The Home of the Big Whopper*

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Wherein visits to: Computer Science Department, University of Chicago, Chicago, IL; Complexity Workshop (same address); 17th ACM Symposium on Theory of Computing, Providence, RI; Laboratory for Computer Science, MIT, Cambridge, MA; Computer Science Department, University of Rochester, Rochester, NY; Chapel Hill VLSI Conference, Chapel Hill, N.C.; Computer Science Department, University of California, Berkeley, CA; Computer Science Department, Stanford University, Palo Alto, CA; Digital Equipment Co., System Research Center, Palo Alto, CA; IBM San Jose Research Laboratory, San Jose, CA; Computer Science Department, University of California, San Diego, CA.

1. Plains

On April 29 I flew from Amsterdam to Chicago. The purpose of the visit to the Windy City was the newly established Computer Science Department of the University of Chicago (1100 East 58 St) where I gave a talk next day. The strong position of the US $ was advertised by giant billboards along the highway leading into town stating "Europe is on sale! Book a $469 round trip now!"

The Chicago Symphony Orchestra and the Lyric Opera of Chicago are famous. The Art Institute of Chicago has the best collection of impressionists this side of Paris (e.g., Seurat's 'Grande Jatte'), is strong in contemporary art (most appropriately Hopper's 'Nighthawks' is here) and has a distinguished

* This is a modified and gentlified version of the original internal accounting for the described trip. All resemblance to existing people and institutes is unintentional and accidental. All opinions expressed are my own. All errors as well. Free after John Bunyan's "Apology for this Book (Pilgrim's Progress)": "*Some said 'Paul, print it'; others said 'not so'. Some said 'It might be good'; others said 'no'.*"

oriental collection. Innovative architecture has long been a Chicago theme: Frank Lloyd Wright and Mies Van Der Rohe worked here. Now downtown Chicago proudly boasts the most expensive skyscraper (the Standard Oil Building covered with Carrara marble), the tallest skyscraper 'Sears Tower' and, with the new state building of Illinois, the skyscraper with most empty space inside. Here we find a gigantic open air mosaic of Chagall - tender and lovely - opposite the Burger King 'Home of the Big Whopper'. On Wabash and Randolph the Underground stands on 10 yard stilts between an admiring crowd of high rise developments. It shudders and sheds flakes of rust whenever a screeching train ventures to pass.

Open air mosaic of Chagall

The University of Chicago is situated in the Hyde Park area of Chicago (East 50th St - East 60th St), and consists for a large part of attractive gargoyle studded neo-gothic buildings. This area forms a pleasant enclave in threatening surroundings. Going on foot below the 50s or above the 60s is ill advised; going too far away from the lake front is dangerous as well. In fact, without tin cover on wheels you can only swim out. The Computer Science Department is presently situated on the ground floor of the Physical Sciences building in Ryerson Hall. The CS department has been recently reestablished under the chairmanship of Robert I. Soare. His philosophy is to attract initially a large number of very strong researchers in algebraical and combinatorial aspects of the theory of computing, and slowly build up a group in Theory and later in Systems. Among the impressive group he has collected are: Laszlo Babai, Laszlo Lovasz, Arjen Lenstra, Janos Simon, Endre Szemeredi. AT&T has supported the department by instituting two AT&T fellowships, of which Babai and Lenstra are the first recipients. In the context of building up the name of the department, the (pre-ACM Symposium on Theory of Computing) Workshop on Computational Complexity in Chicago was held from May 2 — May 4. The main feature of this workshop was a cycle of 4 lectures giving the state of the art in the "NC-class and P-RAM" type of parallel complexity theory, by Richard M. Karp of the Computer Science Division, University of California, Berkeley. NC stands for "Nick's Class": Turing Award winner and originator of the NP-completeness concept Stephen Cook has named this parallel complexity class after one of the original investigators Nicholas Pippenger, Maria Klawe's husband. (At the time unknown, this highest distinction in Computer Science, the Turing Award, has now been conferred to Dick Karp for 1985.) New results were presented by Tom Leighton, Laboratory for Computer Science, MIT, and by Lovasz and Szemeredi, but the big news was the talk by Andrew Chi-Chih Yao of the Computer Science Department, Stanford University, where progress related to the famous P versus NP question was announced. (No solution, but an oracle set which separates the polynomial hierarchy uniformly. Officially presented at 26th IEEE-FOCS in Portland, OR, October 1985.) The Workshop drew over 70 invited participants from the US, together with a couple from Europe. Most participants stayed in the conveniently located Hyde Park Hilton. A late night excursion to Buddy Guy's Checkerboard Lounge in the desolation of 423 E. 43rd Street (five specially dressed excursionists in a ramshackle car) gave that authentic Chicago feeling. "Bluesman Buddy Guy [has] one of the establishments which have made Chicago's blues scene one of the best. The Checkerboard is not in a great area, so don't wander about; rent a car and don't depend on public transportation."

2. New England

On May 5 I flew from Chicago to Providence, Rhode Island, to attend the 17th ACM Symposium on the Theory of Computing. This conference is one of the two yearly preeminent (if you have a hang for theory) computer science conferences in the US (the other one is the IEEE Conference on Fundamentals of Computer Science). The symposium took place in the Biltmore Plaza Hotel, Kennedy Plaza, Providence, and was mainly devoted to issues in the theory of computation. Several interesting new results in the area of distributed computing were presented. Narendra Karmarkar of AT&T Bell Labs presented an impromptu lecture in which he gave a comparison in number of iterations and cpu time between his applauded new method for solving linear programming problems and the standard Simplex method. The practical performance of the new method has this last year been the subject of much debate in the Operations Research community. This issue is so important because of the huge economic investment in linear programming problems. Karmarkar has compared 4 types of problems, ranging in number of parameters and size of problem instances, and prepared by independent outside experts as benchmarks. According to Karmarkar, the results showed a 10 to 300 fold speedup by using the new method, the latter for the very large problem instances.

Rhode Island, smallest state in the Union, is first in corruption. This time Providence hit the news with the Von Bulow trial. The long drawn out case about the Honourable Von Bulow's supposed murder attempt on his rich wife (in coma for the last five years) led first to a life imprisonment sentence; now Von Bulow was acquitted and had a happy reunion in front of the networks with his (long time) girlfriend. During the trial (and the STOC) the famous man stayed in the Biltmore besieged by the national press. This too is the city of which the mayor, offering to host the STOC last year, had to resign half an hour after signing the invitation letter on being charged in a corruption case. The city also contains Ivy League's Brown University. Nearby Newport is the home of the very rich. Their mansions border the ocean along 'Cliff Walk'. In Rosecliff Manor a champagne reception on the grass lawn with view over the ocean took place on the filmic location of 'the Great Gatsby' followed by a lobster dinner in the ballroom.

From May 8 - May 11 I visited the Laboratory for Computer Science, Massachusetts Institute of Technology. In the aftermath of the nearby STOC conference, some more attendees descended on MIT to give talks. Main purpose of my visit here was the Distributed Computing group centered around Nancy Lynch, and to reconnoitre the Boston-Cambridge area for a more protracted visit in the near future. Invited to the weekly faculty luncheon, I had the good fortune to hear director M.L. Dertouzos of the Laboratory for Computer Science expound the newly proposed guidelines for proprietary rights for products like books or software developed at LCS-MIT. As Dertouzos stated: "the proposed guidelines are the most liberal possible. Everybody, from

faculty to students, will be the legal owner of their own work, shared among the participants according to contribution, without MIT having any title to it. This holds insofar as the work has been produced using ordinary (computer) resources. For extraordinary resources like the Athena Project, the ownership will have to be shared with MIT. Similar exceptions have to be made for contract work. The policy will put the LCS at odds with the general MIT policy. This is a responsibility I will take, and the outlined new policy will be the department policy from the immediate future onwards." In the discussion it became clear that the new LCS-MIT policy aimed at trying to keep good faculty and students who are able to write profitable books and software. The previous policy, that MIT has the title to such work produced during employment by MIT (as is common elsewhere), is perceived to encourage the very best people to look for more grazy pastures. This is a general issue among all top US Universities, and, true to its reputation for excellence, LCS-MIT seems the first to change its policy by, in effect, opting to attract and keep the very best experts and waiving short-term (and doubtful because of law suits) monetary gain.

MIT (founded in 1861 in Boston and moved to Cambridge in 1916) is the hub of the high-tech developments along US Route 128 'America's Technology Highway'. MIT has 9,500 students and 123 buildings. (Compare Harvard/Radcliffe with 23,000 students, 274 buildings.) It occupies a sprawling elongated terrain bordering the Charles river in Cambridge opposite from the Back Bay area in Boston. The site is interspersed with sturdy looking turn-of-the-century buildings (viz., the mascot MIT dome), new *avant garde* architecture like the Auditorium by Saarinen, ramshackle barracks which are shedding loose planking, decrepit smoking factory buildings which are left-overs from the last century, factory railroads crossing the area, high-tech companies in modern buildings, and, on Technology Square 545, the Laboratory for Computer Science. Excavations are going on, roads are being paved, buildings are being erected. The institute is appropriately -and perhaps fondly- nicknamed "the factory". One of the newer looking buildings is the CS building, which does not prevent it from being renovated bottom up. Therefore, the Theory part on the third floor is handsomely designed, whereas the Distributed Systems group on the fifth floor is housed somewhat oldfashionedly. Office and other space is pretty tight. Although the regular professors have a 10 times 10 ft cubicle to themselves, with another such cubicle for their private secretary, the graduate students and more ordinary faculty members share rooms, sometimes three to a small room of 12 times 12 ft. This was a pattern I saw repeated also at Stanford University, contrasting with the very spacious accommodations at Chicago University, and the in-between accommodations at Berkeley. Although UNIX is available, the most commonly used operating system seems to be DEC's TOPS 20, and the usual editor Emacs. Finally, MIT proudly boasts an enormously long corridor: crossing the Mathematics

wing is the second longest* corridor in the world (two miles).

To the European eye, Boston-Cambridge makes a pleasing view, with as highlights the Back Bay, Beacon Hill and Harvard Square. In between lies the Charles River lined with frantic joggers and supporting innumerable sailing boats. The Boston area has nearly a hundred Universities, some of them far larger than Harvard or MIT. Beacon Hill is a curious part of the New World in that it looks largely 18th century. Here we find the graves of Paul Revere and Benjamin Franklin bordering a several miles long red stripe in the pavement: the Freedom Trail. This is where it all began.

On May 12 - May 13 I visited the Computer Science Department, University of Rochester, Ray P. Hylan Building, Rochester, NY. On Rochester Airport visitors are gladdened by a large 'Welcome to the Home of Eastman-Kodak' and 'Rochester, first in film'. Without scorning Kodak, or Xerox for that matter 'Xerox, a Rochester Employer', the main reason for my visit was cooperation with former chairman Joel Seiferas on a subject in automata-complexity. The Computer Science Department in Rochester has 36 graduate students and no undergraduates. It has three specialisations: Theory of Computing, Systems and Artificial Intelligence. The department has a wealth of hardware, which is partly connected to the fact that Rochester is the home of the above mentioned industrial giants. Among the equipment of the faculty are: several VAXs 780 and 750, 12 Xerox Altos intelligent work stations (where the MacIntosh technology comes from), 10 SUNs, 6 new Xerox Dandelion Intelligent work stations (descendants of the Altos), part of a BBN Butterfly, and the first Butterfly to be delivered on order. The Bolt Beranek & Newman Butterfly is a multiprocessor machine consisting of 128 Motorola 68010 microprocessors, each with its own few M memory, in a fast permutation topology (viz., in the "butterfly" or Fast Fourier Transform circuit).

3. Old South

May 14 I left Rochester for 'Gone with the Wind' country to visit the Chapel Hill VLSI Conference, held at Chapel Hill, N.C., May 15 - May 17. Attendance to this conference was by invitation only. This is a ruse to keep out hordes of nontechnicians which may flock to conferences graced by the golden acronym. The conference was held on the campus of the University of North Carolina in Chapel Hill, the oldest (1795) *state* university in the US. (Harvard (1636) is the oldest university.) Chapel Hill has about 15,000 regular inhabitants and 23,000 transient students. The latter amuse themselves on Franklin (the main drag) before 12.00 pm in "He Is Not Here" drinking beer and after 00.00 am at "Cat's Cradle" swinging it out. Alumnus Thomas Wolfe once described it as a place that "beats every other town all hollow." The

* Where is the longest?

conference was unusual among scientific conferences because of a sizeable group of reporters attending, and rushing off their findings in the evening. Chapel Hill is one corner of the famous 'Research Triangle': University of North Carolina at Chapel Hill, North Carolina State University at Raleigh and Duke University in Durham, in the center of which is Research Triangle Park. This area is reputed to have the most Ph.D.s per head of population in the US. On Thursday 16th the conferencees visited the new Microelectronics Center of North Carolina (MCNC) located in the Triangle Research Park. MCNC is a not-for-profit corporation founded by five universities: Duke University, North Carolina A&T State University, University of North Carolina at Chapel Hill, University of North Carolina at Charlotte, and Triangle Research Institute. The headquarters is a $20M building with extensive Integrated Circuit design and fabrication facilities. A total of about $100M has by now been invested in this venture. No actual chips had as yet been produced. The color graphics design facilities were demonstrated, and the super cleanness of the building spoke for itself. Another day we were shown the advanced facilities at the University itself. Among the interesting talks at the conference was the idea of "Hot Clocks" by Ch. Seitz from Caltech. Formerly the pope of the idea of delay-insensitive VLSI circuits, this paper presented a 180 degree *volte-face* by propagating chips which are the epitome of synchronization by using the clock itself to power the circuits. Substantial area savings appeared to result. Remarkable was the presented Chapel Hill research on building a VLSI-based graphic system "Pixel-Planes", by conference organizer H. Fuchs et. al., which would also be presented at the July SIGGRAPH conference in San Francisco. This was one of several papers of using VLSI in computer graphics. N.L. Lincoln, of ETA Systems, gave a talk on very large scale computation (VLSC) in which he described feasible approaches of building supercomputers. One approach which recently seemed to become viable was putting a hundred mainframes (in the form of chips) on a sub-pc board, and stacking such boards in a cabinet. The quest for speed with Gallium-Arsenide substrates instead of silicon continues. Optical computing was a scientist dreaming, or, in any event, way out in the future. Another talk was about legal protection for VLSI from patent laws through the 1978 and 1980 revisions of the US Copyright Act to the 1984 Chip Protection Act. Nearly all of the projects presented used the general chip-bakery: the MOSIS project, where those institutes with access to the Arpanet could get a turn-around time, between sending the design and receiving the packaged chips, of about 6 weeks. (Volume about 1300 design projects per year.) One feature of the conference was that nearly all talks concluded with a slide with the magnified picture of 'the final chip': formerly a sign that something had been *actually fabricated*, now somewhat boring because everybody does so and one design looks very much like another. (Except to the proud parents.) Here I could not miss but meeting a 7 ft expatriate Dutchman, Adriaan Ligtenberg, presently at AT&T Bell Labs, Holmdell,

N.J., engaged in the development of VLSI design tools. At his work site his facilities included having a private microVAX under his desk. Another meeting, at the conference dinner in the historic building of Morehead Planetarium (used by U.S. astronauts in preparing for space flights), was with new Computer Science Department (UNC Chapel Hill) Chairman J. Nievergelt who will leave his present position at Informatik, ETH Zurich, Switzerland. At the end of the conference the United Airlines pilots went on strike, which was inconvenient for holders of a United Airlines Airpass, like myself. Having to fly to San Francisco that same day, May 17, I succeeded in cajoling the airlines to first transport me by Delta to Dallas/Fort Worth, and continuing with Braniff to San Francisco.

4. California

Arriving 15 minutes early in San Francisco, was compensated for by having to wait a long time for my checked luggage. The good fortune in arriving early was further offset by the removal from the bag of a small satchel containing half a pound of Dutch coin and *all* receipts so far accumulated. Here I visited Leslie Lamport, lately of SRI-International at Menlo Park, now at DEC-SRC in Palo Alto. On May 20 I spent the day at the Computer Science Department, University of California, Berkeley. My host was Associate Chairman for Computer Science Dominico Ferrari, of the EECS Department. Here I nearly overdid it by giving a CS seminar in the morning and one in the afternoon as well. Luckily, there was coffee on the premisses and goodsized audiences in the room. The group of Ferrari is responsible for the Berkeley Unix releases. In between seminars I had luncheon with the faculty and staff, where the relative responsibilities and the resulting frictions between those two echelons were discussed. One problem is that secretaries have to learn the Unix system, and when they are highly qualified users do not earn more for that. Thus, they tend to go elsewhere to where the appreciation is expressed by an appropriate salary. This results in an extraordinarily high turnover of the supporting administrative staff. Another issue at the meeting was that the staff should screen the faculty from administrative duties and random visitors. (A well known faculty like the one at UC Berkeley attracts so many people who want to talk to them that if they are not shielded no time for significant research is left. Eventually then the faculty looses prominence and the visitors stop coming: a prospect which had little appeal to faculty and staff alike.) UC Berkeley is doing well, and somebody told me that soon the big three in Computer Science will be the big four.

On May 21 I proceeded to nearby Palo Alto, Cal., focal point of Silicon Valley, to visit the Computer Science Department, Stanford University, housed in Margaret Jacks Hall. Stanford University owes its existence to one Leland Stanford Jr., in whose memory his doting mother erected a garishly mosaic studded chapel in - what is described as - "Spanish brown sandstone style".

The chapel wall bears the unforgettable legend 'for the glory of God and <doubling of point size> the memory of Leland Stanford Jr', as well as exhortations to lead a moral and religious life. The Stanfords were railroad barons and owned the huge tract of land on which the university now stands scattered among waving palm trees and approved by a one yard across copper embossed 'Seal of the President of the United States' in the pavement. Shortly after junior changed this earthly existence for a more eternal one, around the turn of the century, senior did so too. The bereaved mother and wife subsequently added a museum (second largest collection of Rodin sculptures) and a mausoleum (for the Stanford family) to the grounds. Just as UC Berkeley has its twice life size copy of the San Marco Campanilla of Venice as focal point on campus, also Stanford has its rallying tower. As far as I know, this may be one of a kind.

Being a speaker in the Stanford Computer Science Colloquium, I was invited to attend the weekly (?) faculty luncheon. Like MIT's, this faculty consists of a host of well-known names. In this case, with a slant towards the theoretical side. I was cheerfully welcomed by acting chairman Nils Nillson, introduced to all entering faculty, "is that Hungarian?", and invited to join the discussion. The topic here was whether the graduate students should be forced to do significant research already in their first year "slave labor for their teacher", or whether only - as is practice now - in their second year. Well-known scientist: "if I would have to have done all these things in my first year at Caltech I would have flunked". Conclusion: continue the present state of events, with perhaps some pressure added. The Stanford faculty scene seems like a firmament studded with bright solitary stars fixed in place with little communication yet fierce competition.

Stanford's CS department has 60 graduate students, computer generated mosaics (resembling pen drawings by Lucebert*) on some outdoor walls, and occupies the basement and 2nd and 3rd floors of the sandstone building. There are some mainframes which seem to be down a lot of the time, about 40 SUN intelligent work stations, Xerox Altos sprinkled here and there, Dandelions etc. Work in Stanford is theoretically oriented, systems and AI.

Giving a CS Colloquium at Stanford is a somewhat unsettling experience. The occasion takes place in a large auditorium, where each seat is supplied with a microphone connected to the sound system. In the back of the auditorium is a smoked glass division, behind which is the recording crew. Each such lecture is transmitted live on television to both remote locations on campus and off campus (for instance, to corporations in Silicon Valley). All listeners can - by direct connection - interrupt the lecture and ask questions which

* Lucebert, pseudonym of Lubertus J. Swaanswijk (1924 -) contemporary Dutch poet-painter of the COBRA group.

rudely bellow from the walls. The video recorded talks are stored in the libraries for future reference. Speakers are presented with a set of instructions on what to wear and how to behave, which follow below.

TELEVISED SEMINARS: A GUIDE FOR GUEST SPEAKERS

I. LET ME KNOW YOUR A/V NEEDS

We can provide 35mm slide projection, 16mm film projection, 3/4" and VHS videotape playbacks, and computer hook-ups into our video system for certain computers. Please notify me if you are using any visual aids other than one overhead projector.

II. PLEASE DON'T WEAR WHITE!

Clothing with too great a contrast (white shirt with dark slacks) can interfere with the camera's operation. If possible, wear shirts in pastel blues, yellows, and greys.

III. BE AWARE OF THE LIMITATIONS OF TELEVISION

Try not to pace. Do not simultaneously refer to specific points on two separate blackboards.

Our overhead cameras can show material that you place down on your desk, for both off campus and in-studio students. Be aware that televised graphics resolve best when they conform to a ratio of 3 x 4. Material that is typed on 8 1/2 by 11 paper, and small print from books will not be clear. Use fairly large print, ideally 24 point font size. We can provide entire pads of lined paper that we have specially designed for studio use.

If you have a series of visuals that you will be placing on the desk for pickup by the overhead camera, place each page down in the same spot. Do not move your visuals hastily.

Arthur Keller
Coordinator, Stanford CS Colloquia

Dinner in Palo Alto, true to the way it ought to be, was with high-powered thirtyish Silicon Valley people like Leo Guibas (Stanford/DEC-SRC/Technical U. Athens), Pat Cole (Project Leader Personal Computers HP), Co-Chair of the upcoming SIGGRAPH Conference in San Francisco, and Susan Brennan

(Senior Researcher HP) and member of the same conference committee. Conversation turned to problems attending running a conference with 35,000 attendees, personal career planning, and problems in computer graphics. Contrary to the deplorable situation in the Low Countries, big responsibilities are often shouldered by the very young in Silicon Valley.

On May 22 I paid a short visit to the newly established DEC Systems Research Center (SRC), situated just on the edge of the Stanford Campus and Palo Alto proper. This is a new group, which aims at producing long-term work. DEC thinks it needs its own scientific research center to match those of IBM and AT&T Bell.

> SRC's role is to design, build, and use new digital systems five to ten years before they become commonplace. The purpose is to advance both the state of the knowledge and the state of the art. SRC will create and use real systems in order to investigate their properties. Interesting systems are too complex to be evaluated purely in the abstract. Our strategy is to build prototypes, use them as daily tools, and feed the experience back into the design of better tools and more relevant theories. Most of the major advances in information systems have come through this strategy, including time-sharing, the Arpanet, and distributed personal computing. Among the areas SRC will build prototypes during the next several years are applications of high-performance personal computing, distributed computing, communications, databases, programming environments, system-building tools, design automation. specification technology, and tightly coupled multiprocessors. SRC will also do work of a more formal and mathematical flavor: some members will be constructing theories, developing algorithms, and proving theorems as well as designing systems and writing programs. Some of SRC's work will be in established fields of theoretical computer science, such as the analysis of algorithms, computational geometry and logics of programming. In other cases, new ground motivated by problems arising in systems research will be explored. DEC has a commitment to open research. The improved understanding that comes with widespread exposure seems more valuable than any transient competitive advantage. SRC will freely report results at conferences and in professional journals. We will encourage visits by university researchers and conduct collaborative research. We will actively seek users for our prototype systems. To facilitate interchange, we will develop systems that run on hardware available to universities and work out ways of making our software available for academic use.

The new SRC is largely staffed by the former researchers from Xerox Palo Alto Research, the people who invented the technology of the Xerox Alto, bit map display and the like. Owing to failure of Xerox to properly market these machines, and eventual sale of the technology to Apple Co. - in search of a new product and thereby able to develop the Lisa and the MacIntosh - the innovative work of this group is not commonly realised. Work is going on in designing a new personal work station. This Firefly will probably be a follow-up of the Xerox Dandelion (itself a follow-up of the Altos), contain five micro-VAXs with a large common memory. SRC has chosen Modula-2 as its primary programming language for the next few years. The SRC has produced as yet

three technical reports. DEC-SRC is distinct from the older DEC Western Research Laboratory a couple of blocks down the road. Late in the evening I saw the Apple Co. headquarters in Cupertino (from the outside).

On May 23 I talked at IBM Research Laboratory in San Jose, geographical heart of Silicon Valley. Peter and Ghica van Emde Boas, Dutchmen for 9 months at IBM, regaled me on stories of the different life in this part of the new world. I, in turn, could tell them about the things transpiring back home. It was a pleasure to settle last year's bet which I lost in the form of a bottle of vintage Veuve Cliquot. The innominate winner, in a surprise switch from theory to practice, now runs a project to build a multiprocessor system. It is rumored that this computer consists of 1024 processors, of very special and secret design, each processor on chip and as powerful as an IBM 3081 mainframe. These processors get their input (and deliver their output) from another one of these processors over a pipelined channel with a peak of 6 Mfl. The processors communicate with each other over a fast permutation network like an FFT network. The machine seems essentially made for special purpose application in scientific computations such as the numeric solution of second order partial differential equations and the like.

IBM San Jose employes about 7,000 people, of which but a relatively small number do fundamental computer-based research. Prominently on display in the main hall of the part of the complex I visited were models and photographs of the posh group of buildings IBM is building in the nearby mountains as an attractive new site for fundamental research in Computer Science and associated branches of Mathematics. It seems that most major corporations in the field are rapidly expanding their activities in fundamental research. In the late afternoon Peter and Ghica brought me to the San Jose airport to take an American Airlines flight to San Diego (thus avoiding the UA strike).

From May 24 - May 26 I visited the Computer Science Department of the University of California, San Diego. Here my host was Walter Savitch. San Diego is appointed as the center of an interuniversity network in the southern part of California, to give universities in the area rapid access to supercomputers. Soon, supercomputer users at Stanford will compute on the supercomputers in San Diego Super Computer Center. This is the result of a nation wide campaign in US Congress, and a feasibility study at SRI-International, to give the major universities on-line access to supercomputers. The campus of UC San Diego is picturesquely situated among a million eucalyptus trees near the beach of subcity La Jolla "La Hojja". The architecture of the buildings is modern but very pleasant, and, since a few years, the statue of "The Sun God" (also called "the Chicken") in Karel Appel* like colors benevolently glowers over the campus. It emanates golden rays from its high pedestal while the sun

* Karel Appel (1921 -) contemporary Dutch painter-sculptor. Member of the COBRA group.

The Sun God

sets in the west in the Pacific. Scenic San Diego's airport is perhaps the only one in the world situated right in the center of a major city. Startled first time arrivals gaze at skyscrapers towering left and right above them just before touch-down, and wonder whether the pilot knows what he is doing. Among the attractions of the area are one of the best zoo's in the world and a major wildlife park. On the 26th I tried to figure out how to get by United to Chicago to catch the connecting KLM flight next day. But now not only were the pilots on strike, but also the computer was down "I cannot do anything for

you sir, I am looking at a blank screen". Spending Sunday in Mexico (another nearby attraction) I tried again next evening. Now the one flight which was flying was full, but I could try on stand-by basis. This was no good to me, so after some insistence and the discovery of a magical "M" status on the ticket, I was told that maybe American Airlines would endorse the ticket. And they did, most friendly and efficiently. So, on the 27th home again in a KLM plane from Chicago. The movie was 'All of me', and seated next to me in the row where you can stretch your legs in a 747 was a friendly citizen of Lincoln's birthplace (Springfield, Ill.). He had been shot down in a fighter plane above Midwoud (N-H) during the war, and was now en route to visit old friends in the Netherlands, as he did every seventh year.