The XANADU Computer System:

An all-purpose information system

for the fallible and even messy user.

DRAFT BROCHURE

T. Nelson. 27 November 1969

Constructive disorder is an essential part of many of
the most creative and important human processes. People think,
therefore, that computers cannot help in these processes.
Legend has it that computers require the user to be rigid,
fussy, numerical and bureaucratized. In fact, a number of
systems, which you may or may not have met, seem to bear this out.

But XANADU puts the lie to this legend. XANADU is the
computer system designed to help ordinary and "creative" people
manage their ideas, their writings, and their bookkeeping.

The system provides the convenience, security and privacy
of your own small computer, and is yet on a par with the most
advanced text manipulation systems, notably Stanford Research
Institute's AHI system and Brown University's Hypertext Editing
System. In its simplicity of use, however, and easy availability
of rich resources, it is unrivalled in the world.

XANADU is an overall computer system, also called a
"monitor" or "operating system," which manages the performance
of various different programs the user may want to employ.
These programs it blends into an "environment" or "workspace"
around a display screen, from which the user may create, modify
and file, in the computer, his writings, drawings, memoranda,
messages and any other information. If desired, XANADU will also
send them, unattended, to anyone else with an appropriate system,

or fetch desired materials from other computers over the phone lines. If desired, it will do this at night, when the rates are low.

Not only does the use of XANADU speed the writing and revision of any document, with quick printing and instantaneous filing and retrieval of the latest version. More than that: by user-controlled linking with other documents or information, it provides instantaneous cross-reference throughout a very large and changeable information base.

The basic programs supplied with the system permit text writing and editing, text linking, text reading with jumps, simple picture drawing (with picture complexity depending on size of machine), picture viewing with jumps, communication, storage, security, printing and plotting. In addition, a simple program-binding language called X^{ULT} ("exult") permits the interested user to combine programs for his own style of operation, even though he himself knows nothing about computers. (The more venturesome user may want to code his own functions using the normal computer instructions, but assembling them under the Xanadu framework using the XAP assembler. In the future, it is expected that languages XANTRAN and BOL-X, resembling FORTRAN and COBOL, will let users program scientific and business applications, producing programs which fit together in the unique XANADU environment.

How it feels.

The user has a typewriter keyboard, a "mouse" or movable thingamajig for pointing at the screen and drawing, and special controls related to certain tasks and security. To the experienced user the sensation of using the system is somewhere between using a typewriter and flying an airplane. The ability to zip from document to document can best be compared to being suspended in a flying harness above a tennis-court full of papers. On the jump commands, a cooperative giant swings you from the papers where you are to where you want to be, instantaneously.

How the screen looks.
The contents of the screen change from moment to moment, depending on the user's action. Here are some examples.

Starting. In the starting state, the system may be set up with secret passwords or secret pointing and drawing actions to identify the qualified user. Only when the user has proven himself will the system go into operation.
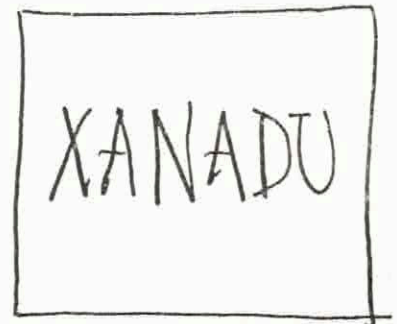
Where am I? The system will automatically provide a map of the workspace or hypertext structure the user is in, with a blinking light showing the current location.
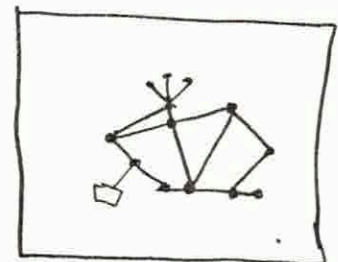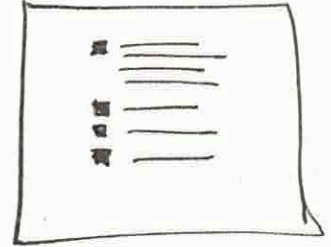

Where was I? The user may when desired find out what time it is, what he last did, and any other programmed information in a constricting
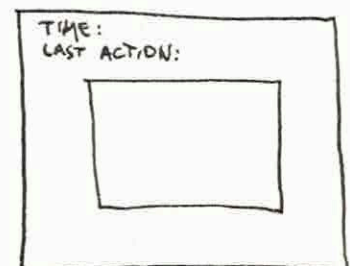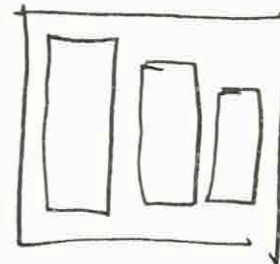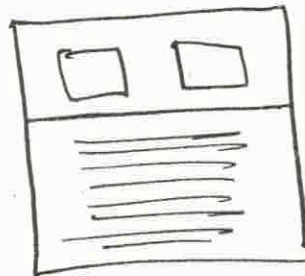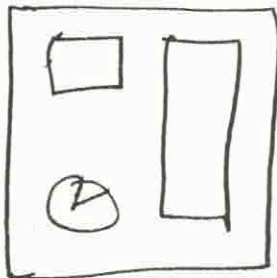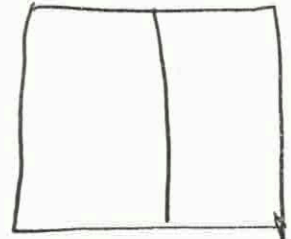
frame at the rim of the screen.

What next? The choice of what to do next may be decided by pointing at a "menu" of existing functions. The user may predefine such menus, and the circumstances of their appearance.

Screen layouts. Through the X^{ULT} binder, the user may create any arrangement of screen formats, and the comings and goings between them.

How to write.

To write something, use is made of the buttons INSERT, DELETE, MOVE and REPLACE. These permit writings to be created on the screen through the typewriter keyboard and text controls. Push INSERT and point to the screen; the typewriter keys now type on the screen at the place pointed to. Press DELETE and point at the start and end of the text to be deleted; it will disappear. MOVE permits you to specify, by pointing, what piece of text you want moved where. REPLACE permits you to specify a piece of text that will disappear when the replacement is typed in.

How to Read.

Using the forward and back controls, the user causes text to roll smoothly back and forth on the screen.

The user may jump to footnotes, or points in linked documents, by pointing at the link symbol (an asterisk or any other link symbol) and pressing the JUMP button. The user may also undo all his jumps in order, using the RETURN button.

How to Make Pictures.

Using the SKETCHPAD facility, the user may draw on the screen with the mouse or optional tablet, creating line drawings of up to a few hundred lines. Points and lines may be made, unmade, moved and changed by using the appropriate command spots.

How to annotate things.

Text and pictures stored within the system may be annotated by means of the "link" facility, causing a mark to appear and a link to be made between any thing and any other thing.

Complex information structures. By use of the link facility, the user may readily create complex interlinked structures of writing and pictures, called hypertexts and hypergrams.

Alternate versions. XANADU has unprecedented facilities to aid the writer. One of these is the "alternate versions" facility, permitting the user to incorporate the same material in separate documents, rewriting them as desired. The system automatically cross-links them for instantaneous viewing side-by-side on the screen.

Historical trails and backtracking.

The user who wants to keep track of the development of his work, and sometimes to recover discarded materials, may trace backward through a "historical trail," automatically kept, and see his work just the way it was at any minute in its history, as well as jump between versions to corresponding parts.

Programming your own.

The sophisticated user may wish to change or replace some of the functions supplied with the system. User guides will be made available for this purpose. However, to assure the orderly development of the system, and the security desired by users, distribution of such programs may only be with permission and supervision of the company.

A work example: writing lots of letters.

For people who send a lot of letters which are roughly similar, XANADU is a boon. A roster of paragraphs may be summoned to the screen and the desired paragraphs picked by pointing. The resulting draft letter may be seen immediately on the screen and rewritten there. Addresses may then be selected by pointing at a list on a screen. XANADU will save a copy electronically and type the letter and envelope, unless the recipient has his own XANADU system, in which case your own system can send it to him automatically.

Xanadu as bookkeeper.

Xanadu, used as a check register, keeps track of all checks
written, maintains current ascending or descending balances on
any categories or recipients, automatically types the checks,
and automatically reconciles bank statements when you point
on the screen at the numbers of checks returned by the bank.

The inside story.

Internally, XANADU is unique as a computer system. It is
a completely general programming system, invented by Theodor
H. Nelson, for managing computer input, output, files, displays
and program structure. Programs written within this framework
may be/fitted together for many purposes. While the separate
easily
programs XANADU manages are not in principle new, no one has
previously obtained this level of performance from a small machine.

Technically, XANADU is extremely simple, basic and radical,
and comp uter specialists have expressed surprise that it was not
invented before. All available measures will be taken to secure
rights to the system, including patent applications, copyright,
trademark registration, etc. However, licenses will be granted
throughout the computer community for its programming and use
on any machines for which it is desired. Because it is so simple
and basic, its use will probably extend considerably beyond
the applica tions for which it was originally intended.