T NELSON
SCRAPBOOK

KWINK
of Swarthmore College
Presents the 1957 Hamburg Show

"ANYTHING & EVERYTHING"

A KOLLEKTION OF KUTE KOLLEGIATE KAPERS & PUERILE PRANX

Another thinly disguised WJR success story

By Ted Nelson & Dick Caplan

THE PROGRAM

ACT ONE

1. Prologue
   (The stage of Clothier Hall, Swarthmore College)
   The Hamburg Show Song
2. Prologue to the Second Prologue
   (As above, but better.)
   The Rockin' Hamburg
3. Second Prologue
   (Graduation at Wrathsome College. The rest of the show, save intermissions and fragments, takes place at Wrathsome College, and no further mention will be allotted this fact.)
   The Alma Mortar (Proceasional)
4. Let's Take a Trip
   (The Seedier Local of the Murdock and East Priam Railroad.)
5. Scene around Campus
   (The Campus.)
   Gum Brothers
   Ballet: *"College"*
   Friz the Frisby
6. An Un-Irving Experience
   (The Campus, night.)
   The Burden of Sensitivity
7. Turtles
   (The Men'a Infirmary.)
   Mononucleosis
8. Pillage and Rapine
   (The Dormitory Room of Jane Mool and Joan Walling.)

ACT TWO

9. Blue Suede Loafers
   (Around.)
10. Turkeys in the Straw.
    (The Woods, near the Trestle.)
    Orgy-Porgy
11. The Hall Truth
    (A Public Hall.)
    That Office
12. A Cryin' Sham
    (The Snack Bar.)
13. Fur Enough
    (A Parlor.)
    He's Weird
    Liberty, Equality
14. Just Plain Folks
    (A Folk Festival.)
    Rise up, Urban Proletariat
15. Gemeinschafted
    (The Snack Bar.)
16. Truly Storch
    (The Front Porch.)
    Orgy-Porgy (reprise)
17. The Birds and the Beasts
    (The room of Jane Mool and Joan Walling.)
    Orgy-Porgy (reprise)
18. Excerpt from "Modern Sins"
19. Excerpt from "The Clipped Pegasus"
20. Seminar and Some Aren't
    (A Seminar in a Lodge.)
    It Can Be Seen as Looked upon from Different Points of View
21. A Pot of Message
    (The Snack Bar.)
    Song of Significance
    Mollification

ACT THREE

22. Plota before My Eyea
    (Commons.)
23. Big Game Hunters
    (The Boudoir of Pete Schultz.)
    Have You Seen?
24. Ménage à Quoi?
    (The Snack Bar.)
25. Phyaical Edification
    (The Athletic Field.)
26. Extraneous and Gratuitous Nostalgia
    (A Parlor at Swarthmore College, 1916)
    The Crum Song
27. Turtle Snoop
    (The Snack Bar.)
    It's Not Bad Being out of College
28. Aarghhhh?
    (The Bedroom of the Ibn Khan.)
29. Slyness Trouble
    (The Snack Bar.)
    Like Your Pleasure Big?
30. Putting the Heart before the Course
    (The Library.)
    I Just Feel Like Being in Love (with bibliography)
31. Peaches and Cream
    (Near the Water Tower.)
    Carol
32. Over and Out
    (The Snack Bar.)
    Do the Rock-a-Doodle-Do
33. Epilogue
    (Graduation)
    Post Mortar (Recessional)

PLUS intersticial events and reminiscences too numerous to acknowledge.

THE CREDITS

Title by President Courtney C. Smith
Book and Lyrica by Theodor H. Nelson
Muaic Written and Arranged by Richard L. Caplan
Choreography by Heli Spiegel
Programs by Pyle
Art Work by Russ Ryan
Photographs by Gordon Adams
Electronics by WSRN
Recording by TRULY ZORCH RECORD COMPANY
Lighters by Ronson
Tranquilizers by Miltown
Miss Milgrim's Dungarees by Levi
Copyright 1957 by Ted Nelson
(This program is NOTHING #4)
Sets by Chuck Ruff and Friends
Lighting by David Baltimore and Friends
Sound by Peter Temin and Friends
Stage Managing by Sananman
All Kinds of Help by Joe Keller
Sodium Propionate Added to Retard Spoilage.

THE CAST

Girl Secret Agent	*Faith Blocksom*
Catherine Milla	*Debbie Dempsey*
Girl Secret Age.it	*Barbara Gillies*
Jane Mool	*Carolyn Goldberg*
Sue Rilloway	*Linda Gordon*
Girl Secret Agent	*Carola Hamburger*
Binnie Nustle	*Lillian Kraemer*
Hermione Ham	*Debbie Kurmes*
Molly Pitcher Storch	*Betty Ladd*
Joan Walling	*Lynn Milgrim*
Milie Winthrop	*Joan Pallme*
Ellie Whelk	*Janet Powell*
Janet Farrell	*Helen Smits*
Morris Walpole	*Joe Adcock*
Flipsy McFinn	*Steve Beik*
Dean (formerly a student at Swarthmore College before the Great War)	*Dick Caplan*
College President	*Harvey Caplan*
Max Wabash	*Bill Curreri*
Rusaian Spy	*Andy vanDam*
Harry Mills	*Charlie Dempsey*
KWINK Soloist	*Bob McDiarmid*
American Spy	*Maurice Eldridge*
George Washington Storch	*Peter Friedman*
Rufus Mansfield	*Steve Gilborn*
The Ibn Khan	*Murray Goldman*
Ambrose Masterson	*Seth Greenwald*
Clint Apgar	*Dietz Kessler*
Millard Strimp	*Robert Kramer*
Alexander Hamilton Storch	*Jeremy Mack*
Sam Pickle	*Brian Mangrum*
Spy from Socony-Vacuum	*Bob McMillan*
Cholmondeley Stew-Dorking III	*Bill Moulder*
Dean (formerly a student at Swarthmore College before the Great War)	*Ted Nelson*
Spy from Cities Service	*Tom Neumann*
Herbert Marlin	*Wentworth B. Ofuatey-Kodjoe*
Herman C. Grubnik	*Bob Patten*
Faithful Old Wazir	*Steva Peiker*
Jock Stark	*Evan Powell*
Steven Pillworthy	*Courtney Prentice*
The Coach	*Mike Sananman*
Professor Whillikers	*George Spelvin*

THE ORCHESTRA

Trombone	*Win Buckwalter*
Conductor	*Dick Caplan*
Drum	*Hugh Davy*
Organ	*David Horr*
Saxophone	*Bill Stell*
Guitar and Banjo	*Dave Krash*
Flute	*Marcia Montin*
Nose Flute	*Tad Nelson*
Guitar	*Tom Nawman*
Banjo and Clarinet	*Jim Perkins*
Bass Viol	*Ellie Schuker*
Clarinet and Saxophone	*Bart Sippola*
Bagpipea and Oboe	*Pete Smith*
Piano	*Dick Thomas*

THE FRISBY PLAYERS

Steva Agard, Andy vanDam, Phil Dunham, Dava Matsen, Eric Stephanson

THE FOLK

Joe Finesinger, Dave Kresh, Mike Lessac, Peta Napier, Peta Offenhartz, Ellie Schuker, Dave Tuckar, Jon Weil.

"SOFTWARE"

NAT KUHN, 12 years old, an expert at computer programming, shown assisting with the exhibition.

FROM: Caroline S. Lerner/Joanne Lupton
RUDER & FINN FINE ARTS
110 East 59th Street
New York, N.Y. 10022
(212) PLaza 9-1800

FOR IMMEDIATE RELEASE

FOR: "SOFTWARE" Exhibition

Nat Kuhn, 12 year old computer expert and member of the R.E.S.I.S.T.O.R.S. (Radically Emphatic Students Interested in Science, Technology, and other Research Studies) who is assisting with the exhibition, SOFTWARE.

Organized in 1967, THE R.E.S.I.S.T.O.R.S. are a group of about a dozen students from the Princeton, J.J. area, aged 12 to 18, who are whizzes with computers. Among their accomplishments are:

--they have participated in the last three Spring Joint Computer Conference, at one of which, during the telephone strike, they brought down the house by contriving to go "on line" through a pay telephone, since regular phone equipment was unavailable.

--they delivered eight official papers at the DECUS computer symposium last year.

--at the 1970 Conference, they set a precedent by giving the first student technical talk, at which appeared the largest audience of the entire conference program.

--In a Princeton barn, they work with five computers which they either own, or use on loan. These include a music synthesizer, a digital light organ, a Calcomp plotter, and a DEC PDP-8 computer like the one to be used in SOFTWARE.

--they have introduced computers to a group of disadvantaged students in Trenton.

THN Scrapbook

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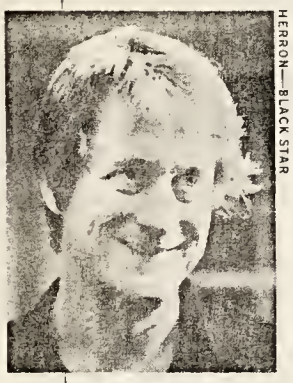
Confidential Softwold Brock.

Let Us Now Praise Famous Hackers

A new view of some much maligned electronic pioneers

Legend at M.I.T. has it that one night in the mid-'50s some students paid a clandestine visit to Cambridge's Kendall Square subway station, where they quietly spread grease all over the tracks. The next morning, the first train that pulled into the station hit the grease and skidded right through the other side, taking its passengers to an unscheduled stop in the middle of a darkened tunnel. When the motorman backed up to see what had happened, the train slid through the station in the other direction as well. The ensuing snarl is supposed to have tied up transit officials and straphangers for hours.


HERRON—BLACK STAR

Ted Nelson

For several generations of M.I.T. engineers, the subway prank was known as the ultimate "hack," the rare practical joke clever and elegant enough to be worthy of one of the world's most prestigious technical schools. Today the best and the brightest technology students are more likely to be found hanging around a computer system than a subway system. But they still call themselves hackers, and although they insist they have been misunderstood, their relationship with the public is once again on the skids.


MATTHEW MAYTHONS

"Cap'n Crunch" Draper

Last year's hit movie *WarGames* and a series of well-publicized computer break-ins have created an image of a teen-age computer hacker that is giving the term a bad name. Many people now think of hackers as pests or perhaps even criminals. But the hackers themselves claim they are getting a bum rap from movies and newspapers. Says Bill Burns, an industrial psychologist and part-time hacker: "We are the victims of a major press screw-up."


HERRON—BLACK STAR

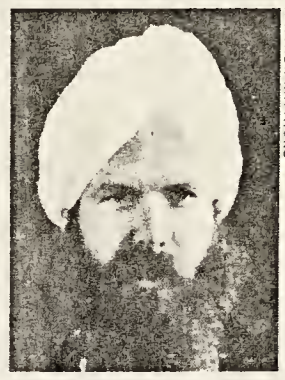
Bill Atkinson

Hackers, as most computer experts use the term, are distinguished not by their mischievousness but by their persistence and skill. Some of the key breakthroughs in modern computer science, including the development of the personal computer, can be traced to these often fanatically dedicated people. Even today, men and women who are proud to call themselves hackers can be found in the research departments of almost any major computer firm, designing state-of-the-art machines and writing the software that runs on them.

Now some of the real computer whiz kids are finally getting their due. In a new book called *Hackers* (Doubleday; $17.95), Writer Steven Levy argues that these "science-mad people" are the true heroes of the computer revolution. He traces the history of hackers from M.I.T.'s Tech Model Railroad Club, their first mecca, to Silicon Valley's Homebrew Computer Club, an early microcomputer gathering spot, to a video-game factory in Coarsegold, Calif. Through it all he discerns a common thread: the unspoken assumption among crack computer programmers and engineers that they could straighten out the world by dint of their intelligence if they could only get their hands on the control box.

The overpowering urge to compute, as Levy describes it, has always seemed bizarre to outsiders. At M.I.T. and Stanford the true devotees would skip meals, drop classes and give up sleep and social lives to burrow deeper and deeper into their beloved electronic brains. Once they started on a project, they would regularly "wrap around," working day and night until, after 30 hours, they collapsed on the nearest cot or sofa. Programmers at Stanford's Artificial Intelligence Lab eventually discovered that the space between the roof and false ceiling made a comfortable sleeping hutch, and some of them lived there for months at a time.

Two weeks ago, 130 of America's most devoted hackers gathered in the barracks of a refurbished Army post in Sausalito, Calif., at the invitation of a group of computer experts headed by Stewart Brand, editor in chief of the *Whole Earth Software Catalog*. Brand's idea was to bring together, for the first time, people from several generations of hackers, and his guests included some of the brightest stars in computing: Ted Nelson, author of *Computer Lib*, a widely read handbook from the mid-1970s; Stephen Wozniak, who built the original Apple computer; Lee Felsenstein, designer of the Osborne 1; Richard Greenblatt, who developed the LISP machines used in artificial-intelligence research; and Burrell Smith, a


MATTHEW MAYTHONS

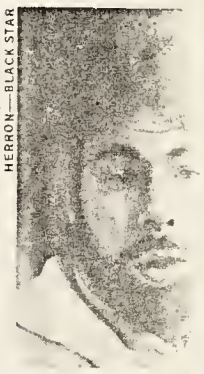
Sat Tara Singh Khalsa

time Apple repairman who went o build the Macintosh computer.

There were a fair share of sha beards, silver-winged baseball and even one turban, worn a Montana-born programr who now calls himself Sat T. Singh Khalsa. But for the m part the hackers looked m like backpackers or profess al musicians than any ste type image of computer nc By day, they met for disc sions and debates that incl ed a face-off between D Parker, a computer-crime pert, and John Draper, the l endary "Cap'n Crunch," w developed a system for mak free phone calls by using the toy whis from a breakfast-cereal box to imitate tone used by A T & T for long-dista calls. At night the hackers cluste around a dazzling array of compu hardware that beeped and glowed unti o'clock each morning.

Most of the weekend conferenc though, was spent trying to plot the futu of hacking in an industry increasing dominated by marketers and venture ca italists. Everyone present seemed to agr that commercialism had changed the n ture of computing. What was less cle was what the new rules for hacking ou to be. Said Bill Atkinson, author o flashy new program called MacPai "The question is, how do you spread e citement around?"

Many first-generation hackers, ha ing struggled with the red tape that su rounded million-dollar systems in th early days of computing, tended to vie such things as copy-protection scheme which make it difficult to steal pr grams, as barriers to the free flow of information. Other hackers, however, protested that anyone who spends thousands of hours writing a program deserves to earn royalties on it. Said Robert Woodhead, co-author of a best-selling game called Wizardry: "My soul is in my product."


HERRON—BLACK STAR

Stephen Wozn

As the industry has matured, so have the pioneers who helped build it. Most of the high priests of hackir have long ago grown out of the prankste ism associated with their name, and man feel it is time they set an example for th next generation of computer fans. "It one thing for a high school kid to show o how he can dial the phone for free," say Brian Harvey, an M.I.T. hacker turne high school teacher. "It's quite another t an adult to go around encouraging schoo kids to steal."

—By Philip Elmer-DeWi

VASSAR COLLEGE

January 5, 1965

TO: Members of the College Community
FROM: Faculty Science Club
SUBJECT: Lecture on Computers by Theodor Nelson, Instructor in Sociology
8:00 p.m. Wednesday, January 27 - The Aula

The Faculty Science Club is pleased to sponsor the talk described below for the benefit of all members of the College community interested in learning more about uses of the computer in the academic environment.

COMPUTERS, CREATIVITY, AND THE NATURE OF THE WRITTEN WORD

No special background is necessary to understand this; indeed, "special" background may well be detrimental.

Everybody's misimpression of electronic computers -- a misimpression peculiarly acute among "computer people" -- continues to restrict the general use of computers to essentially numerical tasks. Inherently these machines have far broader capacities; the limits are not of technology, but of imagination.

This talk will first describe the structure and generality of the stored-program digital computer. The computer is NOT mathematical: if it is the most perfect adding machine, it is also the most perfect typewriter, electric train control, filing cabinet, movie projector, and musical instrument. But whole new attitudes will be needed, and liberal-arts personages will have to learn to program, before computers can make their real contribution to civilization.

The speaker will describe his own experiments in this direction -- trying to build "systems" for the handling of creative (and academic) materials -- ideas, words, and other things. A succession of approaches, and their increasing generality, will be explained.

The philosophic consequences of all this are very grave. Our concepts of "reading", "writing", and "book" fall apart, and we are challenged to design "hyperfiles" and write "hypertexts" that may have more teaching power than anything that could ever be printed on paper.

Please feel free to invite any interested students.

Sue Lumb, President
Robert Rehwold, Vice-President
Stanley Novak, Secretary

The 1960 Social Committee presents Roccatorso

"Umpthing" and/or "$\sum_{i=\infty}^{N}(0)$ Est Revenu" and/or "NELZAPARPIN'!"

(Some of Nothing returns)

AN INTRAVAGANZA. WRITTEN ETC. BY TED NELSON.
FEATURING Roger Heacock, Kathe Johnson, David Kresh, Ellie Wehmiller, Lissy Sherr, Leo Braudy, Carolyn Shields, Wentworth B. Ofuatey-Kodjoe; John, Robin and the gang.
BITS: Vergin' on the brink; DETERRENT MIGHT or might not; The Dicho-tomy of Snookum Furbelow; & lots of surprises & mistakes.
SONGS: West Pot; Beer & Wine; You've already had your beverage, do you want another beverage?; Lady Fair; the Talkin' Swarthmore Grant; South Chicago, Here We Come; Otis, The Lotus Eater... and many, many more.*
NELSON-SHOW TRADITION CHECK LIST. Purple sweater; mythical animals; Talking blues; "Pot" song; seduction in woods; funny use of auditorium; very serious interlude and Message; nasty review in the Phoenix.
TECHNICAL STAFF: Marsha Swiss (fullback,) B. Price, K. Johnson, J. Rosner, and many helpful people. Monies by Social Committee. Advice by Alexander Hamilton, Roger Heacock, Bill Brownfield, John Wheeler, Stan Rosenberg, Deans, Departments, Woody Fleisig, N.V. Peale.

Mouths & mustaches may be pasted on this figure.

Chorus line production & reproduction numbers by Heli Spiegel.

A very various presentation of whimsies, inversions & excitement. There is only one Ted Nelson tradition.

★ BEWARE OF IMITATIONS! ★

Surely the last typical Nelson show. → The same general idea.

Music partly by Nelson. Underture by Paul Brest. Armature by L. Beethoven.

Other stuff we may work in: There's A Teardrop on My Forehead; Man, the Human Element; I been Spreadin' Propaganda; Notes on the Medical Profession Today; Grad School Blues; When it's Springtime back home someplace.

This space for marking announced or apparent divergences.

*But not in this show.

The Amphitheatre or Commons or Somerville or elsewhere. Saturday the 16th April 1960.

Music by Diego Riviera and his Humble Artesians.

Happy birthday to Joan Moffitt. This is Something #5. We Need a Sociology Dept.

Xanadu may be computer McDonald's

Rec'd 10 01
WINNIPEG
FREE PRESS
Sept 29, 197

Home information system touted

By Hope Kamin

It's the sort of Kubla Khan-meets-Citizen Kane scenario that might send Samuel Coleridge into a roll.

It is the Xanadu Information System currently being developed by home computer zealot Ted Nelson and 12 "very brilliant and eccentric" programmers holed up at the Nelson homestead in a Philadelphia suburb.

Nelson, a sociologist by education, was in Winnipeg this week to get a closer look at the Manitoba Telephone System's home computer experiment, IDA, which begins in Headingley in January. He called it "the first sweeping experiment of its kind."

He explained the Xanadu system as "an electronic public access data repository and publishing medium and archive."

Anyone with a home computer terminal will be able to tap into the system by subscribing at the local Xanadu office.

Nelson, too, plans to tap into the system.

"I hope to franchise it — like McDonald's."

The Xanadu system is the sort of "software" that could be used in the MTS home computer system in the future, MTS spokeswoman Carolyn Rickey said.

MTS system compatible

"It would be compatible with our system," she said. "We'll have the network and he has the software."

However, Ms. Rickey said MTS has made no plans to include such a system. Nelson said he expects the Xanadu framework to be ready for experiment by next year.

The author of *Computer Lib*, a $7 guide whose kicker is "you can and must understand computers NOW", says "the public notion of computers is totally wrong."

"Most people view the computer as a threatening monolith that is dehumanizing society. What *is* dehumanizing society is the way computers have been used."

Nelson maintains computers in themselves are not the complex, alienating machines the major computer companies have made them out to be.

"If it hadn't been for IBM, personal computers would have been around 10 years ago.

"We can be liberated by computers by getting information we didn't have access to before."

A well-rounded person himself, Nelson will join Parker Brothers in October to help advertise "Merlin", a computerized toy which can engage in six different games.

The key to Nelson's computer philosophy is his belief that the need for sequential information is only a function of the print medium, of writing.

"Writing is a way of splicing pieces of information together. We need the sequence. In the screen writing of the future we won't need the sequence. Each person will be able to peruse the information and select what he or she wants.

"I'm hoping that through the computer screen we'll be able to liberate kids from the tyranny of the curriculum. There should be no prerequisites (for studying certain things). The necessity for them is only administrative."

There's also a practical side to the development of the home computer, Nelson says.

"We know we'll run out of paper by the year 2000. Then what?"

KEN GIGLIOTTI/WINNIPEG FREE PRESS

Ted Nelson hopes to franchise the information system he is developing for home computers.

Prof. H. Ishida
Computer Centre
Univ. of Tokyo

Recd 6 Oct 80

談話室

●事務屋のみたNCC●

パーコン汎用ソフト時代の訪れ！

「1にネルソン，2に石田，3に岸孝，4池，5西」というのが，白浪5人男ふうにいえば，今のパーコン時代に突っぱっている代表的パーコニストということになろう．

第一のネルソンというのは，テッド・ネルソンのことである．アメリカで，『コンピュータ・リブ』，『ホームコンピュータ革命』(邦訳あり．西 順一郎監訳，ソーテック社刊)を出して，全米パーコニストのアイドルになった．

彼の手にかかると，IBM も顔色なしとなり，徹底的にその官僚主義的，権威主義的発想をやっつけられる．もちろん IBM はサンプルにすぎない．彼の鋭い矛先は，すべてのオフコン・メーカーに向けられていることはいうまでもない．正に彼は，コンピュータ界のラルフ・ネーダーであろう．

二番目の石田晴久東大助教授については，特に今更いうこともあるまい．最近の「情報産業新聞」(6月2日付)に，彼の論文がのっている．

「80年代は，安価なメモリーを大量に使える時代であり，これを背景としたパーソナル・コンピューターに大きな期待がもてる．ことし初め，BASIC 言語が使えるポケット・コンピューターが出現したが，80年代を象徴する製品といえる．

これは個人レベルで購入するマシーンだが，机上型のパーソナル機は，企業，商店，大学などでもどんどん買い込まれ，使用するのは各個人といった時代が到来しよう．これはオフィス・オートメーションの中核である」

これに対し，『学習コンピュータ』の6月号に早大で5月9～10日ひらかれた第1回 OA 学会の紹介がのっている．その書き出しにいわく，

「第1回 OA 学会は，折からのオフコン・ブームのせいもあって，参加者 250 人の多きを数え……』

―― 全くズレておるのです．

第三の岸田孝一氏については，彼(ら)が最近出した『BASIC TRAIN 10』(学研)の前書きを見ていただこう．そこに激えつに，最近のパーコンにおけるソフトの弱さ，BASIC の問題点，構造化言語への希求が書かれているのです．

第四の池孝三氏については，知る人ぞ知る「X型利用，Y型利用」の提言者．

近作『マイコンとマイ・ビジネス』(学研)は，彼の見解をあますところなく伝えて，PC (パーコン)の Y 型利用の実例を示してくれているのです．

同書の 120 ページにいわく，

「かつての IBM 5100 が 5110 の発表で売れなくなったように，この 5120 の発表によって 5110 は早晩市場から姿を消すのではないでしょうか．この技術革新の激しさは，車のニューモデルどころの騒ぎではありません．よほどしっかり見定めないと，損な買い物をしてしまいます．

事実，IBM に限らず，次々とすばらしいコンピュータが発表されているのに，オールド・ファッションの高価なオフコンがいまだに売れているのですから，筆者としては不思議でならないのです」

*　　*　　*

ここに3種類の人間がいることを銘記しよう．

まずは，全体の9割9分を占めるオフコン主義者．彼らはまさに池氏のいうように，1975 年以降のパーコン時代に入っても，相変わらずメイン・フレームすなわちオフコンを売っている．アダム・オズボーンは，彼の近著『激変のとき』(邦訳なし)の中で，近い将来，メイン・フレームが 10 %，マイコンが 90 % になるといっているというのに――．

さて，残りの1%のパーコン主義者にあっても，思想のある人，ない人が混在している．

たとえば，パーコンはなぜ生まれたかをいうときに技術者は簡単に「それは LSI が生まれたからだ」というであろう．これは“思想”のある態度とはいえないのであって，それはたんに，シーズ(技術側)からものをみているのにすぎない．

ネルソンが凄いのは，彼がニーズ(人間側)からものをみていることである．「パーコンが生まれたのは，必要があるから，当然，生まれたのだ．生まれはしたが遅すぎたのだ，人為的邪魔がなければ，もっと，15 年は早く生まれたところだ」と論説している．

*　　*　　*

5月に，アメリカの NCC '80 にいってきた．

淋しかったのは，47 人もツアーの仲間がいて，パーコンを見ようという人は2人ぐらいしかいなかったことだ．皆が IBM のブースにいき，何もないのを知ると，Wang や DEC のブースに流れる．

ところが，NCC の一番の見どころは「アップル・コンピュータ社」のブースにあったと思う．事実，アメリカ人は，このブースに楽しげにタムロしていた．

ア社は，今年，この NCC で Apple III をはじめて発表した．

ユニークだったのは，ハードの発表と同時に，ソフトの発表を同比率でやっていたことだ．

「アップル・インフォメーション・アナリスト」(別名 Visi Cale III)．

「プログラミングができなくても，その日から管理者，経営者の右腕になります．経営計画からダイレクト・メールまで」という Visi Cale III は，われわれ事務屋にとって注目に価する．

来年の NCC '81 は，アップルの Visi Cale III と，ソードの PIPS と，タンディの DBMS との三つ巴の闘いになるであろう．ソフトにも“汎用”の時代が訪れようとしているのである．我々はそれを心待ちにしている．　(JN)

Rochester, N.Y.
1973

FEBRUARY ACM MEETING REVIEW

"Hyperman Meets the Cybercrud"

On February 21, in the sedate halls of The Spring House, a whirling dervish named Theodor Nelson descended on the august proceedings of the annual ACM-CSA joint meeting. When the dust cleared a disarray of reeling senses and violated egos could be observed.

Although, Mr. Nelson's primary target is educators, he opened with a barrage on Computer Scientists whom he characterized as high priests of "cybercrud". He felt, we, like our engineering brethren, pursued our dreams in isolation from the rest of the race and as such created systems which abused people rather than served them. He warned, the computer, like the automobile, was a machine for the people and, in time, they would turn out the priests and claim it as their own.

Mr. Nelson then turned his attention to CAI specifically. He saw education as a vast desensitizing process geared to purge the young of every vestige of imagination, enthusiasm, and creativity. Students, teachers, and administrators alike were trapped in this factory for molding youth into old men. To him, CAI was its latest captive. It served only to automate this distructive process and intensify the depersonalization.

According to Nelson, the liberator of CAI and the rest of the prisoners is "hypermedia". Hypermedia differs from conventional CAI in that control resides with the student rather than the system. The student is given a wide range of computer based "on-line" graphic and text manipulating facilities which respond to, rather than direct, him as he explores areas of knowledge of his own chosing and in his own way. Mr. Nelson outlined his concept of such a system, i.e., Project Xanadu with hypertext, hypergrams, etc. (see Nelson's article in Computer Decisions, Sept. 1970). Contrary to CAI experts, he believes such systems are feasible within the current technology. He claims these systems are inherently simple since they are stripped of the "talk back and direct" capabilities which only inhibit students.

Mr. Nelson unquestionably entertained, but did he enlighten? In the opinion of this reviewer, he did both. Underneath the showmanship, he had a valid mission. In the spirit of Dreyfus, he calls this field to task. He makes us lift our robes to see if perhaps we too might have feet of clay.

Wiley McKinzie

Nelson's the name, and what he proposes could outdo Engelbart

While Douglas Engelbart slowly pieces together his intellect augmentation system, a 32-year old consultant named Ted Nelson blazes McLuhanesque paths into uncharted communications systems.

Nelson, lean, well-educated, and fast-talking has a real flair for showmanship. He got his theatrical abilities from his parents, Hollywood film producer Ralph Nelson, and actress-singer Celeste Holm; his education from Swarthmore, the University of Chicago and Harvard, where he received an M.A. in sociology. Nelson has been a consultant to Bell Telephone Laboratories, CBS Labs, and IBM.

To these oganizations, as well as any others that will listen, Nelson proposes a text and graphics manipulation program which he dubs his "fantasm system." This is derived from another Nelson word, "fantics," which he defines as the art and science of presentation—"making things look good, feel right, and come across clearly." The central piece of equipment in Nelson's fantasm system is his Xanadu machine—a souped-up version of the one built by Engelbart.

Like the latter, Nelson would use a computer-driven cathode-ray tube information display, but there the similarity ends. Data in the fantasm system would be stored in the computer in what he calls "hypertext" form—a multilevel melange of characters, diagrams, images and movies. Instead of manipulating various complicated controls, the reader would "fly" the machine with a single control stick, which would work somewhat like the joystick in an airplane. When moved right or left, the control stick would make the hypertext proceed forward or backward with a speed proportional to the amount of deflection. Thus, for example, fast readers would push the stick to the far right. Moving the stick toward or away from the reader would make the hypertext either more detailed or more summarized.

Writing, according to Nelson, would take place, whenever and wherever thoughts occur on a small pocket keyboard, which would be at the hypertext writer's instant disposal; all typed notes and passages would go right on magnetic tape. Cassettes would be unplugged from the back of the pocket

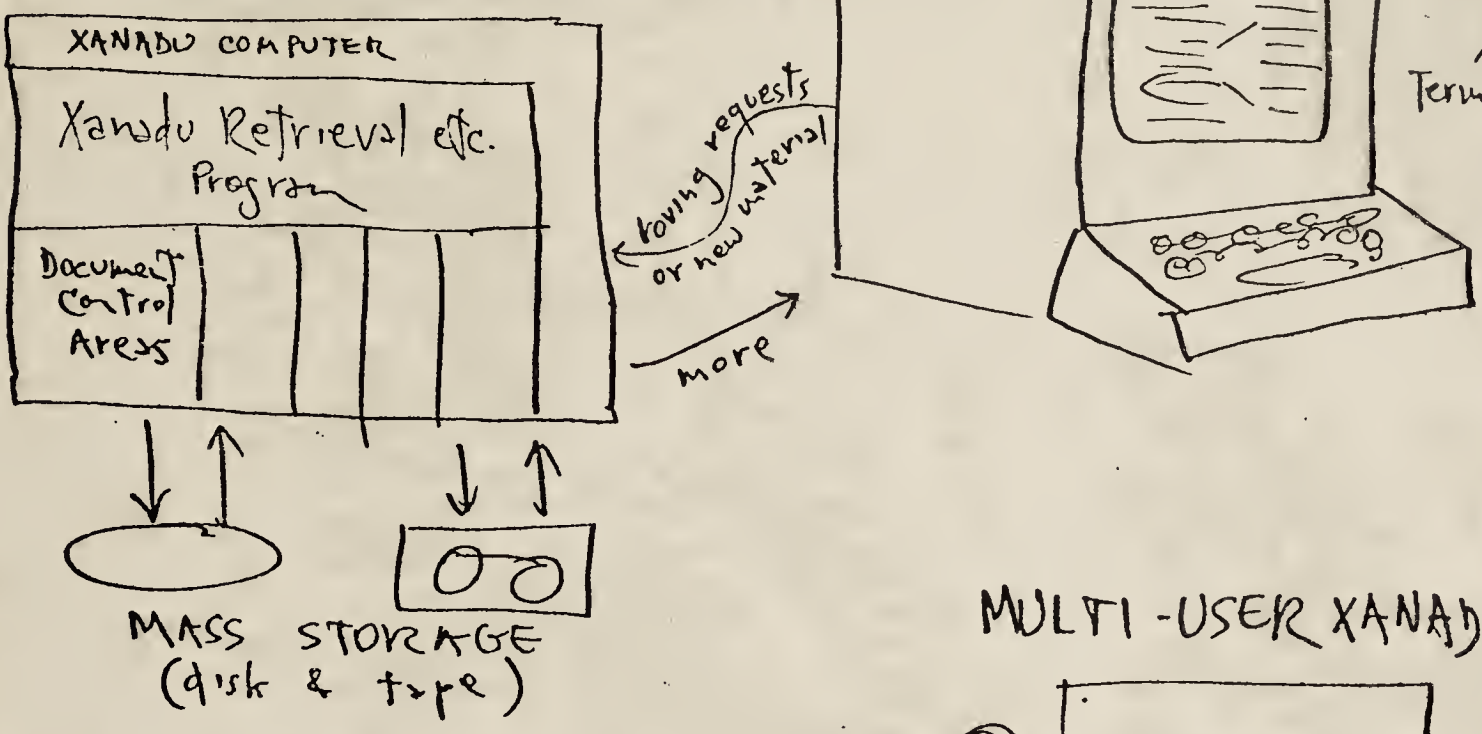
keyboard and snapped into the Xanadu machine, accomplishing what Nelson glibly refers to as "prestidigitative publishing."

Whether or not Nelson's visions come true, one thing's sure: he bristles with ideas about communications, and at least one company, IBM, has successfully introduced a typing system product based on one fragment of Nelson's schemes. Nelson himself is perhaps the greatest living proof of the effectiveness of "fantics." Says one Time Inc. executive after witnessing a Nelson presentation, "Boy, you should have seen him. He was barely up there 10 minutes when he had businessmen in the audience practically ripping their pockets trying to get to their checkbooks." "Man, they were stepping all over each other to underwrite his projects."

Perhaps, though, there is a very simple explanation for Ted Nelson's effectiveness: One of his favorite heroes is P. T. Barnum.

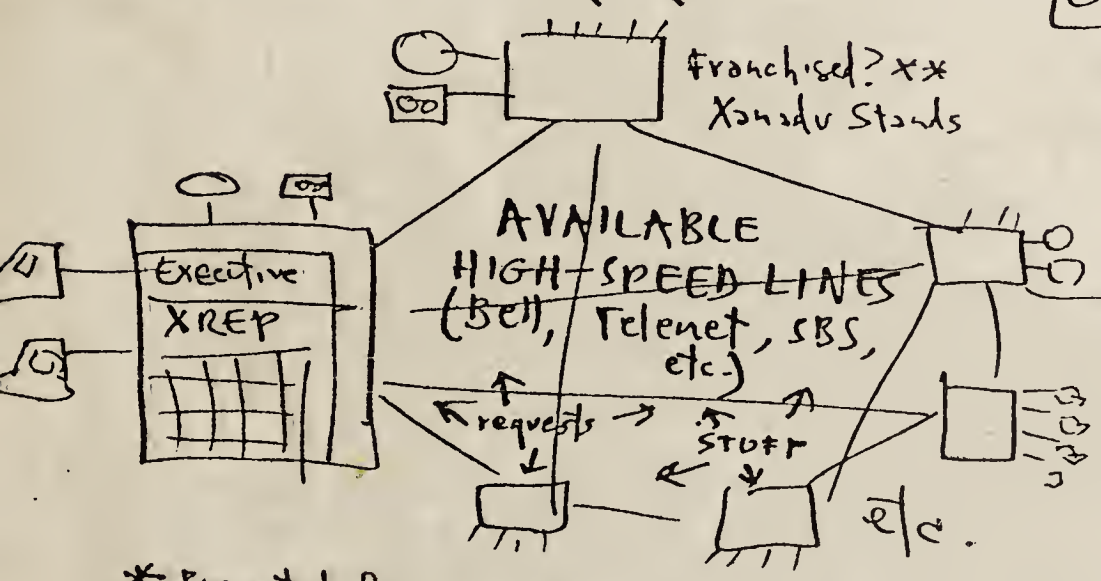
"NEXT YEAR IN XANADU™"

Single-User Xanadu System*



MULTI-USER XANADU SYSTEM

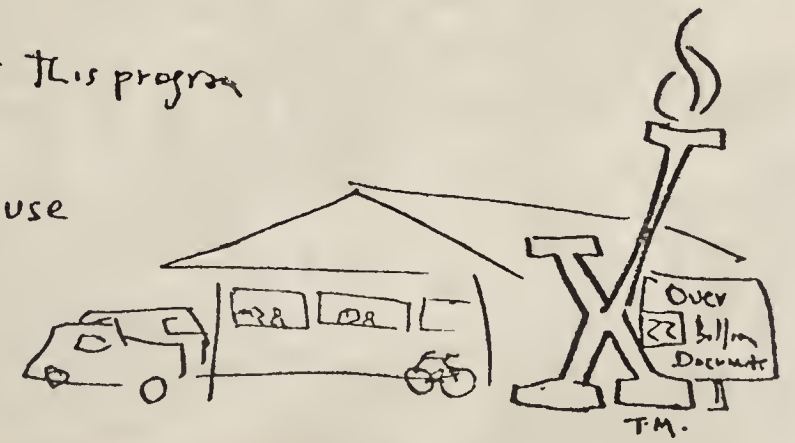
The Xanadu Information NETWORK™



* Presented for completeness only.

** There is presently no plan to market this program except as a remote service.

** LEGAL NOTICE. Note that the use of franchising is presented only as an hypothetical possibility, and no offer of franchises or supposed business opportunities has been or is being presented.



THE MANY FACES OF THE XANADU™ HYPERTEXT SYSTEM.

'What will it look like?' you ask. We gasp helplessly, make vague gestures.

It can look like anything. It can sound like a string quartet.

The Xanadu Hypertext System is a public-access data storage facility. Rather than store writings on paper, or on your own computer disk, you transmit the symbols to us and we store them. For a price. When you want to see them again, there's no muss or fuss, no rummaging — it's all right there, instantly.

And your material is available to your friends as well, if you so permit. And you may revise it far more easily than if it were on paper.

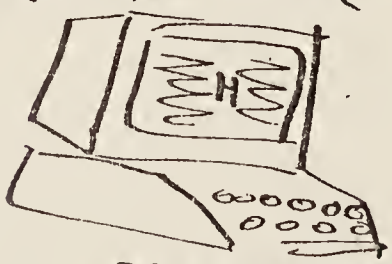
The Xanadu Hypertext System is also a publishing medium. If you choose to publish on it, you get a royalty wherever your material is used — about 5¢ per hour of use.

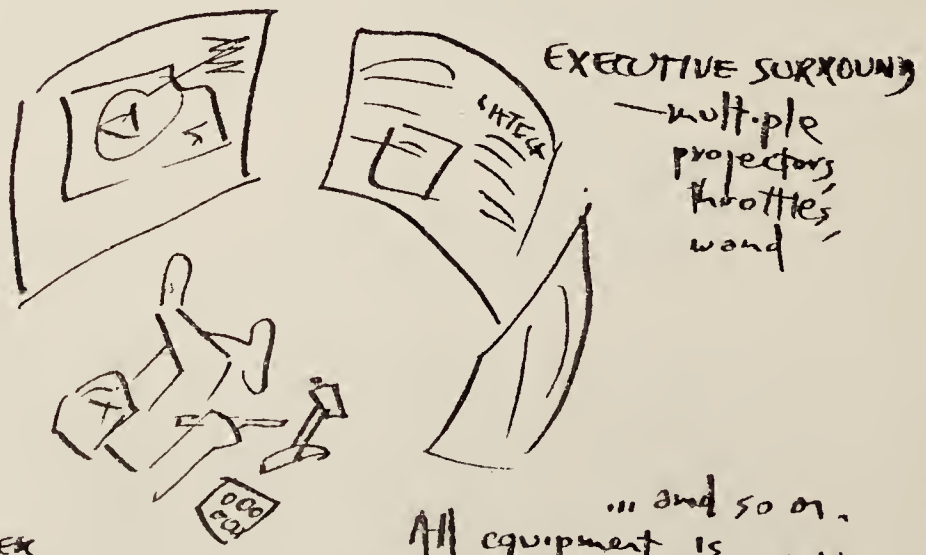
The "front ends," or user consoles, can be any personal computer or computer terminal — suitably programmed.

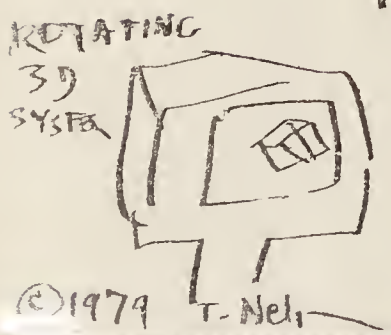
And the data you store can be text, graphics, dress patterns, or string quartets — stored symbolically, as dots or lines or musical notes.

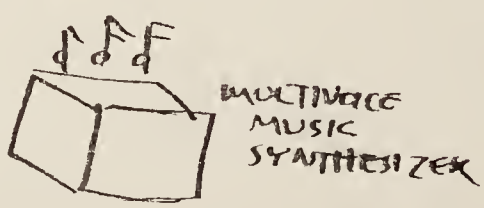
But because of our carefully-designed linkage structures, you may also write marginal notes on anything; freely excerpt from and anthologize anything; or make footnotes to anything. And more.

TYPICAL USER CONSOLES:









FINE-TUNING THE LIBRARY.

TARIFFS & COSTS provide a means for fine tuning of the system's nature. (Degraded or upbeat performance provides hidden fine tuning.)

BASE HOURLY RATE. [$2/hr?] AT THE PLUG; not county cost of terminal or external communication.

Should it be constant

- No matter how many jumps you take?
- Up to a certain amount of text input (10 cps?)?
- Up to a certain ready speed (30 cps?)?
- Regardless of your editorial changes?

AUTHOR ROYALTY [5¢/full-screen hour?] Should not vary. (No internal impediments, please.)

PUBLICATION COST THRESHOLD.
What should it cost, if anything, to "publish" a document?

PUBLICATION RUNNING COST: The continuous cost, per day, of keeping a document rapidly accessible.

SPECIAL FETCH COST: additional tariffs (or delay?) for what nobody is paying to keep rapidly accessible.

HIGH-PERFORMANCE (OR PRIORITY) COSTS:
Fast-reader speeds?
Priority service at extra cost? (Cf. 'person-to-person calls')
Budget service on standby basis?
Extra for multiple-screen consoles?

GENERALIST™ SIDE-LINKING DATA STRUCTURES: HISTORICAL OVERVIEW.

Originally designed for text applications, this family may have unusual powers for business and ordinary data applications.

	System	Name of Basic Entity	Psychological Unit	Elements Which May Be Linked	Types of Link	Fate & Comments
CONVENTIONAL	ELF™65 (Evolutionary List File)	Zippered List	Zippered List	Text Sections	VS	Hypothetical; first published design of side-linking data structure (see T. Nelson, "A File Structure for the Complex, the Changing and the Indeterminate," ACM Nat. Proceedings, 1965).
	Z1 (Computopia Personal System™)	Zip™	Zip, Zipplex™	Text Sections, Picture Sections	VSC: arbitrary graph structures through vanilla links.	Intended for 8080-based personal computers; Computopia Corporation founded to create and promote this; implementation stalled.
	ISAM GeneraList	(Hypothetical system for IBM-type ISAM installations, if anybody wanted to do it.)				
	ZB	(Hypothetical system for personal computers using BASIC, if anybody wanted to do it.)				
UNUSUAL PROPRIETARY METHODS (Project XANADU™)	XU72™	Classical Enfilade™	Document	Text Sections	All 7	Implemented in ALGOL by Cal Daniels and FORTRAN by John V.E. Ridgway. Abandoned for better approaches.
	XU74™	NB Enfilade™	Document	Character Spans	All 7, down to the character for A, R.	Substantially improved in design from XU72 by William Barus; ☆ currently under implementation.
	GWOW™ GeneraList (Generalized Windows on Windows)	NB Enfilade	Document & Views (which may be made up of other views to any level)	Character Spans, Parallel Zippered structures, frozen views and rovable views	All 7, character-granular. Arbitrary graph structures for arbitrary hypertext.	Upgrade from XU74 currently under design consideration.
	GWOW2™	"	"	The above plus: articulated picture parts for animation, subsections of n-dimensional data manifolds (e.g. 3D blueprints), halftone photographs, audio synthesis codes.	"	"We think we know how." Not yet active.

XU 7Mar79 1

Please Circulate and Post

PROSPECTIVE EXTERNALS OF THE XANADU™ HYPERTEXT NETWORK

A DISCUSSION PROSPECTUS

The following specifications are presented for general comment prior to being frozen for implementation.

The Xanadu Hypertext Network has been designed as a universal publication system to make written material of all kinds instantly available electronically.

The principal purposes of this enterprise are to provide a universal system for electronic publication and to assure the rapid availability of writings in general and of our literary and historical heritage. We further intend to assure standardization, and most especially to set a level of performance from which no one may accidentally or purposely retreat.

Readers, authors, researchers, browsers and publishers will all find certain of their needs met. The network is intended as well to be a powerful environment for private and unguided study of any subject. It is also intended as a general archival repository, and can function directly as a teleconferencing and electronic mail system.

CONVENTION 1. TYPES OF DOCUMENT.

A document consists of any text and/or links that someone wishes to store.

Thus the Gettysburg Address is a document; "Jabberwocky" is a document; and a set of links between them is a separate document.

A document may also consist of changes to another document. Thus the modified Gettysburg Address published in MAD by Doodles Weaver may be thought of as two documents: the original, and the changes.

The integrity of each document is maintained by these separations: derivative documents are permanently defined in terms of the originals and the changes. Evolutionary continuity is unambiguous and storage space is saved.

CONVENTION 2. OWNERSHIP, CONTROL, ROYALTY

Ancient and public-domain documents have no owner. Otherwise, each document has an owner who controls it and receives royalties for its use.

The owner determines whether a document is to be private or not.

The owner does not determine whether a reader may create links to it or modified versions of it.

The owner receives a royalty based upon use: especially, a royalty rate based upon the length of time his document is on a reader's screen. If it is on a screen for one hour, he receives a full hour's royalty. If it is on the screen for half an hour, or on half the screen for one hour, he receives half the hour's royalty.

If a modified document is read, the original owner and the modifier split the royalty in proportion to the size of the changes, as determined automatically.

A uniform royalty for all authors and documents is desirable, since this means there is no pretext for the system's keeping track of who reads what.

(Note that "on the screen," above, may for practical purposes be interpreted as in the final buffer area.)

A one-time royalty is to be paid if a paper copy is made.

CONVENTION 3. LEVELS OF PUBLICATION

A document may be private or published. A private document may be read and linked-to only by the owner and his associates. A published document is available to anyone, and may be read and linked-to by anyone.

The name and author of a published document are listed in various directories, which are themselves published documents.

A published document may not be withdrawn from publication. Its owner may publish a modified version, with a request not to use the previous version, but the previous version remains published.

A document at an intermediate level, the open document, is generally available but not listed in directories.

CONVENTION 4. TYPES OF LINKAGE

Links are made by individuals as pathways for the reader's exploration; thus they are parts or modifications of the actual text. Links may be created within or between documents.

Any type of linkage is possible in principle. We are presently concentrating on three of basically literary origin:

- ¶ The jump-link. As symbolized by the asterisk, this generalizes the footnote.
- ¶ The quote-window. This allows one document to quote another, with the reader at once free to peruse the document of origin.
- ¶ Collateration. This sets parts of two documents in correspondence to one another, permitting recognition and close study of the corresponding parts.

Collateration between successor versions of a document is automatic.

CONVENTION 5. FUNDING AND ACCESS

An hourly base rate is charged to all users.

This includes the cost of fetching all materials and of all editing operations, and the hourly royalty to be divided among authors.

It also includes the placing in archival storage of all that a normal user can type in one hour.

This archival storage is comparatively slow to retrieve, involving minutes rather than seconds.

Storage at a more accessible level, or at more than one main station, involves additional storage charges. Thus a "publisher" is someone who pays for the rapid accessibility of materials and benefits from their use along with the author.

SYSTEM INTERNALS

These external specifications are made possible only by certain technical developments which are for the present proprietary and secret. A number of radical discoveries in the field of computer indexing and retrieval render it possible to offer these services within seconds on configurations of present-day equipment, even as the number of documents and service requests expands to astronomical figures.

OTHER MATTERS

The network will not monitor who reads what or who writes what. Movement of text in the network will be under the dispersed control of user requests, with no central list of what is currently being read.

The network is to be a distributed system of storage and local services, with high-speed lines connecting the storage centers. Each main station is to have a number of functions:

- ¶ Local service to local user terminals, honoring local requests or passing them on to other main stations.
- ¶ Local storage of materials owned by local users and of materials having high usage at this locality.
- ¶ Pass-through of requests and materials from other main stations, to local users or other main stations.
- ¶ Assigned storage: duties of archival and repository storage as assigned within the system.

The Xanadu Information System ™ consists of the Xanadu Hypertext Network used in conjunction with an official Xanadu Information Terminal ™ . This and other trademarks will be available under nominal license fees to vendors offering compatible equipment, as precisely defined under specifications to be released at a later time and subject to phased change.

Studies are underway as to the best feasible organization for both system security and general economic incentive. Dispersed private-sector financing is foreseen, with probable use of the franchising mechanism. While the profit motive is necessarily involved—the profit motives of many firms and individuals must be enlisted—the ultimate goal is plain, idealistic and simple.

OTHER ISSUES

A number of thorny issues, and their relation to these designs, remain to be discussed. These include system-level encryptions, libel, copyright infringement, "national security," hardening of the archives against war or disaster, and the general issue-cluster relating to privacy, withdrawability and the financing of archival keepage.

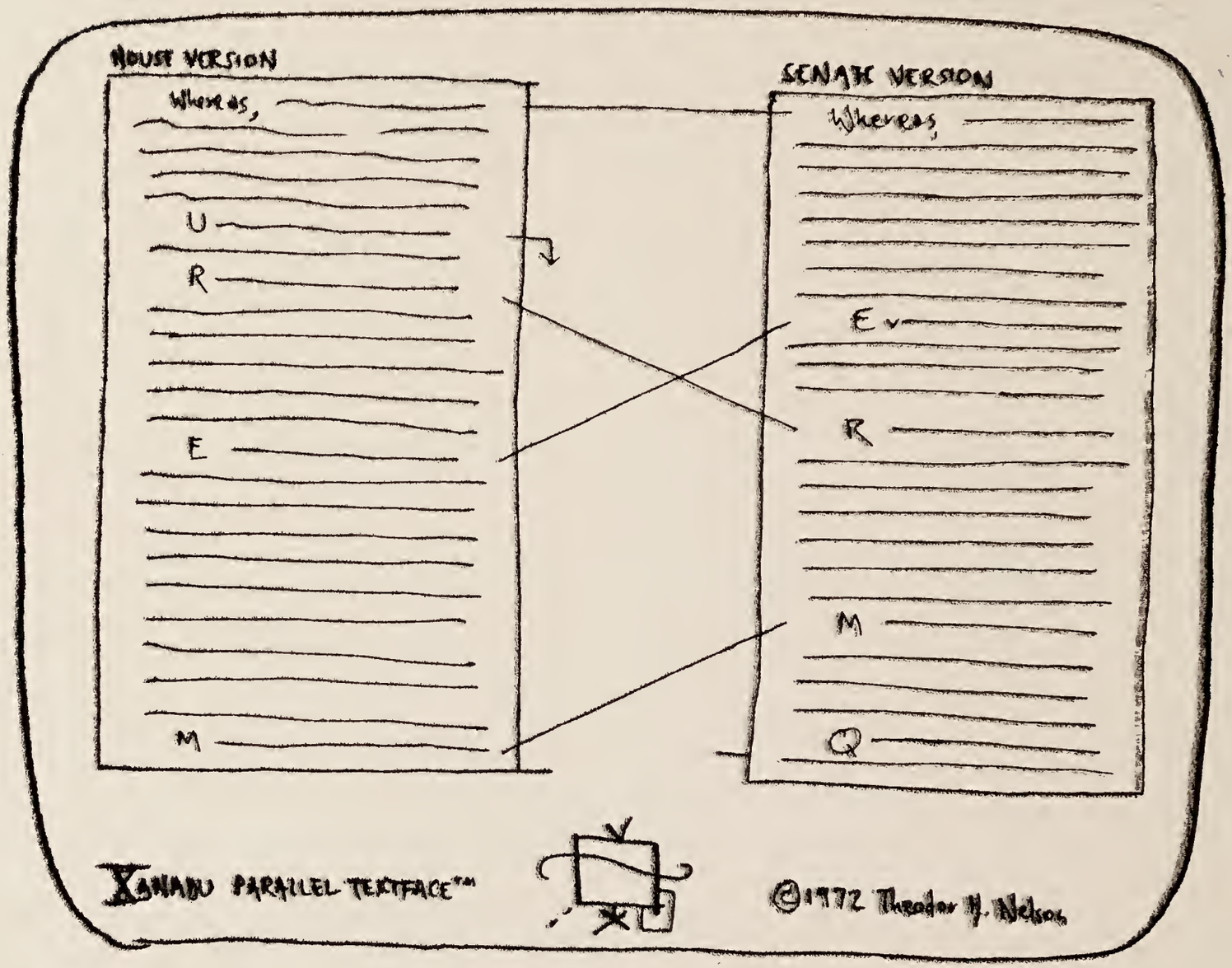
Your comments are invited.

TED NELSON
PROJECT XANADU
BOX 128
SWARTHMORE, PA 19081

We regret that there is little opportunity to answer correspondence. If there is sufficient interest, a convention may be held in 1978 to discuss these matters. If you would come, please so indicate.

Example of a clarifying screen visualization; THE PARALLEL TEXTFACE™

The problem: how to make it easy for a reader or author to read, write or revise on a screen; how to make textual intercomparison simple and clear.



Speed control:
light-pen moves it up or down.

forward

backward

Previous versions:

backward in time

forward in time

Edit controls:

insert

rearrange

delete

copy

applies to link

FEP 1.3

The Last Word.

X-ALPHA presents the most recent text version to a person who needs it immediately, whether an executive, newscaster or member of operating staff in industry.

X-Alpha allows immediate visual access to documents or records of any form, stored in Xanadu memory. Basically System X with keyscope instead of typewriter, it offers all the same functions. Data may have any structure, and be accessed as a seamless whole without paging. The system will be supplied with any commercial terminal, and conversion in software to Xanadu retrieval and edit codes.

Price: $35,000. Includes: Xanadu nucleus with faster 16-bit computer, 4k, firmware; two Schizotape units; terminal of customer's choice; Selectric.

Options. More terminals; more core; teleprompter accessories; head-per-track disk cartridge for improved speed; other computer memories; TV output storage systems, including half-tone. This system may be built up in steps to the full Xanadu system.

PRELIMINARY DESCRIPTION

ENVIRONMENT/ONE™

A COMPUTER SOFTWARE PACKAGE

for

HOME AND OFFICE

to be offered through

The Itty Bitty Machine Co., Inc.

and other fine computer stores.

As the sale of personal and home computers grows geometrically-- a surprise, apparently, to all but a few of us-- it becomes clearer and clearer that the kind of software people need just isn't ready. And that most people who are programming in the field have only the dimmest notion, if any, of what it means to make computer programs SIMPLE AND CLEAR while making them also GENERAL AND POWERFUL. We see no conflict; only boundless opportunity for creative new designs.

Environment/One will be our first offering. It will run on the SOL-20* computer in the TRAC** Language. (Adaptations for other computers based on the 8080 computer chip will depend on demand.)

Environment/One will be simple enough for a fourth-grader to master in an afternoon. (Each of its main programs, however, will adhere to Nelson's ten-minute rule: you can learn it in ten minutes.) It will be fully interactive: everything you want the computer to do can be commanded rapidly by choices laid out on the screen. It will be comprehensive: a Magic Typewriter***, combining "word processing" with retrieval, boilerplate and collateration; a Business Whizness*** combining checkbook management (and reconciliation) with financial projection, purchasing and inventory management, order processing and mailing lists. Other utility functions, meshed with the others, perform such utility functions as TEMPUS*** (a planning aid similar to PERT) and FUDGET*** (a general resource allocator).

For home users, we expect to offer the game of Dungeons and Dragons*+ -- with animated dragons on the SOL's screen-- and ANIMA***, a system that lets you create your very own animated cartoons-- which may be added to other parts of Environment/One.

* Trade mark of Processor Technology, Inc.
** " Rockford Research, Inc.
*** " Sophystems Ltd.
*+ " The Dungeon, Lake Geneva, Wis.

Come to the

SOFTWORLD*

Personal Computer Environment

Most computers are complicated and hard to use. The idea of employing them in your personal life is far-fetched. Even small businesses can't get decent systems yet.

Today's new, cheap computers – costing from five hundred to perhaps five thousand dollars – promise great practical benefits and new art forms and recreations. Yet the programs that will make all this easy haven't come.

The Softworld Personal Computer Environment will change all that.

Each of its five major systems can be used within ten minutes' instruction. Screen interaction and visible data structure make it uniquely easy to use. Novel visualizations will clarify every activity.

Built around novel forms of parallel linked data, the Softworld system will be unusually simple to use, yet offer powers traditionally only offered on large computers. The Softworld system is initially being offered for the SOL-20‡ computer with HELIOS‡ disk system.

The five parts of Softworld are:

HYPERTYPER*, the word processor, filing and cataloguing system. Unique parallel linked text provides a powerful revision feature for authors. The Hypertyper system may be used for keeping track of the contents of files and dossiers, and of where things are kept. Sequential structure is not forced on partially-ordered data.

Page numbering, layout and mailing-list functions are included.

PLANORAMA*, the scheduling system. A sophisticated planning system of the PERT type, the Planorama system permits the interactive update and revision of complicated projects and schedules; yet it is simple for an individual to use on a daily or hourly basis. Reminder lists are compiled automatically.

LEDGERDOMAIN*, the accounting system. Unique visualizing functions make account reconcilation, float and other complications perfectly simple.

ThingEez*, the inventory and purchasing system. This system tells you what you've got and what's on order; types up orders, complaints, and the nuisance correspondence of acquisition and maintenance. Handles subscriptions and keeps track of your magazines as well.

COMPUTOPIA*, the animation and gaming system. Allows the beginner to create animated cartoons, instructional materials and branching presentations on the computer screen.

Portions of the system will be available in June, 1978.

The Sophisystems Group
Box 128
Swarthmore, PA 19081

IN ALL SIZES:
THE ITTYBITTY LINE OF

COMPUTER SYSTEMS FOR INDUSTRY, GOVERNMENT, ACADEMIA, OFFICES, COMMUNES & LARGE FAMILIES

Most computer sytems of the past have been too expensive, hard to understand, and graded in capability so the little ones hardly did anything.

We are going to change all that.

The line of computer systems to be distributed by Itty Bitty will range from the tiny to the large — except that our "larger" systems are minuscule by the usual standards of the field.

They will all be powerful — restricted in individual cases only by such absolute limitations as mass memory attached.

Our systems will be set up for either stand-alone computers of the 8080 class — preferably with built-in screens and keyboards, such as the Intecolor® — or for larger computers of the PDP-11* class, with terminals.

*"PDP-11" is a registered trademark of the Digital Equipment Corporation.

THE WHITE HOUSE
WASHINGTON D.C.
20500

[recd. ca. 4 July '76]

Gentlemen:

Please send me one copy of "Computer Lib" by Ted Nelson.

Thank you,

Dr. Gus Weiss

pdT