 1967, he has worked for the U.S. Army Engineer District in Sacramento in various capacities. Currently, he is Chief of the Geotechnical Branch where he is responsible for explorations, geology and materials, embankment design, and survey programs.

Barney McCauley graduated from the University of Wisconsin in 1971 with a B.S. degree in Chemistry, and from CSUS in 1979 with a Master’s degree in Engineering-Computer Science. He has worked for the State Air Resources Board as a programer, with the Computer Sciences Corporation as a programer analyst, and with SMUD as a software specialist where he currently designs and implements control programs for computers that monitor power plants. He also teaches part time in the Department of Computer Science.

Where Are You Now?

Every semester graduating seniors are asked to fill out a survey letting us know about the successes of our alumni. The information is extremely valuable to the school as it lets us know where our students are going after graduation, what industries and organizations are hiring, how long it takes after graduation for students to obtain employment and what salaries the various majors are commanding in the various organizations. The Alumni Network also tends to be one of the best paths to jobs for our students. Furthermore, this information is required for accreditation and should be one of the features of future newsletters.

Enclosed in this issue of the School of Engineering and Computer Science newsletter is a survey we'd like you to fill out and mail back to us. Let us know what you're doing!

E&CS Alumni Chapter Activities

The sixth annual E&CS Alumni Awards Banquet is now being planned. It will be held in April, with the date and location to be announced. All alumni are encouraged to attend, and spend an evening with fellow alumni at tables designated by graduating year. This will be a great opportunity to renew old acquaintances. Hope to see you there!

The E&CS alumni chapter officers for the 1987-88 term are:
President – Cynthia Connell  Vice President – Jon Rice
Treasurer – Kevin Madison  Secretary – Rick Valine

The officers are working on several exciting projects this year. The first is an E&CS alumni chapter directory. This will be a subset of the university alumni directory which will be presented by the Alumni Affairs Office in conjunction with the university’s 40th anniversary. The plan is to offer the E&CS directory at a nominal cost to Alumni Association members.

The Plato System Serves Students and Alumni Seeking Jobs

The Plato System, a computerized learning system available through the California State University, Sacramento Computer Center, now has coursework available on career preparation titled “Career Planning for the Technical Professional.”

The coursework was specially designed to meet the needs of engineering and computer science professionals engaged in a job search. Users via the system can review their skills, contemplate career possibilities, analyze their assets, learn how to develop professional level resumes and cover letters for targeting the interests of prospective employers, and prepare themselves for the “all important” interview.

Instead of having to juggle busy school and work schedules to get the information they need, students and alumni can take advantage of the system anytime between 7 a.m. and 11 p.m. To use the system individuals merely have to fill out a Plato user form available in Engr 1207 and take it to the use counter on the 3rd floor of the Science Building. (Note: it may take a day to get signed into the system by user services if they are backlogged.)
E&CS Faculty Promoted

Five members of the Engineering and Computer Science faculty this year were promoted from Associate Professor to Professor. They are John Clevenger, Dwight Freund, and Mary Jane Lee from Computer Science, and Jose Granda and Joe Harrason from Mechanical Engineering.

John Clevenger is a CSUS alumni, having earned his B.S. in Computer Science here in 1974. He also holds M.S. and Ph.D. degrees in Computer Science from the University of California, Davis. He has been teaching in the Computer Science Department at CSUS for 12 years, and has also taught at UCD and in extension courses for DPMA.

His current teaching and research interests lie in the areas of Operating Systems, Machine Organization and Architecture, and Computer Graphics. He and his wife Kevin have one young son, and are expecting a daughter in February. John is also Co-Director and a founding member of the Ophir Prison Marching Kazoo Band and Temperance Society, Ltd.

Dwight Freund came to CSUS from Wisconsin in 1983, after several years of university-level teaching and research, including 3 years in England. He holds degrees in Applied Mathematics and Computer Science from UC Berkeley and the University of Wisconsin. As a break from a lifetime in academe, Dwight spent a year in the furniture manufacturing industry and has been centrally involved in a couple of commercial microcomputer CAD software products. Computer-aided-design, especially computational geometry, is his current research enthusiasm. Dwight is partially colorblind and spends some of his spare time foraging.

Jose Granda became a full-time member of the faculty of Mechanical Engineering in 1983, after four years working with IBM's General Products Division in San Jose and part-time teaching at CSUS. His duties at IBM involved analysis, modeling and computer-aided design of electro-mechanical subsystems of disk drives. Prior to that he worked in the research and development group that designed the DEC LP25 computer printer at Dataprints Corporation. Jose earned his Master's degree at University of California, Berkeley and his Ph.D. degree at the University of California, Davis. His research interests are directed toward software development for computer assisted engineering design and analysis.

Mary Jane Lee joined the CSUS Computer Science faculty in 1984 after several years at North Carolina State University and Northern Arizona University as a faculty member. An Ohioan, she completed her B.S. in Education, M.S. and Ph.D. in Computer and Information Science all from the Ohio State University. Her teaching and research interests include modeling and simulation, file and database systems, human-computer interaction, and decision systems. Mary Jane has been active in departmental curriculum issues and is currently the associate chair of the department. She enjoys being a Sacramentan.

Joe Harrason is a graduate of CSUS earning his B.S. in Mechanical Engineering in 1970. He worked for Aerojet, for Mercury Marine as a design engineer, and for the McCulloch Corporation as a Senior Design Engineer and Project Manager. He pursued graduate studies at the University of Wisconsin and at Loyola Marymont University where he earned his M.S. degree in Mechanical Engineering in 1978. In 1980 he became a full-time member of the CSUS faculty, specializing in Mechanical Design. He is an active member of the Society of Automotive Engineers. Joe lives with his wife and two daughters on a ranch in the Sierra Foothills where they raise wine grapes and sheep.

Annual Engineering and Computer Science Career Fair

On Friday, March 11, 1988, the School of Engineering and Computer Science will host its annual Engineering and Computer Science Career Fair for students and alumni of the school. Invitations will be sent out in January to approximately 300 organizations. It is anticipated that 50 organizations representing a wide range of business, industry and government settings will attend. The event provides freshman, sophomore and junior students with an opportunity to meet with employers of technical majors and gain valuable information about career paths and what employers look for in the individuals they hire. Co-op and part-time positions are also discussed.

Seniors and alumni have the opportunity to link up with employers that are seeking to hire engineering and computer science professionals the next 6 to 8 months. Each year large numbers of graduating seniors report receiving job offers from companies participating in the annual event.

Employers find the Career Fair provides them with an excellent opportunity to meet with students, faculty and alumni of the CSU, Sacramento School of Engineering and Computer Science and foster long-term relationships with faculty and student leaders as well as filling immediate hiring needs. Employers also find it valuable to increase their visibility with the students and alumni even during temporary periods of slow growth.

If you or your company would like more information about the Career Fair please contact Cici Mattiuzzi at 278-7091.
Jim Harold, MESA Project Director for the Capitol Center (greater Sacramento Area) said, "In the Sacramento region we are in six school districts, totalling 21 junior and senior high schools for about 650 students. And at CSU Sacramento there are 127 students in the MESA Minority Engineering Program." Jim Harold is pleased with the support he’s received from business and in particular PG&E. “What I especially appreciate is not only the needed financial support, but that Jack LaRue (PG&E’s Sacramento Regional Vice President) has brought to us the human resources. When Ben Bendell, Mary Post, and Dale Quadros take on a job they carry it through. It is this personal commitment that makes our programs a lot stronger.”

Dale Quadros, PG&E Coordinator for the MESA Program in Sacramento, pointed out the need for PG&E involvement. "If PG&E is to maintain its position as an industry leader into the 21st Century we must continue to staff our departments with the creative, energetic minds that the MESA pipeline can generate."

One of these MESA students is Pablo Torres, an engineering student at CSUS and a paid recipient of PG&E’s Summer Technical Internship Program three years running. When asked what MESA means to him, Pablo said, "I couldn’t have survived without it! MESA is more than a program, it’s a community — students, teachers, professors, industry employees — all helping me to achieve. When I think of MESA I also think of PG&E! This year, thanks to them I know more in my university classes because of my summer job with PG&E. The people at PG&E are willing to help, very efficient and they always emphasize teamwork and communication."

Today the MESA model is working at CSUS and in 22 other universities in California and helping almost 8,000 students from 7th grade through college succeed in technical fields like Engineering and Computer Science.

New Building Model Displayed

Ground breaking for the new E&CS Building on October 15 was an event that drew 500 friends of the school. Presided over by President Donald Gerth and Dean Donald Gillott, it was a celebration that featured Dr. Gene Amdahl as guest speaker and more.

At the conclusion of the ceremony, Academic Senate Chair Juanita Barrera and President Gerth threw a switch that raised a model of the new building before 1000 surprised eyes. The model and the clever idea for the "raising of the building" came from the school’s able Tech Shop. Jim Holtzman, Jim Star, and Rene Burghgrave provided the leadership for this effort.

Interested alumni and friends are invited to stop by the school and see the model and plans for the new building, both of which now are on display in the corridor near the department offices.

The New E&CS Building — The Model

Computer Science Senior Projects Class

Computer Science Senior Projects class is the capstone of the Computer Science curriculum. It provides the students with the opportunity to gather together the information they have learned in three years of computer science education and to use this information to solve “real world” problems. These “real world” problems involve software development projects for sponsors from industry, government, non-profit organizations, or the academic world. Incidentally, if you have need for such a project, please contact the Computer Science Department (details below).

Senior Project is a two semester course which encompasses a project for the development and delivery of a computer product. The product is selected by the students from a list prepared each semester. Students work in groups, generally teams of three or four. The course emphasizes the software development process—life-cycle development, proposal writing, project management planning, system requirements analysis and design, implementation, testing, and documentation of a computer product.

The senior project class is intended to help the students make the transition from school life to professional life. The student teams assume responsibilities broader in scope than they would normally have the opportunity to assume, even through the early years of employment.

In the typical college class, all the students do the same assignment. It is already known how it can be done and what resources are required, because the instructor or an earlier class has already done it. The instructor does not depend upon the project’s completion for his well being. If it is not finished, it only affects the student’s grade.

On the other hand, in the “real world”, if a project has been done before, there is seldom any need to do it again. Furthermore, if no one is depending upon it being completed, there is no need to do it at all. Thus, a Senior Project must be something that has not been done before and has some risks. More importantly, someone is depending on the completion of the work. This person, the "sponsor", must be kept informed as to how the work is proceeding, what the expectations are that the project will be completed as planned, and what charges might be required to improve the likelihood of delivery of a satisfactory product at a satisfactory time.

The Senior Projects class is always looking for good projects. If you feel that you have a project which might be suitable, please contact us by phone (916-278-6834) or mail at the Computer Science Department, CSUS. Just provide your name, address, and phone number, and one of our students will contact you for additional information. Here are some points to consider before contacting us:

There are two goals for Senior Project. Goal one is to deliver a product to the sponsor. Goal two is to provide an education for the students. In all cases, goal two takes precedence over goal one.

There is no charge for having a student team create a product for a sponsor. However, it is expected that the sponsor or some representative of the sponsor will provide a significant amount of time to the students to help determine the requirements for the project. One to two hours per week is generally required.

Senior Project takes two semesters to complete. It is unusual for a project to fail, but it can happen.

In the real world, delivery of a computer software product is not the end of the project. It is usually necessary to maintain the software, making changes as conditions change and repairing errors which slipped through the testing. However, in Senior Project, there is no such maintenance provided. Once these students finish their project, they graduate.
Computer Legend Gene Amdahl Speaks At Ground Breaking

Dr. Gene Amdahl, Chief Executive Officer and Chairman of the Board of ELXSI Corporation, gave the keynote address at the groundbreaking ceremony of the school’s new building and shared his visions of computer technology in the next decade. The computer industry, according to Amdahl, is on the threshold of new technologies which will significantly increase computing speed.

From a man whose history and accomplishments are already legendary, this is a significant forecast. Heralded as one of the inventors of the computer, Dr. Amdahl’s computer career began with his doctoral dissertation. He subsequently worked for IBM Corporation and was the prime architect of IBM’s 360 series.

In the fall of 1970 he left IBM to form and operate his own company, Amdahl Corporation. In the first full year this new enterprise shipped $96 million worth of product, followed by $190 million in the second year, and $320 million in the third.

In August of 1980 he retired from Amdahl Corporation to begin yet another venture, Trilogy Systems Corporation, to design, manufacture and market large-scale, high-performance computer systems. In the 1984-85 period, excessive technology development cost projections caused Trilogy to turn to acquisition of ELXSI for its principal computer system entry.

Dr. Amdahl has agreed to serve on the school’s fund raising committee, and that has Dean Don Gillott smiling broadly.

PG&E Committed To Safe, Reliable, Efficient Energy For Californians

Pacific Gas and Electric Company brings gas and electric service to nearly 11 million residents over 94,000 square miles of northern and central California. Headquartered in San Francisco, PG&E is the nation’s largest investor-owned gas and electric utility.

The company’s generating plants utilize five sources of energy to produce an electric capacity of more than 18,000 megawatts. Included in the generation mix are nuclear, natural gas, and oil-fired plants, an extensive system of hydroelectric plants, and the Geysers geothermal facility. The Geysers is the largest facility of its kind in the world, and by 1992 will be producing 1.7 million kilowatts.

In gas service the majority of the nearly 600 million cubic ft. of gas delivered last year comes from outside California, requiring creative and highly technical engineering and regulatory efforts. PG&E’s 35,000 miles of pipeline transports gas from as far away as the Gulf States and Canada to serve 3 million customers.

For the past several years, PG&E like virtually all U.S. energy utilities, has faced growing competition in its industrial and commercial markets. Advances in technology and the trend toward deregulation will further intensify competition in the future.

PG&E has adopted a comprehensive strategy to achieve success in this dramatically different business environment. The company is aggressively marketing gas and electricity, stressing its superior service and reliability, reducing prices to be competitive, cutting costs and seeking new markets.

Maintaining the company’s record of leadership in today’s competitive markets requires that we continue building on our strengths and focus on an objective which has guided PG&E for many years: to provide customers with the right combination of products, prices and services for their energy dollars.