



Electronic Publishing and Hyperstorage™

May 1982

Dear friend,

Thank you for your interest in Project Xanadu*, the book *Literary Machines*, and/or my principal work over the years. They are all essentially one. (If you are one of those people who asked for information some time ago, my great apologies. I, the other project people and our project headquarters have moved several times in the last few years, and many things have been misfiled or mislaid in the trample.)

The book *Literary Machines* — ordering information is given below — details the work of Project Xanadu, which has been the center of my life for over twenty-one years. Project Xanadu is, as you probably know, a computer system seriously intended to become, by various forms of growth, a universal instantaneous publishing system and library, as originally proposed by H.G. Wells and later by Vannevar Bush. Our version will use up-to-date techniques and put the forthcoming hardware (especially the write-once digital “video” disks—) to its best possible use.

The Xanadu Hypertext System* has gone through many stages. I did a number of preliminary versions in the sixties and early seventies with various co-workers, using the computing languages of those times. Since 1976, however, the project has taken several giant steps, and a growing team of very unusual people has been designing and programming the Xanadu Hypertext System for the machines of the eighties. We now believe we’ve got it. Let me review for you what we have done.

The Xanadu project, described in the book, has created a generalized computer program that essentially grows and assembles into one big electronic library. We conceive of it as a universal publishing system. Let me explain.

Our Xanadu program runs on certain fair-size computers, and manages storage and retrieval in certain special ways. But the program is self-expanding. The same Xanadu program can be run in a network of computers, the same program actually running simultaneously in each machine. In such a setup, a document stored on any one machine is rapidly available to a user on any other.

So far so good; most computer people could set that up. What we have added, however, is the ability to create links between documents: any user may attach bookmarks or private notes to any document in the system, as if making marginal notes in a personal copy. Thus each user has an increasingly personalized library that grows and grows without necessarily requiring huge amounts of storage. For you to have “your own” copy of a book, all that is required is one stored copy of the book somewhere on the network, and the small amount of storage space somewhere needed to hold your link information.

But this does not mean a document once stored is “frozen.” Its owner may change it continually without invalidating the links that users have attached, since they are permanently attached to the particular place in the changing document. This unique and unusual Xanadu attachment is both to the old version and corresponding places, if any, in more recent versions. Such a powerful facility, we think, must be the heart of any future library network. We believe no one else understands the problem and so no one else has even begun to work on it, whereas we have fully solved it. The problem is evolving storage with stable links.

*trademark and service mark.

Finally, we plan a system of publication around this which assures all authors (or publishers) of a hassle-free automatic royalty, yet avoids all red tape for other authors who wish to quote or anthologize. Royalty for quoted material automatically goes to the primary owner and that is that. The full publication (or library) system is a totally orderly population of available documents and links with automatic royalty on what is drawn out.

The growth plan is quite straightforward. We will open as a small-scale service storing and supplying on demand, then grow. We will begin public-access service with a single computer, first on straight dial-in and then on Telenet. Additional Xanadu stations will be opened around the country, possibly on a franchise basis, connected by Cylix, ACS or similar high-bandwidth arrangements between stations. Each station will offer local dial-in and storage, but instantaneous pass-through will make it seem that each station contains all documents available.

We do not begin, of course, with "the Library of Congress," but with an empty vessel. We offer a storage service with immediate benefits and immense long-term power. Anyone may store anything, unless it is shown to violate copyright, commit libel or threaten national security. (To the often-asked question "How do you get it in?," the answer is **any way you like**. We will accept ASCII over the phone and presumably floppies though the mail. After we've been open a little while we should be able to afford a Kurzweil scanner.)

The Xanadu system is not a DBMS in the usual sense. You cannot ask for "scans" or searches. It is a literary system for the storage of documents, making explicit the linkage facilities that literature has used from time immemorial. The system is, however, a "decision support system," meaning its contents can be molded to any use. Each viewer may relink, regroup, recategorize, annotate anew or rewrite his permitted universe any way he wants — yet always see the unsmirched original.

I like to think the Xanadu system corresponds best to a naive notion of what computers do. It keeps track — of connections, of variants and possibilities and alternatives and of history, with little bother to the user.

The system and its back-end protocol are rather well described in the book. *Literary Machines* is essentially an expanded version of my paper, "Replacing the Printed Word" (Proceedings of the IFIP World Computer Conference, Tokyo and Melbourne, 1980). A related piece, "A New Home for the Mind," appeared in *Datamation* in March of this year. I also included related material in my opening speech at this year's Office Automation conference, and they have asked me to give the featured speech on "the electronic office" at next year's as well.

To the often-asked question, "When?," our standard answer is, and remains, six months. That's when we hope to begin to offer limited service to paying storage-and-linkage customers. But if you want a big in-house system, call for quotation.

The Xanadu Project is alive and well, though our resources are not what we wish they were; programming work continues under the day-to-day direction of Roger Gregory in Ann Arbor, Michigan. The telephone number is 313/663-3637 and the address is Box 7615, Ann Arbor, MI 48107. Demonstrations may be arranged there by special appointment. (Over-the-phone demonstration is impossible because of the need for a tightly-coupled front-end computer to handle user display and interaction. This is not yet exportable.)

While my own special concern as Director of the project is the long-term goal of setting up and marketing the public-access network of Xanadu services, Mr. Gregory is presently handling industrial and commercial applications. (We are quoting big systems to big companies at big prices, especially for code management of large programming projects.)

Fully operational is the indexing system for any number of documents and links between them. Not all of the features described in *Literary Machines* are as yet operational, though all are fully designed. All of these features scale up fully to any size and quantity. (Multi-user and networking are also not as yet implemented, and while they sound tough they are mundane compared to what we have already licked.)

The system runs under the Unix operating system (which must be supplied with a modification license). Unlike conventional programs, the Xanadu program also requires a very large directly-addressable RAM space. Thus the only available machines that will run it as presently written are the VAX, the 68000, the Perkin-Elmer, the Harris, or the National 16000. (However, we are open to custom configuration for other customer machines, especially the 43xx and 33xx series.) Additionally required, of course, is a front-end system — that is, a fairly powerful user terminal — that will provide an easy user interface and translate user requests into the rather intricate back-end protocol.

While interest in our work is considerable throughout the world — especially due to the kind remarks in the 1980 and 1981 *Whole Earth Catalog* — we especially appreciate yours because of your inquiry (or whatever prompted this letter in reply). We stand ready to work with any company that needs our system and knows it. If you recognize the magnitude of what we believe we have done, you will also appreciate our anomalous position. Please understand that while we hope this will become a conventional business enterprise, it is presently an all-out development effort by a somewhat fanatical group of unusual people.

Many people write us with interesting schemes for “networking” and tying the world together by their own proposed methods of document storage, perhaps including you. We urge you to study what we are doing and see if this is not the vehicle you want. These things take a long time to season, and I think we all want to see this thing done right. There may be only one chance.

We continue to need your support and encouragement. (Our well-wishers and believers who are standing by are presently being offered a lifetime user-name of choice, good only when and if the system flies, for \$100.)

With very best wishes, I am yours truly,

A handwritten signature in black ink that reads "Ted Nelson". The signature is written in a cursive, slightly slanted style. The first name "Ted" is written with a large, open 'T' and a small 'e'. The last name "Nelson" is written with a large 'N' and a long, sweeping horizontal line that extends to the right, ending in a small hook.

Theodor H. Nelson, Director

OUR NEXT CONVENTION: Hypercon 8, the Eighth Semi-Annual Xanadu Hypertext Convention, is tentatively scheduled for Boston on Saturday, July 31st (right after Siggraph) at the MIT Artificial Intelligence Laboratory. Unfortunately, we are limited to 100 attendees; prospective attendees should contact us immediately.

AVAILABILITY OF MY BOOKS: *Literary Machines* is available prepaid from me: please send \$15 to me at the above address. (Available in bulk or by purchase order from The Distributors, address below.) *The Home Computer Revolution* is \$2 (Plus \$1.50 postage & handling), from The Distributors, address below. *Computer Lib*, now returned to its 1974 incarnation, is now \$12.95 plus \$1.50 postage and handling from The Distributors, 702 South Michigan, South Bend, IN 46618.

THEY'RE GOING FAST!

THESE ARE ALREADY TAKEN. Is your name or favorite pseudonym among them? If it is, Somebody's Already Got It — as a user-name on the Xanadu™ Hypertext System.

47	Dionysius	Grubnik	Loball	Peter	Student
a	Doc	Grumpy	Lubar	Phlogiston	Steve
Al Clem	Dork	Gumbo	Margaret	Pooh	Ted
Alan	Dos Equis	Gumby	Mass Driver	Pope, The	The Director
Anna	Drexler	Hannah	Maybe	Post	This is not a
Artificial Department of Intelligence	Dumbo	HAHA	Mentor	Proctologist	Xanadu
Bill	- e -	Hermes	Merc	Prof	Turoff
Brain Damage	E., Alfred	Herpes	Metamorph	Ridgway	Twit
Bush	Elaine	Hillis	Nidge	Rob	Unicorn
Centaur	Eric	Hugh	Milhaus	Roger	VGER
Chip	Erik	IFTHEELSE	Minister of Intimidation	Roland	Why?
Citizen	Evlrude	Igor	Minsky	Sarah	Why not?
Corvo, Baron	Felch	Ingerman	MSM	Senzig	Witham
- d -	Fiddler	It	Nelsberg	Shane	Wiz
Debbie	Fritch	Jeff	Nero	Shithead	Wyoming
Department of Redundancy Department	Galadriel	Jonathan	Sleazy	Sneezy	XCHAR
Desiderata	Gandalf	Jove	No	Suetl	Wonkyponky
Dick	Ghu	Key Operator	Nomi	Solomon	Yes
	Gilgamesh	Kubla	Nonesuch	Space Man	Zeus
	God	Laura	Orchitis	Spock	
	Gribble	Leur	Pask	Spink	
	Griffith	Liebowitz			

We expect the Xanadu system to become a general-purpose public-access storage and publishing utility. That will make it a "network," generally available to subscribers from dial-in or from other networks, such as Arpanet, Tymnet,* The Source,* Unixnet,* etc.

As is the convention in such networks, users will have wide options in choosing their signon names.

We call such user-names "Xandle™," or Xanadu Handles.

Your Xandle may be used as your signon, your billing code, and your address on the system for electronic messages from anyone.

Billing. Xandles are adequate specifications for billing, since our system is sufficiently advanced not to require account numbers.

Locality. Since the Xanadu system will have distributed outlets across the country, such user-names will ordinarily be associated with particular nodes of the network, e.g.

SANTA CLAUS OF CHICAGO

This would be the first person to choose the name "Santa Claus" in the Chicago area. Someone in Cleveland, however, could also have the name "Santa Claus," but he or she would be

SANTA CLAUS OF CLEVELAND

We call such a Xandle a local Xandle, since it is associated with a particular place.

Inter-network addressing. Following the general convention in such matters, it should be possible to send messages to any Xanadu user from any other network by means of the "@" convention, viz.:

SANTA CLAUS OF CLEVELAND @ XANADU

This assumes, of course, that the Xanadu system becomes connected to the general grid of networks within the evolving standard inter-net protocol, which we intend that it will.

These matters explained, we can now propound our Special Offer.

LIMITED TIME OFFER! YOUR VERY OWN LIFETIME GLOBAL XANDLE!

To raise money for our project, we are offering you the official global Xanadu user-name, or Xandle, of your choice, to be usable globally throughout the network with no location suffix, for life. So you can be:

SANTA CLAUS @ XANADU

The only one in the World.

Formally, your hundred-dollar fee is an initiation and registration fee initializing you as a Charter Member of the Xanadu users' community; it gets you a handsome Charter Member certificate (suitable for framing) and wallet card with which to subdue unbelievers. Permission is also granted for you to announce, sport, blazon, spangle, bedizen, brandish and otherwise employ your Xandle in any written, spoken or mumbled form (including but not limited to badges, business cards and letterheads), at any time (including but not limited to Xanadu meetings and independently arranged luaus, soirees and assignations), for the rest of your life. That is the official offer. In addition, when and if the system goes into public operation, your registration fee will be redeemable for one hundred dollars' worth of Xanadu service, and your Xandle will become your official address and account-name if feasible, subject to such rules and regulations of the system as may from time to time come into effect.

As you see, we're not promising all that much. Your Global Xandle is a statement of faith; or if not faith, the symbolic support of high aspiration.

Unpublished Xandles, like unpublished telephone numbers, are allowed. Thus collision avoidance is vital. COLLISIONS BETWEEN PROPOSED XANDLES WILL BE ARBITRATED ARBITRARILY. Capitalization differences are not presently considered sufficient to distinguish Xandles. ASCII punctuation may be included but at least one letter or numeral is presently required.

Note also that trade marks, such as "Pacman," are ordinarily unacceptable. Names of characters in recent fiction (such as "John Galt" and "Luke Skywalker") may have copyright and trademark status and thus be unavailable. Proof of permission from copyright holders may be required. Real names not your own, such as "Richard Nixon," may be similarly encumbered.

Note that we reserve the right to refuse or withdraw a Xandle at any time for any reason, substituting another Xandle mutually satisfactory between us and you.