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THE PRESIDENT HAS SEEN

12-6-94

UNIVERSITY PROFESSOR

PERSONAL

November 4, 1996

Maurice Lewis
to do reply -

Mr. William Jefferson Clinton
The President
The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

My dear Mr. President:

Your fantastic success will leave a deep mark on the last years of this millennium and shape the opening of the next one. Please allow me to share with you some ideas that might help make this mark even more profound. These ideas are based on reading your book, *Between Hope and History*, and listening to your recent speeches, along with my own insights into the state of American society. These ideas are merely sketched here; if they are of interest they will need to be worked out in conjunction with your staff.

A president can leave as a legacy a few major, highly visible projects or programs. However, budgetary concerns, public fear of big government, and actions of lobbies will limit what can be done in this way in the next four years. Moreover, even when presidents leave these kinds of marks, these projects or programs acquire their significance, in large part, as a result of being viewed as reflections and embodiments of a larger vision. Thus, the introduction of Social Security, of great importance in itself, acquired overarching significance because it marked a new vision of

the role of the state in ensuring the welfare of all people. It follows that your vision of America should be shared with the people both because, in the current economic and political environment, the White House can be much more effective in setting the cultural context than in engineering specific programs; and given such a context, those projects to be launched will find their legitimation, public support, and framing for history.

- **The 1996 State of the Union Address** might focus on your vision of the renewed America rather than on policy details, and those details to be given, might be integrated into your vision. By merely avoiding a sequence of paragraphs dedicated to the needs of various particular groups, and focusing instead on the needs of the society at large, you could at once set a new and high-level perspective for your second term.

You may wish to spell out your views on a society that is *fair to all*; a society in which each person is provided with opportunity to grow, and each person—in line with his or her ability—helps others to grow; a society in which people are not merely civil to one another but act as good neighbors, friends and fellow community members; a society in which the private, public, and voluntary sectors work together rather than in opposition; a society in which criminals and drug abusers are rehabilitated until they again become full members of the community, and the rights of victims of crime are fair and fully protected; a society in which all women and men, and people of all racial and ethnic backgrounds, are treated fully as equals (a society without glass ceilings, bamboo

curtains or any other barriers to personal growth and advancement); a society that is composed like a community of communities, a society that respects differences in our backgrounds but also recognizes the fate we share (that while we came in different ships, we now ride in the same boat); a society at peace with the world and with itself. (This vision can be further spelled out if this is a focus that best expresses your views.)

To turn to specific policies that might serve to advance the vision:

- Providing **health insurance to all** those not currently covered is an essential element of a fair society. A very small task force should be appointed to explore a fundamentally different approach to the matter from the one tried last time, an approach I can only sketch here. Basically this approach entails (a) providing *initially* only minimal insurance rather than full coverage and (b) providing incentives to the private sector that will lead it to support rather than oppose such a plan in Congress. (If the cost of even initially limited coverage for all those now not insured is too high to make it politically sustainable, it is possible to start by covering only children first, and then increasing each year the age (or ages) of those covered. Such a measure would also help mitigate some of the undesirable side effects of the welfare reform.)

The basic idea is to set up the health insurance system before its potential is fully realized; this is the strategy that, in effect, was followed in developing Social Security. It minimizes

the entry costs and initiates the formations of forces that will propel the new program forward to higher levels of coverage in the future.

With this approach, historians will view the setback to health care plans in the first term as a minor event, in effect heightening the effect of success in the second term.

● **Protect Social Security** from the worst attack it ever faced, from Wall Street lobbies that will make major campaign contributions to members of Congress of both parties in hope of privatizing the system in part or in full, to astronomically increase their business. If such privatization of Social Security is not prevented, millions of people who do not have the benefit of the needed training or education, will be forced to make their own investment decisions. In the process they will come under pressure to invest in ways that would increase the profits of the investment community but will diminish if not endanger the retirees' nest eggs. A fair society does not welch on its commitments to its elders and other vulnerable members of the society, those covered by social security. The problems of Social Security (unlike those of Medicare), can be readily repaired without privatization.

● **Appoint a bi-partisan commission to find ways to limit the role of private funds in public life.** Without major reforms in this area, America will all too often be held hostage by special interests rather than follow your vision of a good, fair society. If this can be achieved in a big way, this alone would ensure your mark on the history of the next century. (What can be worked out is

a matter that needs careful examination and negotiation, which a member of your team may undertake.)

- **Enact fairness enhancing measures:** (a) Champion a change in the law so that unearned income will be treated in the same way as earned income. This is not merely in terms of the level of taxes imposed but also in the ways they are collected; for example, withholding. (Widows and orphans would be excepted.) (b) Advocate returning the proportion of government revenues collected from corporations (as compared to individuals) to the level it was at in the Kennedy Administration. Both measures will require a fight and distress conservatives but are completely justifiable and will give much reality to the vision of a fair society.

- Spell out your vision of **a society that relies on three pillars:** the private sector, the government, and the community. Furthermore, emphasize the need for these three sectors to work as partners. It follows that the government often best acts as an agency that primes (with seed money), enables (by changes in legislation), and helps launch (by training community organizers) rather than runs programs itself. This is a subject already very well covered in your book and hence not further discussed here, but by itself could provide a significant new vision for your second term: a society of partners working together, with the government serving as the yeast and not the bread. (A much expanded AmeriCorps might help here.)

Smaller items:

- Enlist the non-profit sector to monitor **community jobs** (to arise out of workfare) to ensure that every American who is able to work, and cannot find work in the private sector, will be provided with a job that has a public benefit.

- Examine ways to encourage the **formation of community schools**, schools that are open more hours a day, more days of the week, and more months of the year.

- Working with the high tech industry to "wire" all schools, as you already announced, would leave a very beneficial and visible mark, **the Clinton wires**.

- Encourage all schools and colleges to provide opportunities for **community service** as a major way to strengthen the civic spirit of the next generation. Only when young people in America have something to say "yes" to will they be able to resist the lures of drugs, alcohol, crime, and teen pregnancy.

- **Arrange for public television and National Public Radio to be endowed** so that they may become independent public authorities and therefore relatively immune from politics and future vagrancies. Such a step would also highlight ways of reducing government without harming the agencies involved. Endowment could be made possible if Congress provides enough funds at the points where these agencies are severed from the government, so that the *yield* from these funds will cover part of the funds now annually allocated to these agencies. The agencies could meet a basic budget with part of the endowment funds. Congress would condition its

contribution to the endowment of these agencies to the availability of matching grants by foundations, the private sector, and individual donors. The President would appoint the first board of trustees but from then on, the board would be self-perpetuating. The same set up might be considered for some other parts of the government.

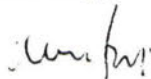
TWO ESSENTIAL ASSUMPTIONS:

1. **Eliminating the deficit should not drive your second term.** As long as the deficit remains roughly at the current level, it will continue to decline as a percentage of the economy, which is what counts. (It might be said that this is true economically but not politically, but it seems evident that the American people are quite content with the present level of the deficit and are very unlikely to cheer further cuts in public programs, not to mention higher taxes, to eliminate the remaining deficit.) Much more important is the growth rate of the economy; addressing the question how the economy may find a non-inflationary, higher growth pathway, is a question that deserves much attention for your second term. Also, giving a high priority to further cutting the deficit would hobble many of the things you will wish to do. And, even if the deficit is completely eradicated, it will remain low only temporarily, and will not be seen historically as a major lasting achievement.

2. Over the last decades America's political institutions, the mainstays of our democracy, have come under increasing attack,

leading to Congress and the presidency being held in low regard by the people, and enhancing their distrust and cynicism. It is vital to work to restore this trust. One major way this may be achieved is if one could agree with the other side to modify the special prosecutor law in ways that will limit the conditions under which investigations of those in office can be launched. Also both political parties might informally agree with one another to limit the conditions under which ethical investigations are started. Holding one speaker after the other out of office on the bases of royalties of books they have written and similar allegations, undermines the whole political system. Having one president after another end their second term under a cloud of controversy, is extremely undesirable. Pardons, which best would cover both Democrats and Republicans, could be fitted into a new bi-partisan understanding. I realize the great difficulties involved in working out these matters but I should stress, although this is hardly necessary, that working out these issues early in the second term, would have tremendous effect on all that will follow.

Sincerely,



Amitai Etzioni

At home
Nov. 7, 1996
'96 DEC 5 PM 3:17

His Excellency
President Bill J. Clinton
Vice President Al Gore
United States of America

Sir:

Gongratetulations and Best Wishes for your
triumphant re-elction victory 1996. Mr. President
your'e the youngest to win a second term at the age
of 50th. " Today the american people have spoken.
They have affirmed our course. They have told us to
go forward."

Although ,I am not an american citizen . I cheers
and pray for democrats party campaign since J.F/K.
Pres. John Fitzsgerald Kennedy the late Pres. of the
United States of america.

Still, it was a dramatic comeback for you
Mr. Pres. William 'Bill' Jefferson Clinton the incumbent
Pres. of the United States of America. In God We Trusht.

Very respectfully yours,

Romeo Esquivel Sarza
ROMEO/ESQUIVEL SARZA
252 oro-site ext.
City of Legazpi
Albay-Philippines
4500

fr.

Lynela D.

Jeff

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12-5-96

To Doriskind
for Reply?

Yes ☒

No ☐

~~COPIED TO [unclear] / [unclear]~~

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HONORARY PARTICIPATION REQUEST

Please return to Room 457

Today's Date: December 5, 1996

Eruebyn
12/5/96

Date of Request: 10/04/94

Request for: POTUS/FLOTUS

Type of Request: Honorary Co-chairs

Requestor Name: Leon G. Smith, M.D.

'96 DEC 5 PM4:06

Title: President

Organization: National Foundation for
Infectious Diseases
Suite 750
4733 Bethesda Avenue
Bethesda, Maryland 20814-5228

Contact Tel. #: 301/656-0003

Event Date: 2/13/97 [Print deadline: 12/9/96]

Event Description: 1997 NFID Awards Dinner

Notes: This awards dinner will honor Nobel laureate Joshua Lederberg, Ph.D., and former President and Mrs. Carter. The President and Mrs. Clinton regretted this request in 1994 and accepted in 1995 when the honorees were Senator and Mrs. Bumpers. The President accepted and the First Lady regretted the group's request for the 1996 Awards Dinner when the honoree was Paul G. Rogers, former Democratic U.S. Representative from Florida.

The President and First Lady should ACCEPT.

Recommendations:

MW _____ TS OK EL _____
(Unless otherwise noted, a yes answer
will automatically generate a message).

Comments:

190466



National Foundation for Infectious Diseases

RESEARCH PREVENTION EDUCATION

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4733 Bethesda Avenue
Suite 750
Bethesda, Maryland 20814
Telephone: 301/656-0003
Facsimile: 301/907-0878
E-mail: nfid@aol.com

October 4, 1996

The Honorable William J. Clinton
Hillary Rodham Clinton
The White House
1600 Pennsylvania Avenue, NW
Washington, DC 20500

Dear Mr. President & Mrs. Clinton:

The National Foundation for Infectious Diseases (NFID) will sponsor its annual NFID Awards Dinner on February 13, 1997, at the Mayflower Hotel in Washington, DC. This year the foundation will present two awards for outstanding service—the **Maxwell Finland Award for Scientific Achievement** and the **Jimmy and Rosalynn Carter Award for Humanitarian Contributions to the Health of Humankind.**

The Maxwell Finland Award for Scientific Achievement is presented to a scientist who has made outstanding contributions to the understanding of infectious diseases or public health. The 1997 Maxwell Finland Award will be presented to Nobel Laureate Joshua Lederberg, Ph.D. The Jimmy and Rosalynn Carter Award for Humanitarian Contributions to the Health of Humankind will be presented henceforth to individuals whose outstanding humanitarian efforts and achievements have contributed significantly to improving the health of humankind. The Jimmy and Rosalynn Carter Award will be presented for the first time in 1997 to **former President Jimmy Carter and Rosalynn Carter.**

The NFID Boards of Directors and Trustees greatly appreciated your support last year when you served as honorary co-chair with former President Carter and Mrs. Carter to honor Paul G. Rogers. We are again extending you both an invitation to serve as honorary co-chairs.

With more than 500 people expected, the black-tie gala will begin with a reception at 6:30 p.m. and dinner at 7:30 p.m. Following dinner at approximately 9:30 p.m., both awards will be presented. Both national and local media will be present.

OCT 10 1996

President William J. Clinton & Mrs. Clinton
October 4, 1996
Page 2

We would certainly welcome your attendance at this event honoring such remarkable citizens. We will understand, however, if your busy schedules preclude you from attending. In addition, it would be highly appropriate and appreciated if you could provide a letter for each of the awardees which will be read at the event and included in our program as a tribute to Dr. Lederberg and former President Carter and Mrs. Carter.

NFID is a national, nonprofit, 501(c)(3) public organization founded in 1973, and dedicated to support research into the causes and cures for infectious diseases, to encourage and sponsor public and professional educational programs, and to aid in the prevention of infectious diseases.

Enclosed are last year's dinner program and invitation. If you have any questions, please do not hesitate to contact Len Novick, NFID Executive Director, at (301) 656-0003 or William J. Martone, M.D., NFID Senior Executive Director, at (770) 939-2936. We look forward to hearing from you or your staff in the near future.

Sincerely,



Leon G. Smith, MD (R)
President

Enclosures

★13102★ NATIONAL FOUNDATION FOR INFECTIOUS DISEASES (NFID)

4733 Bethesda Ave., Ste. 750

Bethesda, MD 20814

Leonard Novick, Exec.Dir.

PH: (301)656-0003

FX: (301)907-0878

Founded: 1973. Members: 17,000. Staff: 3. Budget: \$1,486,200.
State Groups: 3. Receives, maintains, and disburses funds to support research into the causes and cures of infectious diseases; assists in the education of both professionals and the public in infectious diseases. Conducts

programs in prevention of infectious diseases. Offers financial assistance for symposia and workshops related to infectious disease problems. **Libraries:** Type: reference. Subjects: infectious diseases. **Awards:** Frequency: annual. Type: fellowship. Recipient: for physicians specializing in infectious diseases • Maxwell Finland Award. Frequency: annual. Type: recognition. Recipient: for humanitarian efforts and achievements which contribute to improving medical research • Young Investigator Matching Grants. Frequency: annual. Type: grant. **Computer Services:** Mailing lists. **Telecommunication Services:** electronic mail, NFID@aol.com.

Publications: *Double Helix*; bimonthly. Newsletter. Reports on public welfare and support of research, education, and prevention of infectious disease. Monitors legislation. Price: free. Circulation: 21,000. Advertising: not accepted • *National Foundation for Infectious Diseases—Annual Report* • *Proceedings* • *Recognition and Management of Nursing Home Infections*. **Conventions/Meetings:** annual convention and board meeting.

Selected Publications: *An Introduction to Genetics*. Philadelphia, PA: W.B. Saunders, 1939 (with A.H. Sturtevant). *The Language of the Gene*. London: Univ. of London Press, 1960. *Genetics and Modern Biology*. Philadelphia, PA: American Philosophical Society, 1963. *The Language of Life*. New York: Doubleday, 1966 (with M.M. Beadle).

For More Information See: *Current Biography Yearbook*. New York: H.W. Wilson, 1956, 37-39. *National Cyclopaedia of American Biography*. New York: James T. White, 1964 (Current Volume J), 372-73.

Commentary: George Beadle shared the Nobel Prize for "fundamental contributions in the field of biochemical and microbial genetics." His genetic studies progressed from maize to *Drosophila* to *Neurospora crassa*, the red bread mold. In the studies of *Neurospora*, Beadle found mutations by irradiation that could be reversed by Vitamin B6 additions and concluded that specific genes controlled chemical synthesis in cells. The research for which the Nobel was awarded laid the foundations of biochemical genetics. (P.M.)

Lederberg, Joshua

304

PRIZE: Medicine and Physiology, 1958. **BORN:** May 23, 1925; Montclair, NJ. **PARENTS:** Father, Zwi H. Lederberg; Mother, Esther Goldenbaum Lederberg. **NATIONALITY:** American. **RELIGION:** Jewish. **EDUCATION:** Columbia Univ., NY, B.A., 1944; Yale Univ., CT, Ph.D., 1947. **SPOUSE:** Esther Miriam Zimmer, married 1946, divorced 1968; Marguerite Stein Kirsch, married 1968. **CHILDREN:** David, son; Ann, daughter. **CAREER:** Univ. of Wisconsin, Professor, 1947-58; Stanford Univ., CA, Professor and Administrator, 1958-78; Rockefeller Univ., NY, President, 1978-. **OTHER AWARDS:** Eli Lilly Award, 1953; Pasteur Award, Society of Illinois Bacteriologists, 1956; Procter Prize, 1982.

Selected Publications: *Papers in Microbial Genetics*. Madison, WI: Univ. of Wisconsin Press, 1952. "Viruses, Genes and Cells." *Bacteriological Reviews* 21 (1957): 133-39. "Bacterial Reproduction." *Harvey Lectures* 53 (1959): 69-82. *Tables and Algorithms for Calculating Functional Groups of Organic Molecules in High Mass Spectrometry*. Palo Alto, CA: Stanford Univ. Press, 1964.

For More Information See: *Biographical Encyclopedia of Scientists*. New York: Facts on File, 1981, 479-80. *Current Biography Yearbook*. New York: H.W. Wilson, 1959, 251-52. *The Excitement and Fascination of Science*. Palo Alto, CA: Annual Reviews, Inc., 1990, Vol. 3, Part 1, 893-915.

Commentary: Joshua Lederberg's Nobel was granted "for his discoveries concerning genetic recombination and the organization of the genetic material of bacteria." His studies showed that, in some cases, bacteria were sexual, based on the work with *Escherichia coli*. Lederberg also studied bacterial transduction—genetic information transfer across barriers by *Salmonella*—that led to the later work in genetic engineering. (J.C.)

Tatum, Edward Lawrie

305

PRIZE: Medicine and Physiology, 1958. **BORN:** December 14, 1909; Boulder, CO. **DIED:** November 5, 1975; New York, NY. **PARENTS:** Father, Arthur Lawrie Tatum; Mother, Mabel Webb Tatum. **NATIONALITY:** American. **RELIGION:** Most probably Christian/Protestant. **EDUCATION:** Univ. of Wisconsin, A.B., 1931;

Univ. of Wisconsin, M.A., 1932; Univ. of Wisconsin, Ph.D., 1934. **SPOUSE:** June Alton, married July 28, 1934, divorced 1956; Viola Kantor, married December 16, 1956, died April 21, 1974; Elsie Berglund, married 1974. **CHILDREN:** Margaret Carol, daughter; Barbara Ann, daughter. **CAREER:** Univ. of Wisconsin, Researcher, 1935; Univ. of Utrecht, Netherlands, Researcher, 1936-37; Stanford Univ., CA, Professor, 1937-45; Yale Univ., New Haven, CT, Professor, 1948-56; Stanford Univ., CA, Professor, 1956-57; Rockefeller Institute, NY, Professor, 1957-75. **OTHER AWARDS:** Remsen Award, American Chemical Society, 1953.

Selected Publications: "Genetic Control of Biochemical Reactions in *Neurospora*." *Proceedings of the National Academy of Sciences* 27 (1941): 499-506 (with G. Beadle). "Genetic Control of Biochemical Reactions in *Neurospora*: An Aminobenzoicless Mutant." *Proceedings of the National Academy of Sciences* 28 (1942): 234-64 (with G. Beadle). "Gene Recombination in the Bacterium *Escherichia Coli*." *Journal of Bacteriology* 53 (1947): 673-84 (with J. Lederberg). "Sex in Bacteria: Genetic Studies, 1945-1952." *Science* 118 (1953): 169-74 (with J. Lederberg).

For More Information See: *Current Biography Yearbook*. New York: H.W. Wilson, 1959, 437-39. *The Excitement and Fascination of Science*. Palo Alto, CA: Annual Reviews, Inc., 1990, Vol. 3, Part 1, 775-79. *National Cyclopaedia of American Biography*. New York: James T. White, 1964 (Current Volume J): 475.

Commentary: Edward Tatum shared the Nobel Prize "for discovering that genes act by regulating specific chemical processes." His career included work on the nutrition and metabolism of *Drosophila*, on inherited defects in eye pigment development in *Drosophila*, on mutation and hereditary characteristic transmission in relation to genes in *Neurospora crassa*, on biochemical mutations and nutrition of *Escherichia coli*, and on genetic recombination. (P.M.)

1959

Kornberg, Arthur

306

PRIZE: Medicine and Physiology, 1959. **BORN:** March 3, 1918; Brooklyn, NY. **PARENTS:** Father, Joseph Kornberg; Mother, Lena Katz Kornberg. **NATIONALITY:** American. **RELIGION:** Jewish. **EDUCATION:** City College of New York, B.S., 1937; Univ. of Rochester, NY, M.D., 1941. **SPOUSE:** Sylvie R. Levy, married November 21, 1943. **CHILDREN:** Roger, son; Thomas Bill, son; Kenneth Andrew, son. **CAREER:** National Institutes of Health, MD, Researcher, 1942-52; Washington Univ., MO, Professor, 1953-59; Stanford Univ., CA, Professor, 1959-. **OTHER AWARDS:** Paul-Lewis Laboratory Award, American Chemical Society, 1951; Silver Medal, Federal Security Agency, 1952; Lucy Wortham James Award, James Ewing Society, 1968; Max Berg Award, 1968; Science Achievement Award, American Medical Association, 1968; Borden Award, American Association of Medical Colleges, 1968; Albert Gallatin Medal, New York Univ., 1970; National Medal of Science, United States, 1980.

Selected Publications: *Harvey Lectures* 53 (1957-58): 83. *Enzymatic Synthesis of DNA*. New York: Wiley, 1961. "Enzymatic Synthesis of DNA. XXIII. Synthesis of Circular Replicative Form of Phage Phi X174DNA." *Proceedings of the National Academy of Sciences* 58 (1967): 1723-30 (with M. Goulian). "Enzy-



INVESTORS

TOUP - Fyhr BCG

THE PRESIDENT HAS SEEN
12-4-99

PAUL ALLEN: NEW AGE MEDIA MOGUL

He has put \$1.7 billion into entertainment ventures. Is there method in his mishmash?

Surely the third-richest man in America always travels in luxury and high style. But here is Paul G. Allen, with a fortune of about \$8 billion, stuffing his large, ungainly frame into the back of a small, rattling van. He's on his way to a home game of his basketball team, the Portland Trail Blazers, and crammed in the van with him are his mom, his aunt and uncle, and his old college roommate. Throw in a journalist and a couple of other friends, and it's hardly a billionaire's power circle ready to dress up the floor seats.

Once at the Rose Garden, the high-tech \$262 million arena Allen built for the Blazers, the team's owner takes his seat next to a basket and smiles shyly as he twice catches out-of-bounds balls. The Blazers go on to beat the Los Angeles Clippers. To celebrate, the Allen clan piles back into the van

and heads for Powell's, a cavernous bookstore in a somewhat shabby Portland neighborhood. Allen and his family blissfully wander the stacks for a half hour. And what piques the interest of the co-founder of Microsoft Corp., the technowizard who put the backlash in DOS? Allen buys a movie magazine. "I'm fascinated by the entertainment industry. I read all I can to learn more about it," Allen explains as he crawls back into the van.

Paul Allen always seems somehow out of place, never quite meshing with his surroundings. He has vast wealth but is utterly devoid of glamour. At 43, he lives in a lakeside Seattle-area compound (outfitted with a full-size basketball court and a 20-seat movie theater) that he shares with his mother, Faye. He's a technology visionary, but he lacks the single-minded drive of techie empire-builders like his boyhood

'Content Plus Computing Power'

Allen has been placing big bets in new media, entertainment, and technology companies. Here's a look at some of his major holdings:

CNET

Internet content provider and producer of computer-oriented TV series.
OWNERSHIP: 22%
INVESTED: \$11 million
CURRENT VALUE: \$44 million

*Business Week estimate
 DATA: COMPANY REPORTS, BUSINESS WEEK

USSB

Digital satellite broadcaster of premium TV channels
OWNERSHIP: 3.9%
COST BASIS: \$20 million
CURRENT VALUE: \$46 million

WEBTV

Service that turns a TV into an Internet-surfing appliance
OWNERSHIP: Not available
INVESTED: Not available
CURRENT VALUE: Launching this fall; too early to say

DREAMWORKS SKG

▼ Startup studio producing movies, TV shows, music, interactive games
OWNERSHIP: 18.5%
INVESTED: \$492 million over five years
CURRENT VALUE: Impossible to say, but company has been slow to release new products

Dream Team:
 Jeffrey Katzenberg,
 Steven Spielberg,
 David Geffen



TRAIL BLAZERS

▲ Pro basketball team
OWNERSHIP: 100%
COST: \$70 million
CURRENT VALUE: \$150 million*

STARWAVE

Internet content provider with sites such as ESPN SportsZone, Mr. Showbiz, Outside Online
OWNERSHIP: 100%
INVESTED: \$60 million*
CURRENT VALUE: Not available



TICKETMASTER

Largest ticketing service in the world. Moving into online ticketing for live entertainment, movies, travel. Going public in November
OWNERSHIP: 80%
INVESTED: \$240 million
CURRENT VALUE: \$267.9 million

friend and Microsoft co-founder William H. Gates III. Thinking he was terminally ill, Allen left Microsoft in 1983. He beat what turned out to be Hodgkin's disease but spent several years largely absent from business life. He held on to his Microsoft stock, now worth \$7.3 billion.

Over the past few years, though, Allen has become enthralled by the entertainment industry, and he's spending a good chunk of his fortune founding or making investments in at least a dozen young media, entertainment, and technology companies. Having laid out \$1.7 billion so far, the reclusive billionaire is emerging as one of the most active individuals investing in media in the U.S. "He's on everybody's radar screen. If any significant media asset is being sold, Paul is approached on it," says Michael L. Yagemann, who heads the media and entertainment practice at Bear, Stearns & Co. and has worked on many Allen deals.

ODDBALL. Can the pioneering technology billionaire remake himself as a New Age media mogul? In the glitzy world of show business, the intensely shy, awkward Allen is more of an oddball than ever, whether he's riffing on his electric guitar with rockers Peter Dinklage or Dave Stewart, shooting baskets with a few Blazers, or hobnobbing with Hollywood celebrities.

Nonetheless, Allen is building an empire in his own quirky image, one that marries the entertainment content he adores with the power of technology that he understands better than most. From the fledgling DreamWorks SKG movie studio to the just launched WebTV service that enables consumers to

use their televisions to access the Internet, to Starwave Corp., which produces Web sites like the popular ESPN Sports Zone, Allen's grab bag of companies aims to deliver the jazzed-up, wired entertainment content that Allen, as a consumer, craves. "Content plus computing power" he says, is where he likes to place his bets (table).

Soon, outsiders will get a better look at the operations of a few of the companies that Allen founded or controls as they explore initial public offerings. Asymetrix Corp., a lackluster software company Allen founded in 1985, is considering going public. In an encouraging move for Asymetrix' prospects, Tokyo-based Softbank Corp. bought a stake in September, and a senior Softbank executive joined Asymetrix' board. Starwave is also mulling an offering.

And in mid-November, Ticketmaster Group Inc., the ticketing service that Allen acquired 80% of for \$240 million in December, 1993, is going public. Lead underwriter Allen & Co. (no relation) preliminarily valued Ticketmaster at \$494.2 million. The ticketing company is branching out from its live-entertainment base to online ticketing, electronic commerce, and even traditional print magazine publishing, and it is expected to go on the acquisition trail after the offering. Revenues since 1994 have grown 28%, to \$241.3 million for the year ended Jan. 31, 1996. Largely because of costly expansions into online ticketing and other new areas, Ticketmaster's operating earnings have dipped 2.4%, to \$23.7 million, for the same period.

After the Ticketmaster IPO, Allen's stake will be worth only

"The guy is clearly starstruck... And when he does buy, it's a good deal for the seller"



TICKETMASTER: Its IPO may yield lackluster returns for Allen

about \$268 million. That lackluster return only reinforces Allen's mixed reputation as an investor, with some inspired hits and some head-scratching misses. In fact, many in entertainment and finance regard Allen as a dabbler who overpays. "The guy is clearly starstruck," says one investment banker. "He's definitely on [any] list of [potential media] buyers. And when he does buy, it's a good deal for the seller." Internet market analyst Betty J. Lyter thinks that Allen's laid-back, low-pressure investment style actually hobbles the financial performance of otherwise promising ventures. "He has made a lot of investments in companies that haven't achieved profitability as quickly as peer companies have," she says. Allen's great wealth "can make a company less than focused on driving and developing a business model."

Also skeptical is venture capitalist Stewart Alsop, who has observed Allen for years. "Media companies are evaluated [by their success in] spotting the public taste and responding to public need. Paul's really working for an audience of one—himself," says Alsop. "It's kind of a lonely position to be the one guy in the world who has \$8 billion and doesn't care about making money."

PATIENT INVESTOR. Allen insists that what his critics regard as overpaying is just the mark of an extraordinarily patient investor who has the resources to wait years for promising ideas to pay off. "I like to place higher-risk bets" than most investors, he says.

His real objective may well be to secure for himself a role in the creation of a fully wired world. "Most people invest to get a return. Paul Allen does this, but he also is able to invest in ideas he believes will change the world," says Roger

B. McNamee, a partner with Integral Capital Partners, a technology investment firm that has no financial relationship with Allen. "Few people have the luxury of investing that way. The fact that Paul can makes people jealous." Adds DreamWorks co-founder David Geffen, a close friend: "He's a very smart man. He didn't inherit the money; he earned it. The reason you don't know what he's doing with his money is that he doesn't go around making a big deal about it."

Those investments that are now public can speak for themselves. Allen invested \$20 million in 1994 for a 3.9% stake of direct-broadcast satellite company United States Satellite Broadcast Co. The company went public earlier this year, and Allen's stake now has a market value of \$46 million. He also plunked down \$11 million in 1994 and 1995 for a 22% stake in CNET: The Computer Network, a fast-growing Internet-and-TV production company that aims to be the MTV of the cybergeneration. CNET went public in July; Allen's stake is now worth \$44 million.

The flops, of course, never made it to market. One was SkyPix, an early direct-broadcast satellite company that went bust in 1992, shortly after Allen invested \$10 million. Allen lost an undisclosed amount on Virtual Vision, which made goggles equipped with a TV monitor. And Allen's experience with America Online Inc. was a strategic failure, if not a financial one. Excited by the boom in online chat and the possibilities of the Internet, Allen in 1993 bought nearly 25% of AOL's stock. But AOL didn't want Allen to have a role in the company and rebuffed him. Though his bankers encouraged him to mount a hostile takeover, Allen instead gradually sold, more than tripling his money in the process.

Allen's experience with Microsoft, where he still sits on the board, gives him a keen appreciation for getting in on the



SAVOY: His job is to scout out companies that fit Allen's "wired world" vision

ground floor. Given that and his affinity for risk, Allen's guiding investment criteria are fairly straightforward: He must like and trust the managers, he must be interested as a consumer in what they're making, and the business must be poised to profit greatly from an emerging technology that will soon make its products better, faster, or more compelling than anything else on the market. "These really aren't speculative investments," notes Michael Wolf, who heads Booz, Allen & Hamilton Inc.'s media practice. "He's investing in companies that are beginning their growth curve. The approach appears to be a savvy one."

Allen doesn't run or manage any of these companies, even the ones he wholly owns; he has never claimed to have executive skills. He is remote and lacks vitality in one-on-one encounters. Operating executives at each company are pretty much free to make sense of his overall strategic vision and run the businesses on their own. Allen relies on three key aides to conduct whatever oversight there is of the portfolio companies. Vern Raburn was an early Microsoft employee who now plays a sort of supervisory, management counselor role to some of Allen's companies. Bert Kolde, who was Allen's freshman roommate at Washington State University, also takes on many day-to-day administrative duties, overseeing the Blazers and serving on boards on Allen's behalf. David Liddle, once head of Xerox Palo Alto Research Center and now head of Interval Research Corp., a think tank Allen is funding with \$100 million, acts as a technology sounding-board for Allen and the executives at the companies.

Generally, Allen leaves the companies to themselves. Star-

wave, which he founded in 1992, has had significant success on the Internet with ESPN SportsZone, a venture with Walt Disney Co.'s ESPN cable network that provides sports fans with thousands of pages of glossily presented information about sports each day via the Net. SportsZone averages 18 million hits a day, and its attractive demographics have lured such big-name advertisers as Gatorade, Microsoft, Pizza Hut, and several auto makers. Starwave CEO Mike Slade says the

company will post revenues of more than \$10 million this year and may turn a profit next year.

But the boss is in no hurry to draw dividends out of Starwave, Slade says. "Our strategy is get out ahead and run like hell. Only five [other companies] in the world are willing to spend what we're spending. This is cable TV in 1980. We're investing as if the size of the market is 10 times what it is today." Just launching Starwave seemed to outsiders to be a huge gamble four years ago, but Allen never doubted its vi-

ability. "Paul is one of those people who likes to make big bets, and he's a leapfroggy kind of guy," says Slade. "The incremental pace of the software industry always frustrated him. When we started this, there was no World Wide Web. We had to assume the infrastructure would happen."

DIFFERENT AGENDA. Many who have dealt with Allen say that his cancer scare 13 years ago, when he was only 30, left him with an agenda quite different from that of other moguls-in-the-making. When his disease went into remission in 1983, Allen didn't return to Microsoft; rather, the college dropout traveled, read widely, learned to scuba dive, and spent long hours with

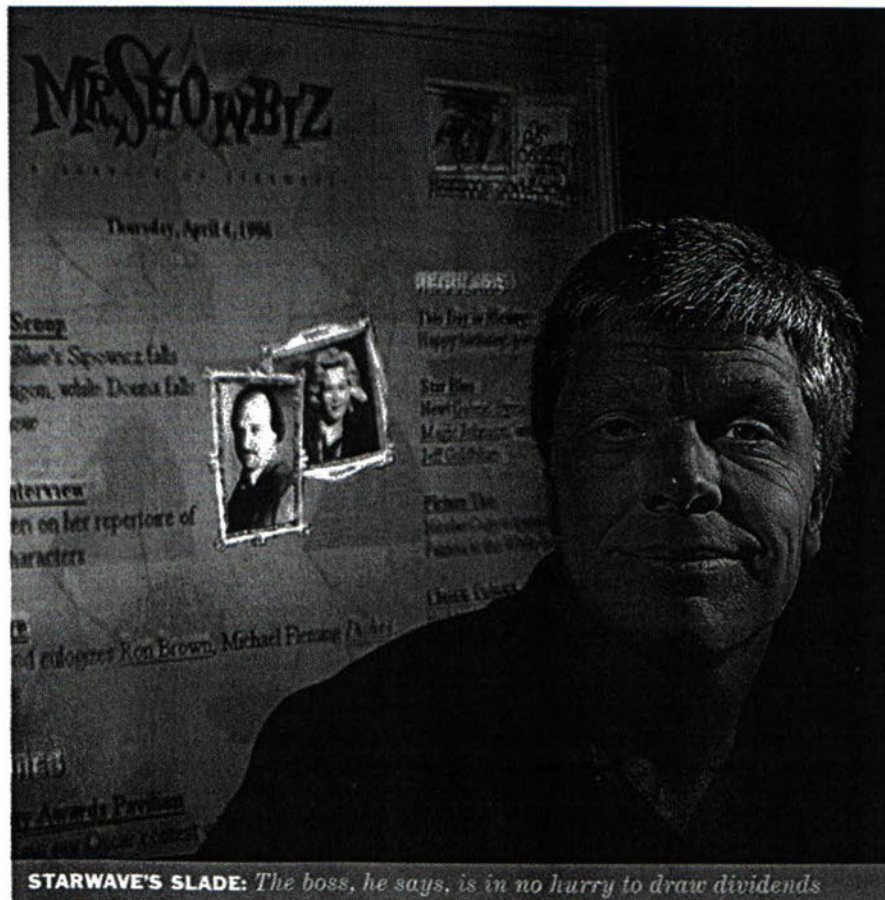
his intensely close-knit family. He was dealt a further blow that year when his father, Kenneth, underwent minor knee surgery and died suddenly when a loosened blood clot caused a fatal stroke.

Never married and childless, Allen remains exceptionally close to his family and old friends. His mother lives in a house Allen built for her on the grounds of his Seattle-area estate, and the retired librarian still assigns him books to read. His sister, Jody Allen Patton, runs Allen's charitable foundation, oversaw construction of the Trail Blazers' Rose Garden, and is the executive director of the Experience Music Project, a \$60 million music museum that grew out of Allen's abiding passion for the music of Jimi Hendrix, another Seattle native son. The museum is scheduled to open in downtown Seattle in 1999.

Allen's tentative efforts to restart his business life after his illness and his father's death met with little initial success until he hired his first real financial staffer, William D. Savoy, in 1990. Since then, Allen and Savoy have worked out a comfortable symbiotic relationship. When Allen pinpoints an area he thinks will soon benefit from an impending technological advancement, Savoy begins scouting for companies that fit the bill, and oversees the due diligence on the company's financials.

Savoy, 32, says that his "job is to lis-

Allen doesn't run any of his companies: He has never claimed to have executive skills



STARWAVE'S SLADE: The boss, he says, is in no hurry to draw dividends



CLOSE-KNIT FAMILY: *The Blazers' owner cheering his team with his mother, Faye*

ten very carefully to 'wired world' ideas articulated by Paul and invest in companies that fit with that vision." As Allen has become more widely known as a rich and patient source of investment capital in media and technology circles, Savoy and his staff of six are flooded with proposals—4,000 last year alone.

Allen has been carefully shopping for media and entertainment properties since 1991. Especially after he bought Ticketmaster in 1993, Allen's profile as a buyer of media properties grew more prominent. In 1994, he was invited to investment banker Herbert Allen Jr.'s (no relation) annual retreat for media moguls. There, Allen met Geffen and struck up a friendship. The two have vacationed together on Allen's yacht, and Allen consults Geffen as he considers different media investments. "We've looked at every movie studio, every music company, starting with Orion [Pictures Corp.] in 1991," says Savoy. They came close to bidding on Miramax Films Inc. and Castle Rock, Savoy says. Allen also seriously considered buying Seagram Co.'s then 15% stake in Time Warner Inc. before Time Warner's dilutive acquisition of Turner Broadcasting Systems Inc. was announced.

They passed on all of these, and the only big-ticket buys they made in this period were Ticketmaster and DreamWorks, which counts Geffen as a principal. But scouting for more media content continues to top their agenda. Executives in the entertainment industry say Allen and Savoy have been spending a good deal of time kicking tires of media properties in Los Angeles lately. Savoy declined to elaborate on specifics but says that "we're definitely [making] more investments in content rather than infrastructure."

Once Savoy identifies a likely prospect, Allen gets very in-

Allen and Savoy have been spending lots of time kicking the tires of media properties in L.A. lately

"Each of these companies has to compete in its own sphere," Allen says. "If the corporate cultures aren't [compatible], that's not a recipe for success." Still, he says "for a lot of these companies, markets are developing rapidly. [Cross-fertilization] can be a real help, and a tremendous opportunity for new products." Allen is preparing to bring his wholly owned companies under one roof in a 60-acre corporate campus, soon to break ground in suburban Seattle.

What does Allen hope to build from this tantalizing mish-mash of technology and media holdings? He hasn't the soul of an ego-driven empire-builder: He is most satisfied when he makes his guesses, places his bets, and is proved right. But he clearly loves being in business, just as he loves to play guitar with rock stars and shoot baskets with pro basketball stars: It's fun, and it makes him feel alive. "To me, the real psychic reward is to be involved in creating new products, new ideas," he says.

Perhaps Allen's eclectic grab bag of entertainment properties will never really make sense to outsiders. But in the meantime, in his low-key way, Allen is carving out a role for himself as a media investor who marches to a decidedly different drummer. "Some people are important because of the force of their personality, some are born important, some are important because of their resources," says Integral Partners' McNamee. "Paul comes out of that latter category. Some people think that's all he's got. And they're missing something. [But] I'm sure Paul couldn't give a damn." Someone in the entertainment industry not caring about image? The mark of a media mogul for a new age if ever there was one.

By Elizabeth Lesly in New York, with Kathy Rebello in San Francisco and bureau reports

involved in evaluating the company. In 1994, Minneapolis-based Hubbard Broadcasting Inc. was looking for investors for its USSB satellite system. Stanley E. Hubbard, the CEO of USSB, vividly remembers Allen's due diligence that summer. Allen visited USSB's dish-manufacturing plants in Minneapolis and Indianapolis and removed the cover of the receiver boxes to scrutinize the circuits inside. Allen is "a genius," Hubbard says. "He goes beyond being technologically bright because he can put it in perspective."

PSYCHIC REWARD. Any significant synergies among his companies seem a ways off, and Allen in his passive way isn't inclined to force the issue. Starwave designed the Web site for Ticketmaster Online, for example, and Interval has provided some research on music trends to Trilobyte Inc., producer of such CD-ROM hits as *7th Guest* and *The 11th Hour*. Allen acquired 12% of Trilobyte in 1994.



U. S. Department of Housing and Urban Development
Washington, D. C. 20410-6000

December 2, 1996

ASSISTANT SECRETARY FOR
POLICY DEVELOPMENT AND RESEARCH

'96 DEC 4 PM 1:30

The President
The White House
Washington, D.C. 20500

Dear Mr. President:

I hereby submit my resignation from the position of Assistant Secretary for Policy Development and Research at the Department of Housing and Urban Development, effective December 31, 1996.

My decision to resign is for purely personal reasons. For the past three and one-half years, I have been on-leave from the University of North Carolina at Chapel Hill where, since 1966, I have held faculty positions in the Departments of City and Regional Planning and Public Policy Analysis. I am returning to UNC to accept appointment to the Duncan MacRae '09 and Rebecca Kyle MacRae Professorship of Public Policy Analysis, and to resume teaching and conducting research in affordable housing, community development, and national urban policies.

I have had the high honor of serving in your administration and, under Secretary Cisneros' extraordinary leadership, I have grown personally and professionally during my tenure at HUD. My colleagues and I have worked hard to restore the public's trust in our Department, put in place a reform agenda, including the transformation of public housing, that will enable HUD to better serve low income and working families, and to become a more reliable partner with America's communities in the years ahead.

Thank you again for allowing me to serve with you. I will cherish the experience for the rest of my life.

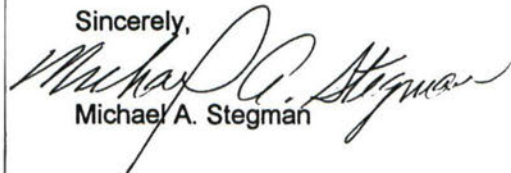
12/4/96

To do

Should this be logged in and
forwarded to POTUS w/ a note
that reply is being prepared
or should it go directly
to Clerk/Do-skind

Send to Do-skind & Clerk

Sincerely,


Michael A. Stegman



U. S. Department of Housing and Urban Development
Washington, D. C. 20410-6000

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Sincerely,

A handwritten signature in cursive script, reading "Michael A. Stegman".
Michael A. Stegman



U. S. Department of Housing and Urban Development
Washington, D. C. 20410-6000

December 2, 1996

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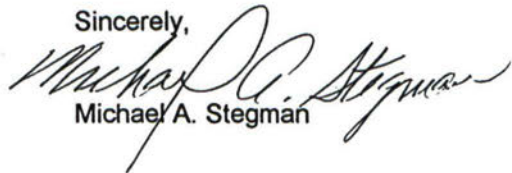
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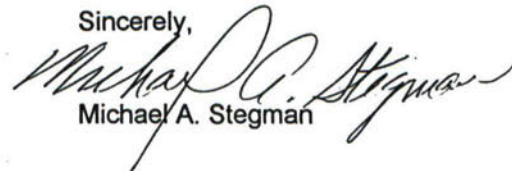
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Thank you again for allowing me to serve with you. I will cherish the experience for the rest of my life.

Sincerely,


Michael A. Stegman

Carter, Chairman of Boston's State Street Boston Corp. "Americans want government to be concerned about those in need, but to use Republican means."

This desire for centrism clearly shaped the contours of the campaign. Clinton, who once intended his domestic legacy to be national health insurance, wound up running as the champion of

Cover Story

fiscal conservatism, family values, and crime-fighting initiatives. Many of the GOP congressional incumbents who once brandished copies of the Contract With America became advocates of bipartisan cooperation once they hit the campaign trail. They boasted of votes for raising the minimum wage, extending health coverage to job-switching workers, and passing environmental laws. "People are not looking for a revolution," says Representative Marge Roukema (R-N.J.), a leader of the Hill's key centrist bloc (page 42). "They're looking for moderate consensus-building." Adds Republican business lobbyist Wayne Valis: "We're all about to become raging incrementalists."

Certainly the reelected Clinton, scarred by his rocky first couple of years in office, harbors no thoughts of grand second-term monuments. The top items on his agenda: forging a bipartisan deal to balance the budget by 2002, fixing the short-term imbalance in the

Medicare trust fund, shoring up Social Security, pushing education initiatives, and continuing progress towards deregulation. The only new item on the list: campaign-finance reform. Reacting to public anger over the Administration's involvement in the Donorgate scandal, White House planners have brazenly vowed to put new curbs on campaign spending.

MUCH ANGER. The drive for bipartisanship, however, could easily be derailed by dueling ethics inquiries. Stung by Clinton's teflon-like ability to deflect Dole's character barrage, many Republicans want to brake the President's momentum with a new wave of congressional investigations. The targets range from First Lady Hillary Rodham Clinton's legal woes to improperly obtained White House FBI files to questionable contributions to the Democratic National Committee. Says one senior GOP Hill staffer: "There are some very angry people up here who believe the President lied his way to reelection."

Democrats will counter by pressing the House ethics committee's ongoing probe of Gingrich's finances and ties to a conservative political committee. If both sides launch competing probes, the result could be "political warfare at its worst," warns former House Democratic Whip Tony Coelho, who quit Congress after his own brush with an ethics flap in 1989. Adds Lewis E. Platt, CEO of Hewlett-Packard Co.: "We need to get to the bottom of the issues. But I'm concerned about it tying up an enormous amount of [Congress'] time. It could be very disruptive." In the end, says a top White House aide, "Republicans will have to get over it, and we'll start getting down to business. We both have a clear interest in doing this."

In the meantime, Clinton will be busy reassuring the business community. Soon after he returns to Washington from Little Rock, he'll send executives a signal of his desire to make the balanced

ELECTION '96

Veteran GOP warrior Dole (with Liddy after conceding) was the sentimental favorite of business leaders. But they'll easily be able to live with a Bill Clinton subject to the checks and balances of two parties in power

WHAT MAY FLY, WHAT WON'T

The parties agree on balancing the budget and probably can compro-

BALANCING THE BUDGET The President and many Hill Republicans desperately want to get the issue behind them. Look for them to cut a deal in the first six months—overriding the objections of hard-core House GOP conservatives.

▼ CRIME Both parties will spend more on anti-drug programs, but the real battle will be over antiterrorism initiatives. Libertarian Republicans and left-wing Democrats blocked key provisions this year. The new Congress is likely to accept a plan to track explosives.



▼ EDUCATION AND TRAINING Clinton and Hill Republicans were close to a deal this year to replace federal job training with vouchers for private programs. That is likely to become law, but Clinton won't get his coveted tax breaks for college tuition.



ENTITLEMENT REFORM A bipartisan panel to make long-term Medicare reforms is just about a sure bet. Both parties will want to resolve the problems without being blamed for the pain they will cause future retirees.



▲ THE ENVIRONMENT Big environmental laws will be up for consideration, including Superfund. A business-backed compromise was torpedoed by Republican firebrands in the last Congress. Under the influence of moderates, the GOP will sign off this time.

REINVENTING GOVERNMENT III Al Gore will continue his push to reduce the federal workforce and make it easier for business to deal with government. Congressional Republicans will say it is not enough but will happily go along.

Still nursing the wounds from the campaign, Republicans mutter that Clinton will backslide. But as a lame duck, he'll have other preoccupations. "Clinton will be thinking about his place in history," says Will Marshall, president of the centrist Progressive Policy Institute. "He'll feel less need to placate his party's factions." Adds White House Political Director Douglas B. Sosnik: "We're going to see government from the center."

The Administration's first priority in January, says White House domestic policy chief Bruce N. Reed, "will be to balance the budget." With both sides in agreement on a zero-deficit goal by 2002, the clash will be over the details. The fiscal plan Clinton offered a year ago called for a 15% cut in domestic spending over the next five years—nearly 30% after inflation. That's unacceptable to most Democrats and even many Republicans. Thus, additional savings will have to come from entitlements, especially Medicare.

While candidate Clinton zapped Republicans for menacing the health-care program for seniors, newly reelected President Clinton knows he'll have to both squeeze budget savings from Medicare and ensure its long-term stability. If he's prepared to strike a quick budget deal, including \$150 billion or so in Medicare savings, the GOP congressional majority is likely to go along.

Republicans are also inclined to accept another Clinton initiative: creation of a bipartisan commission to find a

budget a top priority. How? By underscoring that second-term economic policy will remain in the hands of probusiness moderates. Although Commerce Secretary Mickey Kantor is likely to depart, Treasury Secretary Robert E. Rubin will stay on. Along with new Budget Director Franklin D. Raines, a former Fannie Mae executive, Rubin & Co. are supposed to keep Wall Street happy. The markets reacted to Wash-

ington's new power equation with euphoria, soaring to a new record on Nov. 6 (page 52). And the good vibes would keep rippling if Clinton persuades North Carolina investment banker Erskine B. Bowles, who has been reluctant to come to Washington, to be Chief of Staff, replacing Leon E. Panetta. Says a senior Clinton adviser: "The markets need to know there's going to be no backing off on fiscal restraint."

nise on pension portability—but that leaves plenty of issues to fight over during the next two years

TAXES A big tax cut is out, but Clinton will put forward a package of middle-class capital-gains tax cuts. Hill Republicans will counter with a broader capital-gains cut and may push for broad tax restructuring. The likely deal: Clinton will get his middle-class reduction and take deeper cuts in capital-gains levies.

▼ HEALTH CARE Clinton vows to expand health-care coverage for children and the unemployed. The Republican Congress will resist kid care but may expand limits on benefits for the unemployed.



▼ WELFARE REFORM Clinton will push hard for more training and child care, while restoring the social safety net for legal immigrants. Republicans will resist spending any more money on the program. Clinton will only get crumbs.



PENSION REFORM Clinton will want to let workers carry pensions from one job to another and prevent companies from raiding retirement funds—both priorities of labor. Though worried about increased regulation, Republicans will go along with watered-down pension portability.



▲ REGULATION A mixed bag here. Clinton will impose some tough new rules on tobacco, but continue efforts to ease the regulatory burden on health and safety issues. No big new antitrust initiatives are likely.

TRADE Clinton will attempt to expand NAFTA to Chile and bring China into the world trading system. He will run into fierce resistance from protectionists in both parties, but with the help of the GOP leadership, the President is likely to prevail.

THE WHITE HOUSE
WASHINGTON

December 4, 1996

*original delivered
to Press Sec
A.M. 12/5*

MEMORANDUM FOR MIKE MCCURRY

THROUGH: TODD STERN *TS*

FROM: JIM DORSKIND *JD*

SUBJECT: HANUKKAH, 1996

Attached is the President's message for HANUKKAH, 1996,
which you may want to release to the media. Hanukkah begins
at sundown, Thursday, December 5, 1996.

Thank You.

THE WHITE HOUSE
Office of the Press Secretary

For Immediate Release

HANUKKAH 1996

Warm greetings to everyone celebrating Hanukkah.

In this season of joy, we remember the story of Judah Maccabee and his steadfast followers who freed Jerusalem from its oppressors and rededicated the Temple to God. Although they had only a small supply of consecrated oil with which to rekindle the temple's Holy Light, the courage and faith of the Maccabees were rewarded as the oil burned miraculously for eight days and eight nights until a new supply could be prepared.

Today, more than two thousand years later, families around the world celebrate this Festival of Lights by coming together in prayer, giving thanks to God for His many blessings, exchanging gifts, and lighting the eight candles of the menorah, one candle for each night that the sacred oil burned.

Steeped in ritual and rich in meaning, Hanukkah imparts profound lessons to us: that faith in God can sustain us through any adversity; that peace ultimately comes to those who persevere; and that, just as the shammas passes its light to each candle in the menorah, so too must we share our hope and faith and joy with one another. In this way, we can ensure that the light kindled on that first Hanukkah so many centuries ago will continue to burn brightly for the generations to come.

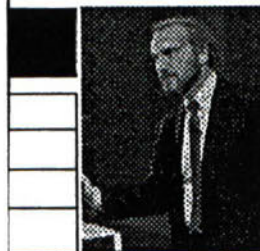
Hillary and I extend best wishes to all for a wonderful holiday celebration.

WILLIAM J. CLINTON

#

12.2.06 from OVAL Ofc.
Phil.
To Doriskind for reply?
✓ yes — no
copy to Gibbons / FYI?
— yes — no.

through
street See



DEC 2 PM 3:09

M

S.
|| For : Betty Currie
Subject : Material requested by the President

Here's my latest "installment" for the President on my continuing research into the state of software engineering in the U.S.

If there is a need to reach me you may do so at the numbers above or via pager at 800-SKY-PAGE Pin# 2291309.

Happy Holidays and thanks for your continuing help this year.

HOWARD RUBIN

5 WINTERBOTTOM LANE

POUND RIDGE NY 10576

914-764-4931 PHONE

914-764-0536 FAX

71031.377@COMPUSERVE.COM



Date : November 30, 1996

For : President Clinton
Vice President Gore

Subject : Update on U.S. software technology competitiveness

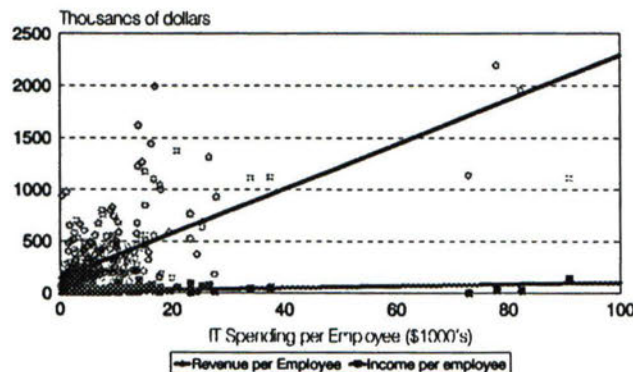
Before proceeding with my latest update on U.S. competitiveness in the area of software engineering, I'd like to congratulate you on the success of your campaign and your re-election. I am proud to have contributed to this effort and, as I said in the Gannet Newspaper interview about my involvement in the campaign which identified me as the "top supporter" in the Westchester County and Putnam County regions of New York State, (attached), ".... it was the right thing to do!"

In terms of the continuing stream of information I've been sending you on the issue of U.S. competitiveness in the area of software development, I now have more data supporting the need for immediate action on the formation of the National Software Competitiveness Council that I have proposed jointly with the DoD team and the backing of major academic and industry leaders.

First here are some general economic figures that may interest you:

- ⇒ The top 500 companies in the U.S. will spend close to \$100,000,000,000 on information technology (IT) in 1996. This is equivalent to approximately \$6,000 per employee on average.
- ⇒ The 1996 spending level on IT is approximately 44% higher on average than in 1995.
- ⇒ The percentage of IT spending devoted to software is now more than 50% of total dollars.
- ⇒ There seems to be a high correlation between IT investment and productivity as measured by revenue per employee (see chart below):

IT Spending & Performance

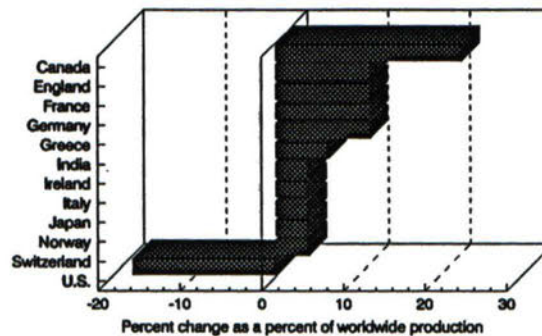


However, just at the time that the demand for software in the U.S. is increasing at a rate faster than ever before, our ability to provide a skilled labor force to develop, implement, and test this software is decreasing. The Year 2000 computer crisis will further compound this problem.

In the enclosed article produced for the DoD Software Program Manager's Network, Frank McGrath provides the details underlying this assertion. To complement Frank's work, I have further developed my concept of an "IT GNP" as a basis for assessing the United States' competitive position in software development over the next 5 years.

Change in Software Production Potential

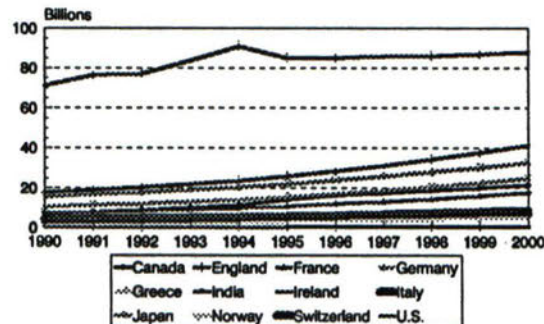
Projected for 1996 to 2000



My projections indicate that the U.S. will be producing 17% less of the world's software by the year 2000 constrained by a national shortage of labor and below worldwide average productivity improvement in the field. The general trend lines by country look as follows:

Worldwide Benchmark Project Results

Software Development Potential Projection (Dollar Value)



Again, feel free to share this information with the appropriate members of your staff. However, this time I urge you to see that some action is taken. As the nation has moved from the industrial age to the information age, new core competitive competencies have emerged. The ability to efficiently and effectively development and implement software systems is one key to maintaining our global position. Do not confuse our high degree of innovation in this field with our ability to sustain continued competitive levels of production and cost. The NSCC must become a reality.

If you need further information or require a joint briefing, please let me know.

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DOD Software Program Managers Network

Software Labor Force In The United States - A Major Problem For Global Competitiveness

by Frank McGrath (mcgrathf@aol.com)

Summary

High productivity throughout the United States workforce is essential to maintaining the huge per capita income disparity between the United States and the emerging economies. Worker job skills and productivity enhancing equipment are key factors in worker productivity. These connections were made by David Broder in an May 12, 1996, editorial in the Washington Post. According to Broder, "Over time, wages cannot grow faster than productivity gains allow. You boost productivity by investing in machines and equipment and in the education and training of their operators." Today, and increasingly into the future, computer software is at the core of almost all productivity enhancing equipment and the timely information that is the heart of competitiveness. Computer software is also at the heart the U.S. Department of Defense strategy to maintain military superiority into the twenty first century, but at an affordable cost.

Studies by market research firms concerned with the computer software industry consistently give bleak reports about the performance of U.S. software organizations, and the size and quality of the software development and maintenance labor force in the United States. This paper summarizes these conclusions and provides statistics which clearly identify major problems with the software labor force in the United States that must be fixed as a necessary condition for this country to be able to produce the software upon which so much depends. In fact, if these problems are not fixed, the current poor performance by much of the application software industry in the U.S. will continue to degrade at an increasing rate.

The two major problems with the US software labor force are a severe shortage in numbers that is getting worse at an alarming rate, and a large disparity between the skills of persons in this labor force and the skill needs of industry. This disparity is true both for the current workforce and for new college graduates entering the workforce, but for different reasons. The current workforce has in large majority not kept up with the rapidly changing software technology. The crux of the problem with the skills of new computer software graduates from colleges and universities in the U.S. is that universities graduate computer scientists, while industry and government need software engineers, not computer scientists. This difference will be discussed below.

Statistics are given below that document and quantify these assertions. These statistics are from the Bureau of Labor Statistics, the National Center for Educational Statistics, the National Science Foundation, and a number of market research firms that specialize in the computer industry.

The organization of the remainder of this paper is to first briefly describe some challenges now facing the United States competing in a world economy with lowered trade barriers. Next, the demand for computer software from both the commercial and government sectors of the US economy is discussed. This is followed by a presentation of statistics from U.S. Government organizations and market research firms that quantify the shortfall of software skilled persons in the United States. Next, results are given from surveys conducted by market research firms that show the poor performance of the U.S. software industry which develops large application software and information systems. Finally, data are given which show that the new computer-software-major college graduates entering this labor force do not have the skills needed by the application software industry.

A Major National Problem

The United States has been for a number of years in the new era of global economic competition with lowered trade barriers. The problem faced by the U.S. is how to make a high-wage country competitive against low-wage countries. There are many low wage countries with rapidly growing economies

According to the 1996 World Almanac and Book of Facts¹, seventeen emerging economies² with a total population of 3,384,000,000 have an average per capita income of \$2,623. Only 69 percent of this population is literate, but that amounts to 2,348,000,000 people. This compares with the United States which has a total population of 263,814,000 and a per capita GDP of \$24,700 which is almost ten times that of the average income in these 17 emerging economies. According to a 1993 study by the U.S. National Center For Educational Statistics, 40 to 44 million persons in the United States workforce function at a level of semiliteracy. This implies that these U.S. citizens have no skill advantage over the 2,348,000,000 literate people in the seventeen emerging economies. Even though there are differences in how these statistics are measured in different countries, the income gap between the United States and these emerging economies is very large in comparison with these differences.

How the United States can continue to maintain the standard of living which corresponds to its current per capita GDP should be an issue of great concern to all citizens of the United States, not just those citizens in the lower three-fifths of the medium family income. There is ample historical evidence that a

¹ Funk & Wagnalls Corporation, p737-837

² China, India, Indonesia, Brazil, Russia, Pakistan, Bangladesh, Mexico, Vietnam, Phillipines, Thailand, Ukraine, South Korea, Argentina, Taiwan, Chile

declining standard of living is socially destabilizing, particularly in societies with different ethnic, religious and racial groups. The standard of living in the United States as measured in median family income adjusted for inflation has been declining for the last two decades according to the Secretary of Labor. The median household income in the United States, adjusted for inflation, has declined from \$33,585 in 1989 to \$31,241 in 1991 while the percent of total income received by the highest fifth of the population has increased from 44 to 47 percent³.

This income decline is at the beginning of an era of low trade barriers and rapidly increasing capabilities for the emerging, low-wage economies to produce quality products that are highly competitive on the world market. These capabilities include software as well as hardware manufacturing. Capabilities in the emerging economies to develop productivity enhancing software are particularly challenging to the U.S. because of the relationship between software and workforce productivity in general. The dependencies between software and the competitiveness of a high-wage United States in global markets are straightforward.

1. Competitive means equal or better quality at an equal or lesser cost.
2. High quality and low cost depends on timely information and a skilled and productive workforce using machines.
3. Today, almost all timely information dissemination and machines which make a high-wage workforce competitive have software at their core.

The United States must have a significant advantage in timely information and productivity enhancing machines to be competitive with low-wage emerging economies.

India is one example of a third world emerging economy that has entered the information age. According to Forbes Magazine, "India is poised to become a world leader in computer software".⁴ According to the Economist⁵, "...there are parts of the Indian economy that are skipping right over the "second" industrial age, and straight into the information era. India's software industry, which barely existed ten years ago, notched up sales of more than \$1.2 billion last year and is growing at over 40% a year. Unlike other Indian industries, it is highly competitive internationally. Around half the industry's revenues come from exports." "India produces 20,000 computer-science graduates a year, but demand is already so high that the industry's wages are rising by 20% a year. There currently are about 130,000 highly skilled software developers in the Indian labor market and starting salaries are less

³ The World Almanac and Book of Facts, 1991 page 561, 1996 pages 383 and 394

⁴ Revenge of the Raj, Forbes, Dec 4, 1995

⁵ Software in India, The Economist, March 23RD, 1966

than \$4,500 a year or about one-tenth of what a comparably skilled U.S. programmer makes.”⁶ A better measure of the cost competitiveness of India’s software industry is the typical cost per function point. A function point is a measure of software size roughly equivalent to 105 lines of code in the COBOL programming language. The net project cost per function point in U.S. dollars is \$125.00 in India, \$180 in Thailand, \$200 in Mexico, \$250 in Argentina, \$1000 in the United States, \$1,400 in the United Kingdom and \$1,600 in Japan⁷. Software developers in India are not only low cost, they also have the leading-edge technology skills needed to develop software on computer networks. Ironically, this is due in large part to the fact that India could not afford mainframe computers in the 1970s and 1980s, and had to make do by networking low cost workstations which has turned out to be the technology of the 1990s and the 21st century.

Market Demand for Software In the United States

The U.S. Department of Commerce reports that 1990 was the first year that capital spending on the information economy, that is on computers and telecommunications equipment, exceeded capital spending on all other parts of the industrial infrastructure of the United States⁸. The Information Technology Industry Council, Washington D.C., reports the following. The U.S. information technology industry had \$645.9 billion revenues in 1994, a 7.3 percent increase over 1993. This industry consists of: computers, software, services, telecommunications, and business equipment. The software and services facet of information technology has averaged a 15.4% annual increase since 1984. This trend in software and services is expected to continue, albeit at a slightly slower rate of 11.6 percent, through the year 2005. The Information Technology Industry Council anticipates IT industry revenue to reach \$1.298 trillion in 2005, increasing at an average rate of 6.6 percent per year. The ITIC considers this a conservative estimate based on how the industry has grown in the past. It should be noted that in addition to software as a product in itself, software is a major component of each of the remaining areas of the information technology industry. It is probably the case that by far the largest and most complex computer networks in existence today are at the heart of the telecommunications industry.

Development of application software is a substantial part of this US information technology market. A 1995 study by the Standish Group estimated that a total of \$250 billion per year is currently being spent on application software development involving 175,000 contracts⁹. The average yearly cost was about \$2.3 million for a large company, \$1.3 million for a medium-sized firm and \$430,000 for a small business.

⁶ Look Out, Here Comes India, Computerworld, February 26, 1996

⁷ Becoming best in class: Taking the path to software excellence, Software Productivity Research (Capres Jones), 1995.

⁸ Scientific American, September 1995, p202.

⁹ The politics of failure, Computer Weekly, July 6, 1995

Although the United States Federal Government no longer dominates the expenditures on software systems in the United States, it remains a major player. Federal Government agencies have spent more than \$200 billion on information technology over the past decade¹⁰.

Data collected by the Electronics Industries Association shows an enormous annual increase in software expenditures by the Department of Defense.¹¹ Figure 1 shows the enormous increase in the software part of DOD software systems while the increase of the hardware part is about the rate of inflation. This enormous increase in software expenditure represents an enormous increase in the demand for software professionals since most of the cost of

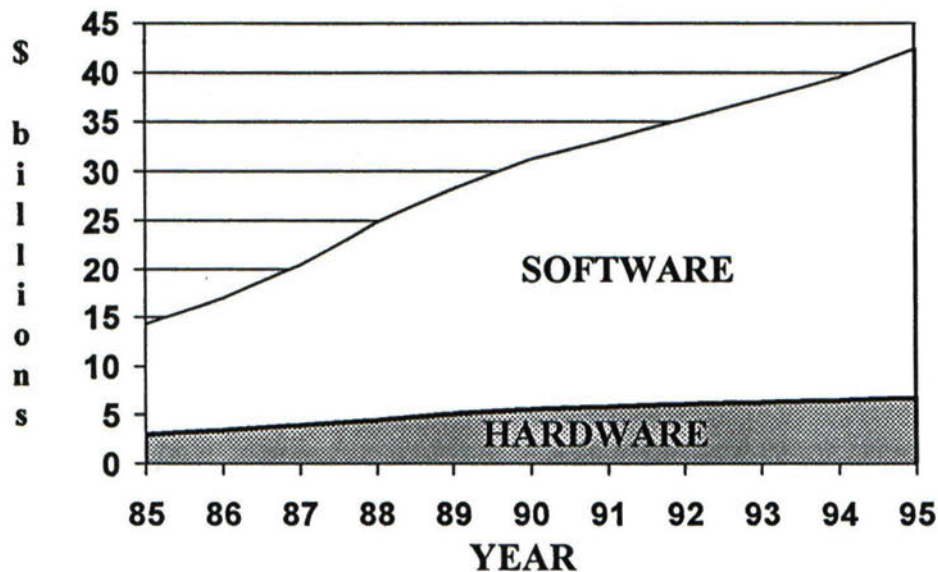


Figure 1: DOD Computer Systems Costs from 1985 to 1995.

software development and maintenance is the cost of labor. The number of computer scientists employed by the DOD, let alone by DoD contractors, is very large. According to statistics from the National Science Foundation¹², 26,932 computer scientists were employed by the DOD in 1991. The total employment of computer scientist by all federal agencies in 1991 was 53,097. More computer scientists were employees of US Federal agencies in 1991 than any other field of science and engineering. The field with the second largest number of employees was electrical/electronic engineering with 35,795.

Given such an enormous increase in software expenditures and corresponding demand for a large increase in the number of software professionals in the labor force, one might think that a solution could be to kill two birds with one

¹⁰ Reinventing Government, LAN Magazine, October 1995, p155.

¹¹ Study by the Electronics Industries Association reported in "Guidelines for Successful Acquisition and Management of Software Intensive Systems", V 1 Ch 1, USAF/STSC, 9/94

¹² <http://www.nsf.gov/sbe/srs/pubdata.htm>

stone and simply reduce the amount of software that is developed and maintained. This is frequently the worst possible solution because of the connection between software and productivity discussed above. A cost/benefit analysis in an organization usually shows that increased use of software, in spite of increased software cost, is the most cost effective way to decrease the total costs of an organization and continue to meet organizational objectives. The United States Air Force is one organization that has recently conducted such a cost/benefit analysis, and the report on this study strongly states this conclusion¹³. The summary volume of this report states, "Cost has become a major factor in the development of all systems. ... It is essential that future systems be based on capabilities and cost, perhaps on an equal footing, rather than on solutions to specific problems." One would have to read this report to really appreciate the extent to which computers and software are central to the results of this Air Force cost/benefit analysis. The following few excerpts from this report can only give a sense of this extent. "We recognize the importance of Information Warfare in the future and that much of what is said in this summary volume is Information Warfare said another way." The following is a paraphrase of the top level list of the technologies of Information Warfare: different types of sensors; sensor data links; automated data fusion and target recognition; and communications and networks. "We will emphasize the interaction of technologies and capabilities, and we will show how new information sciences connect and enhance capabilities. ... The Air Force must be prepared to defend against information attack. ... Because of budget limitations, it is unlikely that we can justify large increases in numbers of aircraft, weapons or people. Therefore, we will concentrate on technologies which will increase apparent force size through increased tempo of operations. ... We define a set of capabilities which, we believe, are synonymous with an effective Air Force. ... We reduced the list of essential capabilities to a basic few. ... The primary capabilities are:

- Global awareness
- Dynamic Planning and Execution Control
- Global Mobility in War and Peace
- Projection of Lethal and Sublethal Power
- Space Operations
- People"

Many readers of this report will be surprised at the extent to which software is given a crucial role in each of these areas. One example that was a surprise to this writer was in the area of "projection of lethal and sublethal power." The reader can imagine the size and complexity of the software needed for a UCAV. "The aircraft now planned for the 21st century, such as the F-22, are superior to existing aircraft but do not produce a "discontinuous"

¹³ New World Vistas, Air and Space Power for The 21st Century, USAF Scientific Advisory Board, 12/15/95

(revolutionary) change in the nature of aerospace war¹⁴. ... The future force will be a mix of inhabited and uninhabited combat aircraft (UCAV). The UCAV is enabled by information technologies. ... The UCAV are high performance aircraft that are more effective for particular missions than are their inhabited counterparts." The report calls for a new type of munitions that even the most imaginative science fiction writers of the past overlooked. "The use of information munitions in offensive operations will become an essential component of warfare. The use of information munitions will, however, make unusual demands on software and equipment."

Severe software labor shortage in the United States.

This section gives statistics that show that the current numerical shortfall of software-development skilled persons in the U.S. is increasing at alarming rate.

The U.S. Department of Labor Bureau of Labor Statistics has defined two labor categories for persons who develop and maintain software systems: computer engineers, scientists, and systems analysts and; computer programmers¹⁵.

Computer scientists, engineers and systems analysts are the higher skilled of the two categories. These are the people who work with users to define the requirements for a new software system and then perform the design of the system to meet these requirements. As software has become increasingly large and complex, design has become increasingly difficult and specialized, particularly when the software is to execute on a network of computers. This labor category also includes those who develop new software technology and most of those who teach computer courses in colleges and universities. It also includes database administrators.

Computer programmers write and maintain the computer programming language instructions that implement the design developed by computer engineers and systems analysts.

According to the Bureau of Labor Statistics (BLS), in 1994 computer scientists, engineers and systems analysts held about 828,000 jobs in the U.S., and computer programmers held about 537,000 jobs. The BLS projects 1,403,000 jobs for computer scientists, engineers and system analysts in 2005 and 723,000 jobs for computer programmers in 2005¹⁶. This is an increase in number of jobs over 11 years of 69% for computer scientists, engineers and system analysts and 35% for computer programmers. These projections are new jobs. Tens of thousands of additional jobs will have to be filled each year

¹⁴ The F-22 is projected to have about 10 million instructions (Guidelines For Successful Acquisition Management, AF/STSC, 9/94, v1, p1-2)

¹⁵ Occupational Outlook Handbook 1996-1997, U.S. Department of Labor, Bureau of Labor Statistics, Bulletin 2470.

¹⁶ Occupational Projections and Training Data 1994 Edition, U.S. Department of Labor Bureau of Labor Statistics, Bulletin 2451.

to replace persons who retire or leave the occupation for other reasons. The BLS also predicts in the 1994 edition of Bulletin 2451 that the annual average number of job openings in the U.S. due to growth and total replacement needs between 1994 and 2005 will be 125,000 for computer scientists, engineers and systems analysts and 73,000 for computer programmers. This is a total annual demand for 198,000 new persons entering the U.S. labor force as software professionals.

The issue thus becomes, where will these increased numbers of software professionals needed by government and industry in the US come from? A college education with a computer software major is, for the great majority of these jobs, a minimum requirement for the job. According to the BLS, "Employers almost always seek college graduates for computer professional positions." This means that the current serious shortage in the numbers of qualified computer professionals in the U.S. labor force is going to get much worse in the next few years because the number of computer software major college graduates from U.S. colleges and universities has been declining since 1985 to the point where only 35,160 degrees were awarded in 1992-1993¹⁷. These 35,160 degrees consisted of 24,200 bachelor, 10,163 master and 805 doctor level degrees. Details of this decline in computer related degrees in the U.S. are shown in figures 3 and 4. Data collected by the National Science Foundation show that in 1991 about 5,164 of the computer software major graduates from US colleges were foreign citizens, but that roughly half of these would remain in the United States¹⁸. This reduces the number of new computer software graduates entering the US labor force in 1992-1993 to about 32,600, and creates an annual inability to staff 165,400 new computer software related job openings in the United States. Figure 2 shows this graphically. It shows the increasing cumulative shortage of software professionals in the U.S., beyond the current shortfall, if the number of graduates with computer majors stops declining and remains steady at the 1992-1993 level through the year 2005. Clearly, the United States must prevent this from happening.

The data shown in Figures 3 and 4 are from the 1995 Digest of Educational Statistics published by the National Center For Educational Statistics.¹⁹ The number of degrees awarded by U.S. colleges and universities in computer and information sciences grew rapidly during the 1970s and early 1980s, but dropped 30 percent between 1985-86 and 1992-93, back to 1982-83 levels (Figure 3). Computer and information science degrees as a percent of all degrees awarded in the United States in all fields dropped 42 percent in this same time period (Figure 4).

¹⁷ 1995 Digest of Educational Statistics, National Center for Educational Statistics, Internet: gopher://gopher.ed.gov:10000/11/publications/majorpub/digest/

¹⁸ <http://www.nsf.gov/sbe/srs/pubdata.htm>

¹⁹ Internet gopher://gopher.ed.gov:10000/11/publications/majorpub/digest/

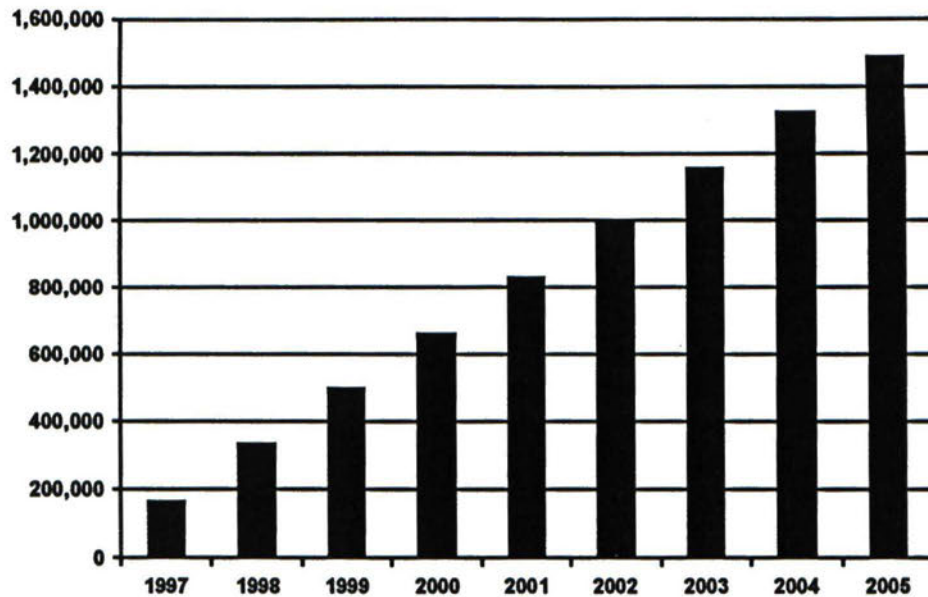


Figure 2 Cumulative Software Job Openings Not Filled By U.S. College Graduates

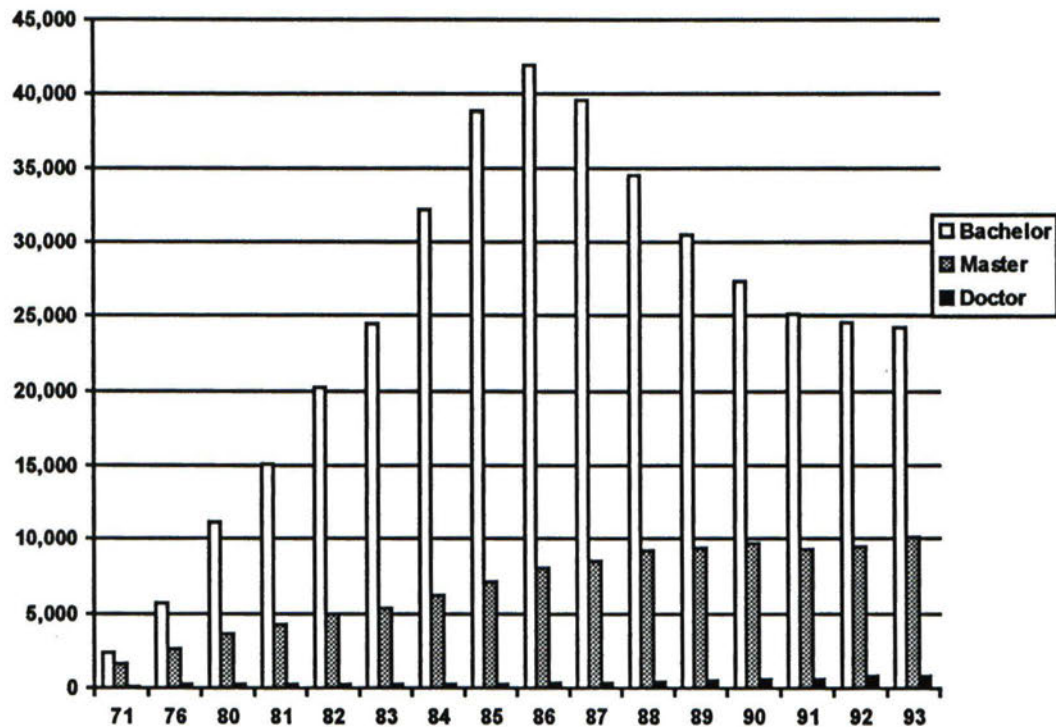


Figure 3: Numbers of Computer and Information Science Degrees Awarded In The United States in Years Between 1970-1971 and 1992-1993

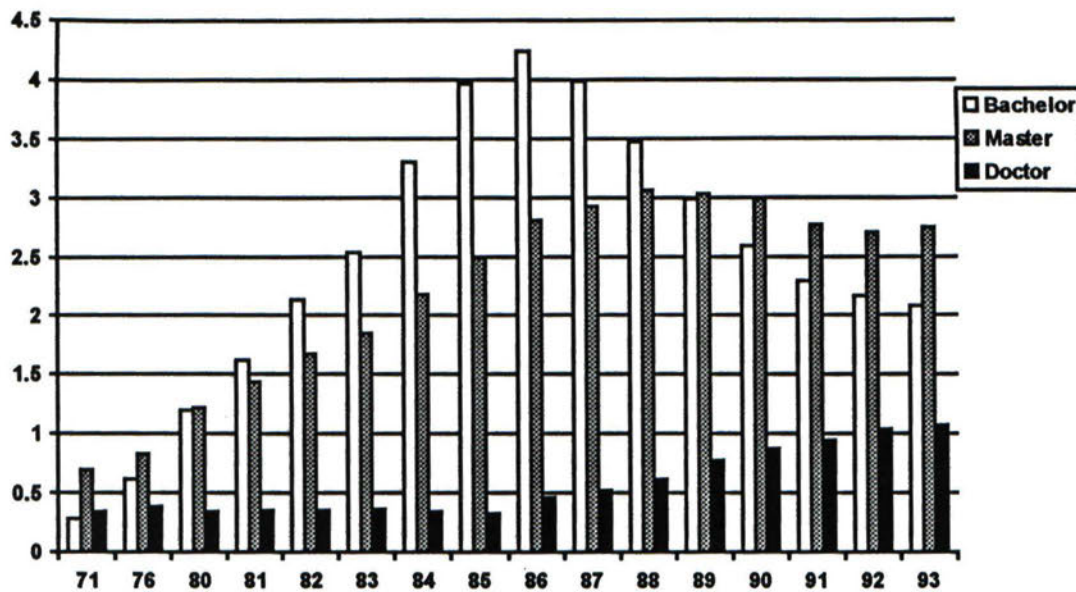


Figure 4: Computer and Information Science Degrees As a Percent Of All Degrees In All Fields In The United States, 1970-1971 to 1992-1993

Another interesting statistic is that the United States is to some extent the beneficiary of a computer science brain drain from foreign countries. Statistics from the National Science Foundation²⁰ show that in April 1993 13.6 percent of bachelor degree, 29.0 percent of master degree, and 39.4 percent of doctor degree computer science people in the U.S. workforce were foreign born. Some of this is the result of the roughly 2,600 foreign citizen computer software graduates from US colleges and universities that remain in the United States after graduation as discussed above. Another factor is the H-1B visa program that gives 6-year non-immigrant visas to persons in high-skill occupations in fields for which a major shortage has been certified to exist in the US workforce²¹. It was certified in 1994 that 64,426 openings in computer related fields were eligible for H-1B visas. The number of openings for computer related fields was larger than any other field except physical therapist. This, in itself, is evidence that there is currently a serious shortage of computer software professionals in the US labor market. The H-1B program is under attack and will probably be greatly reduced because some say that it takes jobs away from US citizens and gives them to low wage temporary immigrants. There also is anecdotal evidence that foreign-citizen computer software workers in the United States are beginning to return home as computer software companies start to grow in their homeland. This is particularly true for India and South Korea.

²⁰ <http://www.nsf.gov/sbc/srs/stats.htm>

²¹ Branigin, William, Washington Post, October 21, 1995

In addition to the H-1B visa program, there are many surveys by market research firms that show there is now a serious shortage in the U.S. labor market of computer software professionals with the needed skills.

One way to sample current demand for computer professionals is the classified adds for job openings. The following shows the number of job openings the week of 21 April, 1966, in a variety of fields, including computer. These job openings were in classified adds in the newspapers indicated in the table²².

Field	Washington Post	NY Times	Boston Globe	Chicago Tribune	LA Times	San Jose Merc	Total
Accounting	230	354	71	79	60	177	971
Aerospace	0	0	0	0	0	0	0
Aviation	0	9	2	2	3	3	20
Banking	87	91	16	36	7	60	297
Bookkeeping	21	64	14	7	10	47	163
Civil Service	15	0	0	0	0	0	15
College	0	213	20	0	0	0	233
Computer	605	708	295	204	139	348	2299
Electronic	20	12	5	13	6	52	108
Engineering	89	80	156	73	34	239	671
Environment	14	7	15	0	0	7	43
Executive	0	23	32	0	2	0	57
Financial	69	300	80	29	30	43	551
Health/Medic	265	283	150	53	29	168	848
Hospital	0	0	6	0	3	0	9
Law Enforcement	6	0	1	0	0	2	9
Legal	106	170	30	14	2	39	361
Management	186	50	115	0	8	57	416
Marketing	79	101	55	30	6	58	324
Nursing	99	65	52	9	21	95	341
Personnel	31	57	19	0	1	0	108
Research	34	15	22	2	1	2	76
Sales	373	436	209	175	88	509	1790
Science	7	12	24	6	5	0	54
Technical	28	16	60	10	11	100	225

The number of classified adds for computer jobs for the week of 21 April was not a spike in an otherwise much lower number of computer job openings. The following table shows the total number of classified adds for computer jobs during the week ending June 2, 1996. It also shows the numbers of these computer job adds that included at least one of the listed words. These

²² <http://www.careerpath.com>

classified adds for computer jobs are the sums of the adds from the following newspapers: Boston Globe; Chicago Tribune; Hartford Courant; Los Angeles Times; New York Times; Philadelphia Inquirer; San Jose Mercury News; Washington Post.

Search words on classified adds for computer jobs	number of adds	% of computer adds
Total computer adds week ending 2 June,96	2825	100
computer scientist, computer scientists	1654	58.5
database, data base, SQL, relational, Sybase, Oracle, Informix, Ingres, DB2	1202	42.5
network, networks, client/server, client server, LAN, WAN, LAN/WAN	1131	40
Windows, Windows/NT, NT	959	33.9
software engineer, software engineers	871	30.8
programmer, programmer/analyst	843	29.8
C++	836	29.6
UNIX	783	27.7
QA, QC, QA/QC, quality assurance, CM, configuration management	421	14.9
design, designer, architect, architects	406	14.4
Pascal, COBOL, FORTRAN	347	12.3
Internet, JAVA	317	11.2
COBOL	310	11
SAP	249	8.8
manager	228	8.1
object oriented, OO, OOA, OOD, OOA/OOD, OOP, OOD/OOP	213	7.5
test, tester, testers	158	5.6
MVS, VM	107	3.8
security	92	3.3
VMS	69	2.4
FORTRAN	37	1.3
Ada	24	0.85
artificial intelligence, AI	6	0.2

Skills In The Software Labor Force

The ability of the software workforce in the US to meet the needs of industry and government is actually much worse than the statistics of the last section indicate. This is because of a great disparity between the skills needed by industry and government and the skills of a great majority of the workforce. This is true both for those persons currently employed in the US as software professionals and the new computer software graduates entering the workforce from colleges and universities in the United States. The skill problem with new graduates will be discussed in the last section of this paper. The skill

problems with the current software workforce are discussed in this section after we describe the skills that are needed.

The current demand for persons with software development skills is driven by the transition of software systems in the United States from operation on a mainframe computer in a paper-in-paper-out computer center to operate on client/server networks of computers that include desktop computers throughout the organization. It is also driven by the increasingly large size of software which is developed to meet user's needs. According to the findings of Deloitte & Touche's annual survey of 400 CIOs²³, use of client/server technologies rose from 27 percent of all applications in 1993 to 43 percent in 1994, a total increase of 60 percent in one year. A survey by the Business Research Group that interviewed 150 Information Systems managers²⁴, primarily from large companies, found that, by 1997, 62 percent of the survey respondents' information processing will take place in a client/server environment. According to a survey by the Gartner Group²⁵, eight of ten new multiuser commercial applications will run on client/server platforms by 1998. A report from a 1995 survey by Forrester Research²⁶ states that 84 percent of the Fortune 1000 companies surveyed expect to implement core client/server applications within three years.

The skills required to reengineer legacy software or develop new software to operate on a client/server network are very different from the skills of the typical person who has been working for many years on information systems software executing on a mainframe computer. The mainframe software person's skills are generally writing code in FORTRAN, assembly or COBOL and IBM JCL to execute with the VM or MVS operating system or the DEC VMS operating system. There have been studies that show most of these people have very little skill with today's object-oriented design methodologies. In sharp contrast, the skills required for client/server include: the C, C++ and SQL programming languages; the UNIX, Windows, NT and OS/2 operating systems with network operating system and middleware extensions and communications protocol stacks; use of Windows and MOTIF graphical user interface development libraries and tools; design methods (including object-oriented) suitable for developing and distributing large application software components and relational databases throughout the client/server network; and network and database administration.

The skills required to develop large software systems are very different than those to develop a small system. The cost drivers in software development are dramatically different between large and small software (Figures 6,7,8,9). The skill differences are those needed to deal with these different sets of cost drivers. Software is small when the size of the team needed to develop the

²³ Client/server surges on, PC Week, October 9, 1995

²⁴ Study makes case for client/server, Midrange Systems, September 29, 1995

²⁵ The training payoff, Information Week, July 10, 1995

²⁶ Client/server wins, data warehousing loses, DBMS, May 1995

software is such that any person on the team can communicate with any other person on the team whenever he/she wishes. This is a team size of up to roughly ten people and software roughly less than several hundred thousand lines of code (several thousand function points). When software is small, most of the development cost goes to writing code and test. When software is large, most of the development goes to those functions that manage complexity. These functions include: software, database, and network architecture design; cost and schedule planning and control; configuration management of changes and interfaces; verification; requirements definition; and the usual consequences of not succeeding in complexity management such as rework. Writing code usually consumes only about 12 to 15 percent of the development costs on large software development projects, while rework typically consumes 35 to 50 percent of development costs (Figure 6).

We begin with a qualitative statement, and then back this statement up with statistics. Julia Allen, deputy director for the Software Engineering Institute (SEI), made this statement during a talk at the Object World Executive Forum²⁷. "In the software industry, the 'state of the practice' lags 15 to 20 years behind the 'state of the art'". This means that the much smaller software mainframe COBOL practices of 1975-1980 are still being attempted on today's large-scale client/server applications and databases.

A study was reported at the August 1991 CASE World Conference²⁸ which analyzed the source code of representative application software that was operational in the 1989-1991 frame. This study showed that this code evidenced almost no application of the structured design and coding methodologies from the late 1960s to the late 1980s. Although the study was not directly analyzing the skills of the US software labor force, there is undoubtedly a very close correlation between the code that is produced and the skills of the people who produced the code. The study collected operational source code that was said to be representative of both commercial and DOD software. The code was examined to determine the percent of this software in which structured programming, structured design, structured analysis, and object-oriented development were implemented. Structured programming was invented in 1966, structured design in 1975, structured analysis in 1978 and object-oriented development in 1983. Results of this study are shown in figure 5.

²⁷ Institute Warns Of Engineer Shortages, Newsbytes: Mar 27, 1995

²⁸ Jensen, Randall W., Emerging real-time CASE technology, CASE World Conference Proceedings, August 1991

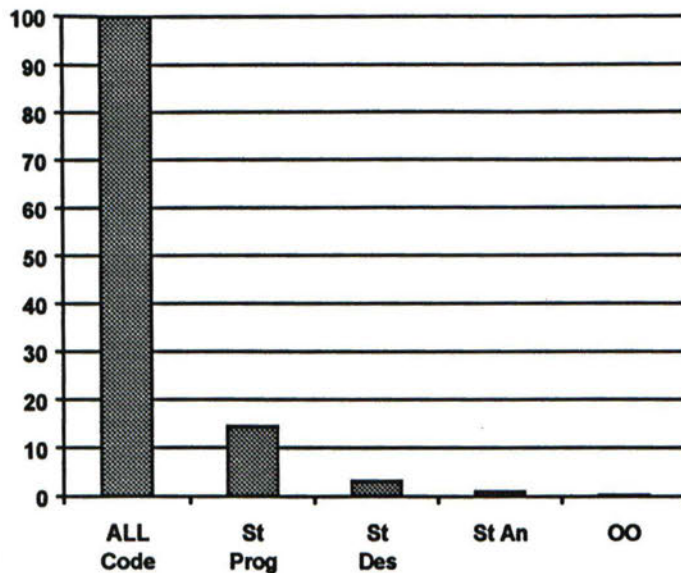


Figure 5 - 1966 - 1983 Development Methods In 1990 Operational Software

Given that the change in skill requirements to develop application software between 1986 and 1996 is enormous (because of the introduction of networks) compared with the change in skill requirements between 1966 and 1986, one begins to understand the skill problems with a large percent of today's software development workforce.

The statistics on transition to client/server given in this section combined with the Bureau of Labor Statistics projections, given in an earlier section, for new software skilled jobs until the year 2005 are consistent with a large shift in demand for software skills. This shift is from people who write code in a programming language to those who design client/server networks and the applications and databases that are distributed on these networks. The BLS estimate was for a 69 percent increase between 1994 and 2005 in the number of new jobs for computer scientists, engineers, and systems analysts and only a 35 percent increase in the number of jobs for computer programmers.

We first present results of market surveys that show the great shortage of client/server skills in the current software labor force. Then we discuss the shortage of the skills to develop large software.

A study by Forrester Research, Inc. reported in April, 1995²⁹ found that seventy percent of the companies surveyed by Forrester said their client/server development plans were being hindered by the lack of skills, and another 16 percent said they anticipated the problem in the foreseeable future. This study also reported that the average central IS (Information Systems) department of a Fortune 1000 company is home to about 175 programmers, and of those,

²⁹ Companies ponder inventive incentives, PC Week, April 17, 1995, p20

about 12 percent know C language and only 3 percent have a command of object-oriented programming. A 1993 study of large companies by Forrester found that 86 percent of software developers were conversant in COBOL. In another report titled *Desperately Seeking Skills*³⁰, Forrester asserts that immature technology is no longer the major stumbling block in the move to client/server. The problem is inappropriate skills.

Analysts tracking the client-server industry estimate that only 30% to 50% of the applications developers in the U.S. possess requisite client-server skills. Among that group only 5% can be considered expert³¹.

A 1995 study by the Controllers Council of the Institute of Management Accounts³² surveyed controllers at 420 companies to determine their views about implemented computer systems. According to survey respondents, lack of sufficient staff and time was the biggest factor affecting their Information Systems department's performance. The Business Research Group from Newton Massachusetts interviewed 150 Information Systems managers primarily from large companies³³. Eighty two percent of the IS managers surveyed said they need to rely more on outside consultants and integrators in implementing client/server networks because few of the new skills needed for client/server development and operation are readily available in companies newly shifting to client/server.

Figures 6,7,8 and 9 graph metrics collected by Capers Jones and his company, Software Productivity Research. These graphs show the dramatic changes in the nature of the software development problem as the size of the software increases from what is taught in the US colleges and universities (2 to 500 function points) through the software size in the 1970s (2000 function points) to much of today's software (5000 to 100000 function points). A function point is roughly equivalent to 105 lines of COBOL source code.

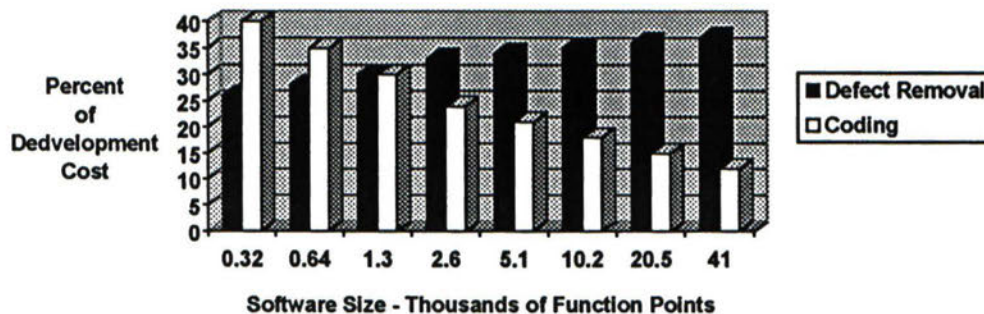


Figure 6: Cost Goes From Coding To Defect Removal As Software Grows

³⁰ Technical training and retraining, InfoWorld, Nov 14, 1994

³¹ The training payoff, InformationWeek: Jul 10, 1995

³² Is your IS shop paleolithic or prime time?, Midrange Systems, September 29, 1995

³³ Study makes case for client/server, Midrange Systems, September 29, 1995

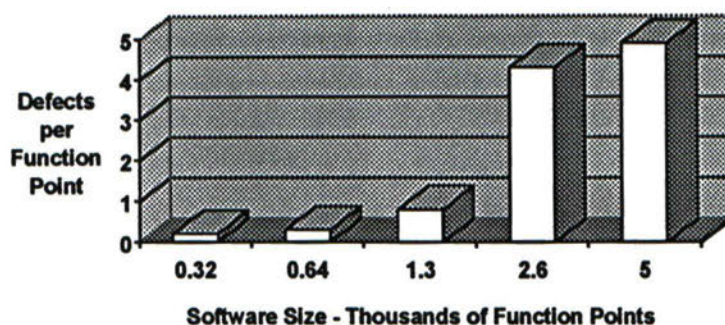


Figure 7: Defects Per Function Point Delivered To Operation

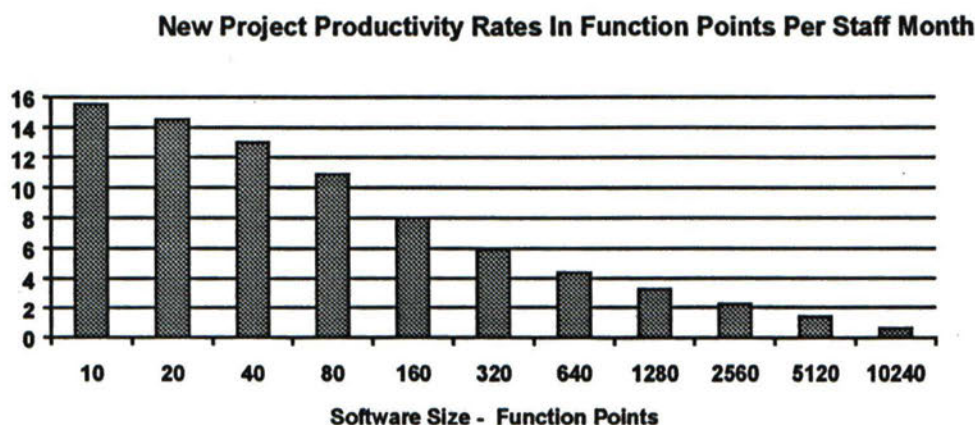


Figure 8: Productivity Plummets As Software Size Increases

Figures 6-9 clearly show that something quite different in the nature of software development happens as the size of the software increase. That difference is complexity which grows very rapidly with software size. The three pillars on which dealing with this complexity is based (with today's understanding of the problem) are management, design, and process. These are the pillars because the key to managing complexity is to partition a very complex problem into many non-complex problems in a way that someone (the systems engineer and the manager) can understand how all the pieces fit together.

Are the data shown in figures 6-9 relevant to much of today's software? The answer is yes. The size of both commercial and government software has been steadily increasing with the enormous and continuous increases in the processing, storage and bandwidth power of computers. The change of Federal Government software size with time is shown on page 2 of volume 1 of the Air Force's Guidelines for Successful Acquisition Management³⁴

³⁴ Guidelines for Successful Acquisition and Management of Software Intensive Systems, Air Force/STSC, September, 1994.

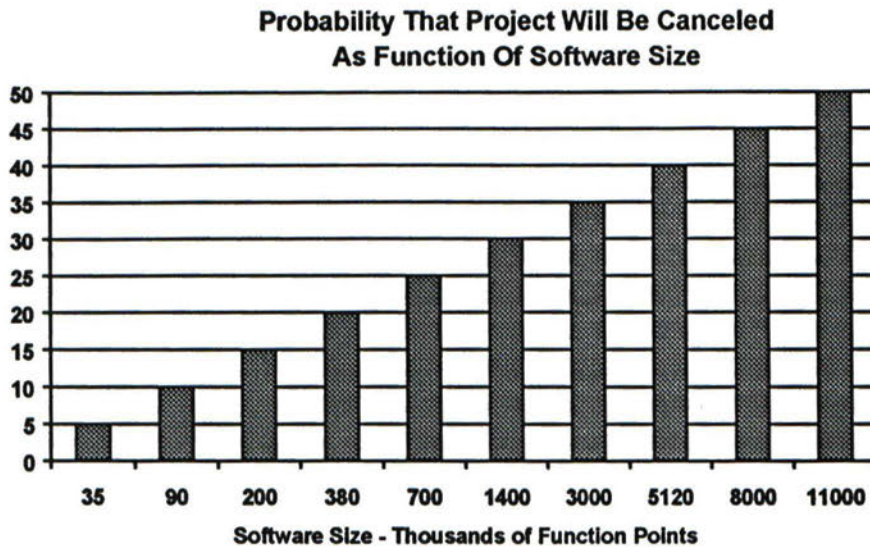


Figure 9: Chance of New Development Cancellation With No Product

The need for competent project management also grows very rapidly with software size. Until the DoD Software Program Managers Network came into being in 1994, no one attempted to attack the number one skill problem, management, in spite of the fact that management failure has been recognized as the greatest contributor to software project failure for many years. The primary conclusion of a blue ribbon panel tasked by the US Department of Defense to study DOD's software problems in 1987³⁵ was the following. "The big problems are not technical. In spite of the substantial technical development needed in requirements-setting, metrics and measures, tools, etc., the Task Force is convinced today's major problems with military software development are not technical problems, but management problems." This conclusion about the key role of management continues in the DOD in 1994. An Air Force acquisition guidelines book discussing the DOD software cost growth shown above in figure 1 makes the following statement³⁶. "While some of the problems causing these extraordinary software cost increases are technical, most have been managerial." Persons who have the skill to manage a large-scale software development project are very scarce in today's labor market.

A survey taken by Software Productivity Research³⁷ on the performance levels of software managers in the US concludes that "U.S. technical skills are better than U.S. management skills." Using the SPR rating system, this survey rated managers as follows.

³⁵ Report of the Defense Science Board Task Force On Military Software, Office of The Undersecretary of Defense For Acquisition, September, 1987

³⁶ Guidelines for Successful Acquisition and Management of Software Intensive Systems, AFSTSC, 9/94

³⁷ Becoming Best In Class, Taking The Path To Software Excellence, 1995 briefing

Sizing	Fair
Estimating	Poor
Planning	Fair
Tracking	Poor
Measuring	Poor
Overall	Poor

Performance of The Software Industry In The United States.

Market research firms that specialize in the computer market have been consistently reporting study results that show the current U.S. software development and maintenance workforce is experiencing major problems.

The Standish Group reported the following³⁸.

- In 1995, only 16% of software projects are expected to finish on time and on budget
- Projects completed by the largest American organizations have only 42% of the originally proposed features and functions
- An estimated 53% of projects will cost nearly 190% of their original estimates
- In larger companies, only 9% of the projects will be completed on time and on budget
- Before completion, 31% of software projects are canceled

³⁸ "Chaos", Open Computing, March 1995

- In 1995, American companies and government agencies will spend an estimated \$81 billion for canceled software projects

These “bottom-line” metrics are linked to poor performance by the software labor force by a number of more technical metrics. One example is that for large software, which is the norm today, it is typical for 45 percent or more of the total software development cost to be expended on rework. There are many examples when rework has been measured as a much higher percent of development than this. Another example is that software maintenance typically is 60 percent to 75 percent of the total life cycle cost with error correction and poor understandability principal contributors to this cost. Maintenance consists of correcting defects and modifying or adding functionality to the software after it is first released into the field.

These industry-wide statistics are brought down to earth by mentioning a few of the very large software failures in government and industry in the last few years. Most have heard of the problems with the baggage handling software at the Denver airport and the software modernization for the FAA. An information management system for the California welfare system which was bid at \$450 million by the development contractor was recently estimated to overrun to more than \$1 billion. (get other examples)

Colleges and Universities Teach Very Little Of What Industry Needs

One can identify the mismatch between what is taught university graduates and what the market needs by reviewing the computer science course offerings at colleges and universities in the U.S. This review compares the course descriptions from the latest catalog of computer science courses at a university with the current needs of industry for computer scientists, engineers and systems analysts. The review has some margin of error since it is based only on the course descriptions in the catalog and the writer's subjective opinion.

The following is preliminary. It is the writer's count of the relevance of course offering semester hours from the 1995-1996 Penn State Baccalaureate Program to the current industry needs for software skills to design large application software and data bases to execute on client/server networks..

The following course categories do not give students these skills. This list shows the number of semester hours of course offering in each category.

- Learning to code in some programming language (30 semester hours)
- Mathematical and computer science algorithms (36 semester hours)
- Computers at the hardware or hardware interface level (38 semester hours)

- system and system utility software (12 semester hours)
- introductory overview of computers and software (3 hours)
- theoretical computer science not closely related to application software development (e.g. artificial intelligence) (6 semester hours)

Twelve semester hours of course offerings could be claimed as application software development, but the catalog descriptions seem to describe single-person tasks for small applications .

There was only one course that addressed developing large application software, but this course seems to be only an overview course. This is a 3 semester hour course in large system development technology trends.

(will add similar analysis for the computer course offerings for the other GIUSA universities - Maryland, Michigan State, Ohio State, U of Colorado, John Hopkins, Berkeley, Cornell, U Illinois at Chicago, Iowa, Rochester Institute of Technology, George Mason, Purdue, Auburn, MIT, Florida Institute of Technonogy.)

THE WHITE HOUSE
WASHINGTON, D.C. 20500

DATE: 12.5

TO:  Ex 12, ne

FROM: Staff Secretary

pyl- I've
signed Bob Rush.



cc: Vicki Radd

JOSEPH R. BIDEN, Jr.
DELAWARE

United States Senate

WASHINGTON, DC 20510-0802

copies sent to
Leon
Eskline
Nash

Joseph R. Biden, Jr.

December 2, 1996

The President
The White House
Washington, D.C. 20500

'96 DEC 4 PM 1:48

Dear Mr. President:

I write to urge your nomination of Thomas P. Foley of Pennsylvania as Secretary of Labor to fill the vacancy that will be created by Secretary Reich's departure.

I understand there are many considerations that must be weighed in putting together your Cabinet for your next term of office. I believe Tom Foley brings with him a special combination of experience and qualifications that would serve you well.

I have known Tom since the early 1980's when he joined my staff shortly after finishing Yale Law School. His intelligence, creative energy, and political savvy were always evident. Since that time, Tom has served in several labor-related positions, including as Secretary of Labor and Industry for the Commonwealth of Pennsylvania, and currently as the regional Secretary's Representative for the U.S. Department of Labor.

Tom also has broad political experience, including as a candidate himself for the positions of Pennsylvania's Lieutenant Governor and, this year, Auditor General.

Tom brings a balanced, insightful approach to his efforts. He has earned the respect and trust of both the business community and organized labor. I am confident he would bring a loyal and discerning voice to your Cabinet.

With best wishes,

Sincerely,

Joe Biden

Joseph R. Biden, Jr.
United States Senator