

Ted Nelson, Copyright, &
Literary Machines



Noah Wardrip-Fruin
Electronic Literature Organization

We've been here before.

Before now

- The web was not the first idea for a world-wide hypertext-enabled publishing network.
- The 1990s was not the first time it was realized that such a network would have copyright implications.
- I think we can learn something from the past.

Hypertext

- Web pages are written in HTML — HyperText Markup Language.
- Web data is transmitted using HTTP — HyperText Transfer Protocol.
- The term *hypertext* isn't generic. It was coined to name the concepts of a 20th century thinker — Ted Nelson — who started writing about a web-like network 30 years ago.

Plan of this talk

- What is hypertext?
- What was Nelson's pre-web vision for a hypertext network? (Xanadu)
- How does Xanadu compare with the web?
- What can this comparison tell us about our present moment?

What is hypertext?

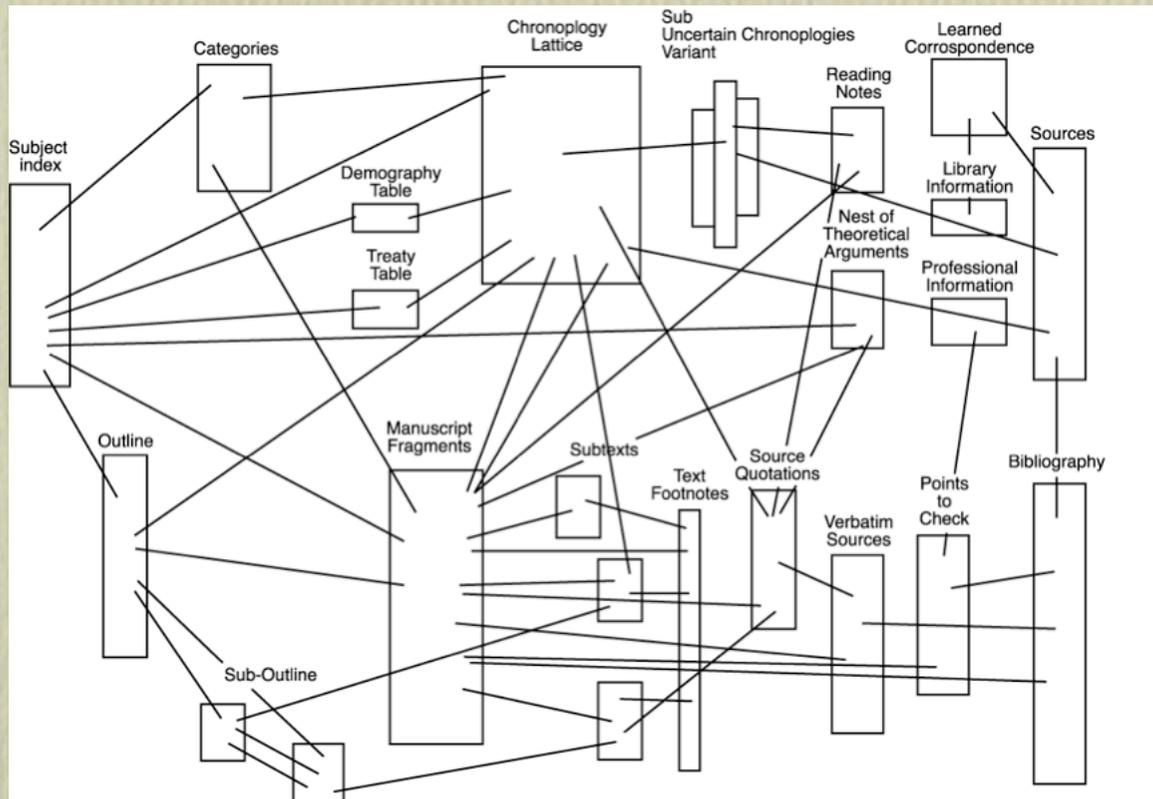
- It's not “node and link.”
- It's a broad category of computer media, first proposed by Nelson at a time when the idea of using computers for media was radical.
- Quick look at definitions and examples from 1965 and 1970.

1965 definition

- In 1965 Nelson published the article “A File Structure for the Complex, the Changing, and the Indeterminant” — introducing the terms “hypertext” and “hypermedia”
- “Let me introduce the word ‘hypertext’* to mean a body of written or pictorial material interconnected in such a complex way that it could not conveniently be presented or represented on paper.”
- “(* the sense of ‘hyper-’ used here connotes extension and generality; cf. ‘hyperspace.’)”

1965 example

- One type of hypertext — linked information structures:

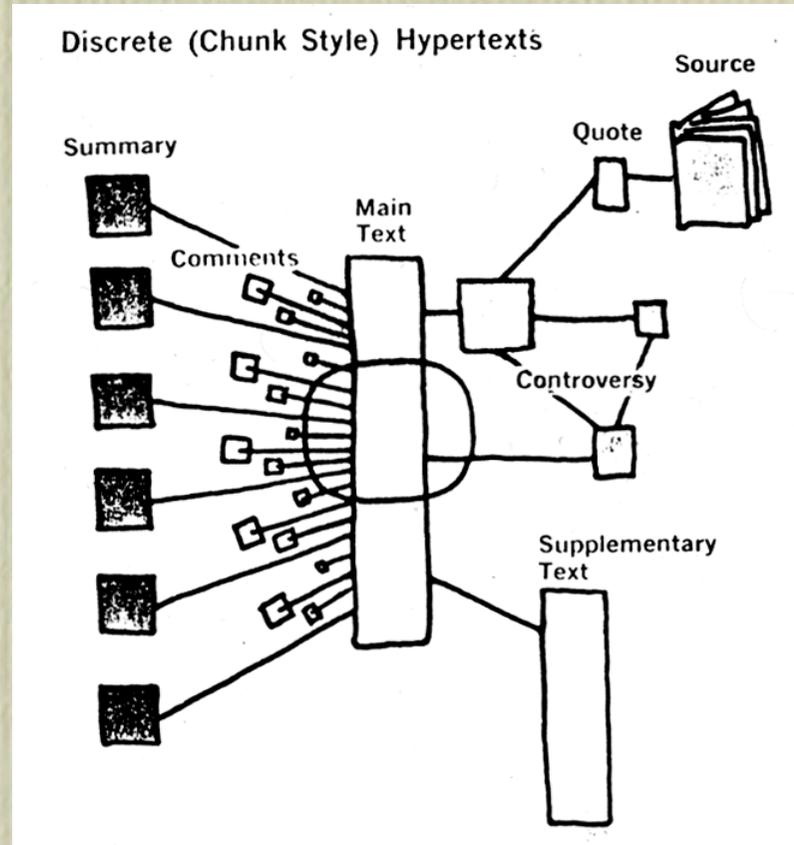


1970 definition

- Also helpful is Nelson's 1970 expansion of "hyper-media":
- "*Hyper-media* are branching or performing presentations which respond to user actions, systems of prearranged words and pictures (for example) which may be explored freely or queried in stylized ways.... Like ordinary prose and pictures, they will be *media*; and because they are in some sense 'multi-dimensional,' we may call them *hyper-media*, following mathematical use of the term 'hyper.'"

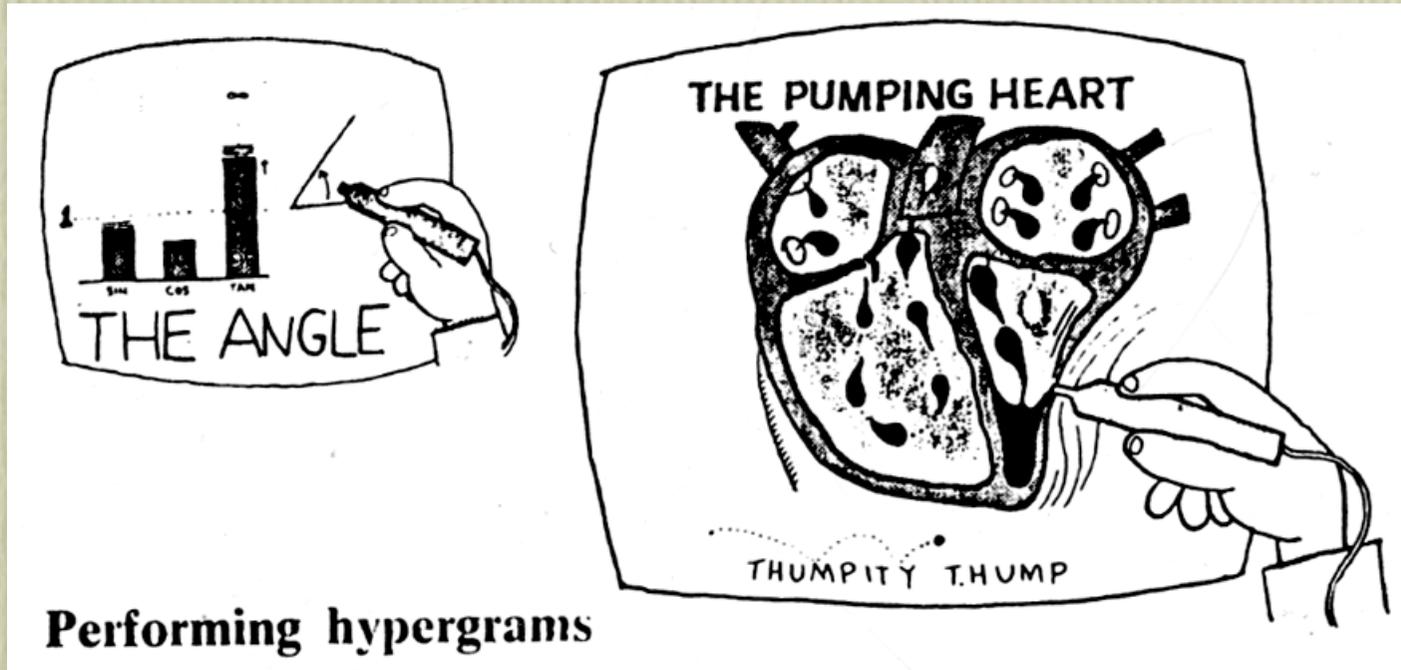
1970 hypermedia examples

- What Nelson called “discrete” (or “chunk style” — aka “weblike”) hypertexts are just one example



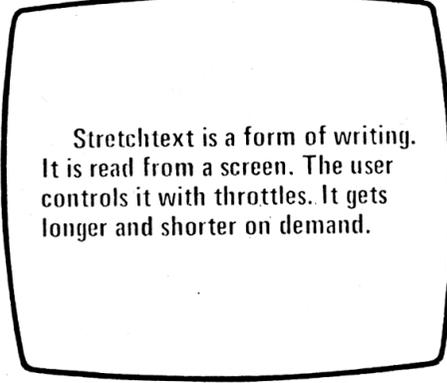
1970 hypermedia examples

- Performing hypergrams (notice the light pen)

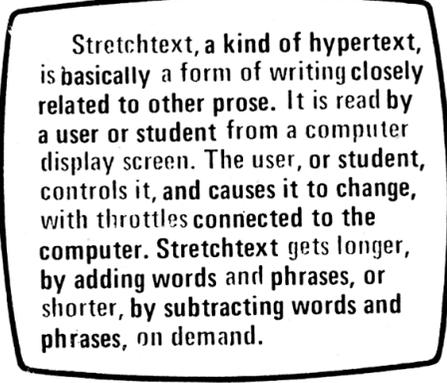


1970 hypermedia examples

- Stretchtext — details expand in place, rather than jumping from chunk to chunk.



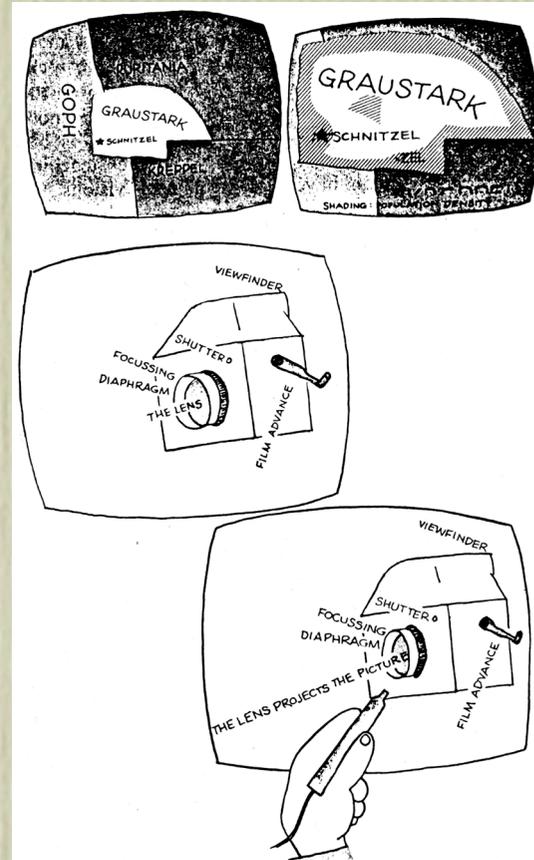
Stretchtext is a form of writing. It is read from a screen. The user controls it with throttles. It gets longer and shorter on demand.



Stretchtext, a kind of hypertext, is basically a form of writing closely related to other prose. It is read by a user or student from a computer display screen. The user, or student, controls it, and causes it to change, with throttles connected to the computer. Stretchtext gets longer, by adding words and phrases, or shorter, by subtracting words and phrases, on demand.

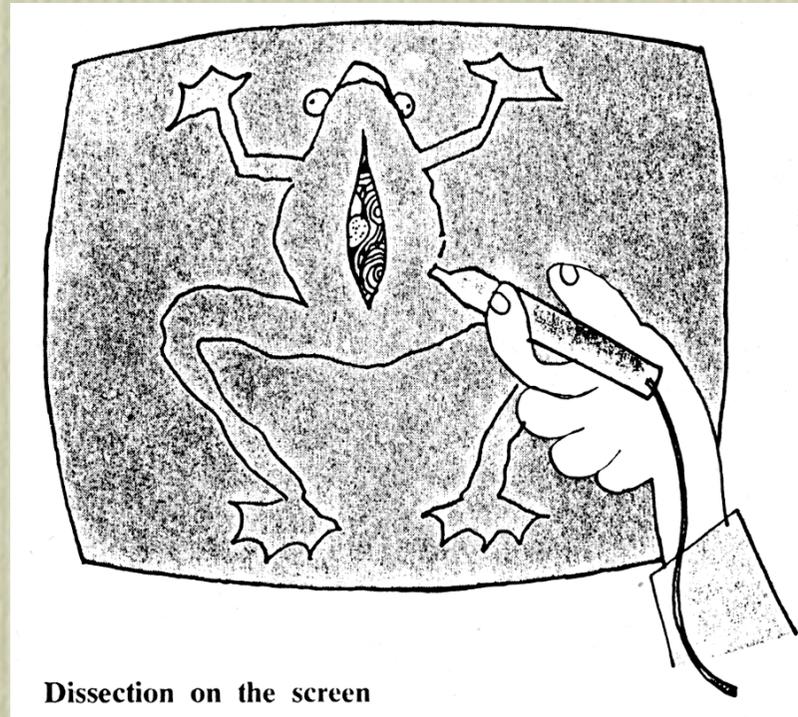
1970 hypermedia examples

- Hypermaps (a zooming interface)
- Queriable illustrations (a form of hypergram)



1970 hypermedia examples

- On screen dissection (remember, we're still 5 years before the first personal computer kit)
- Not mathematical simulation, but authored presentation



1970 hypermedia examples

- Hyper-comics
- All these examples reprinted in Nelson's 1974 *Computer Lib / Dream Machines* (and, from there, in *The New Media Reader*)



What was *Xanadu*?

- Nelson's pre-web vision for a world-wide hypertext-enabled publishing network.
- Discussed in *Computer Lib / Dream Machines* (1974) and given full outline in *Literary Machines* (1981).
- A system for authoring and publishing the diverse forms of hypertext/media Nelson envisioned.

Authoring in Xanadu

- In the Xanadu vision, authors could work on small bits of media (an explanatory paragraph, a bass riff, a schematic).
- These bits could be connected with other things. One of the most common types of connection was *transclusion*, which brought that bit into a larger document (an essay, a song, a blueprint).
- Other types of connection were also possible (e.g., web-like text links).

The ultimate archive

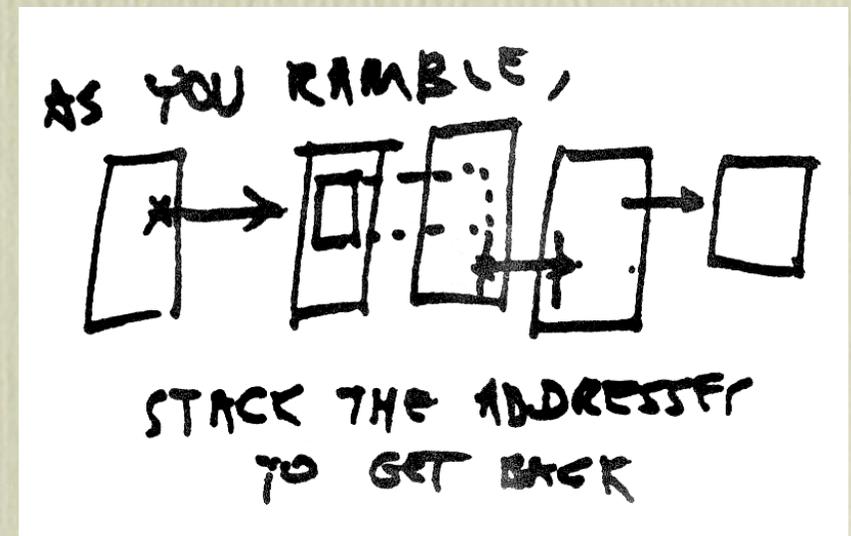
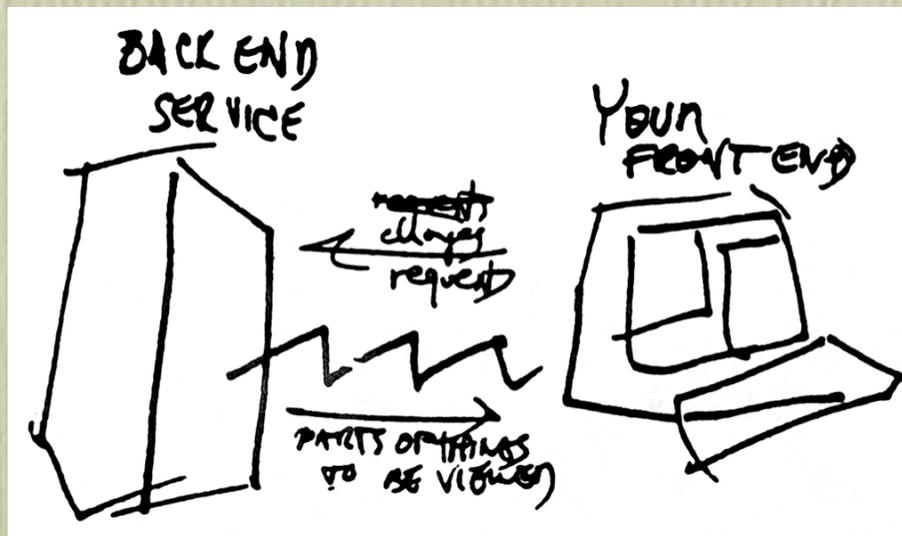
- The Xanadu system was envisioned to keep track of all changes to its bits, rather than a few discrete versions.
- Any version of any bit could be requested. A document could choose to transclude the most current version (whatever it is) or a particular historical version.

Built for the remix

- Authors didn't just have their own bits to play with. Any public bit by any author could be transcluded into any document by any author.
- Nelson knew that creative work builds on prior creative work — Xanadu had the remix, the sample, the quotation built into its basic design.

Front end / back end

- Like the web, Xanadu employed front-end viewer software (browsers) for wandering over a world of information (bits) on back-end servers.



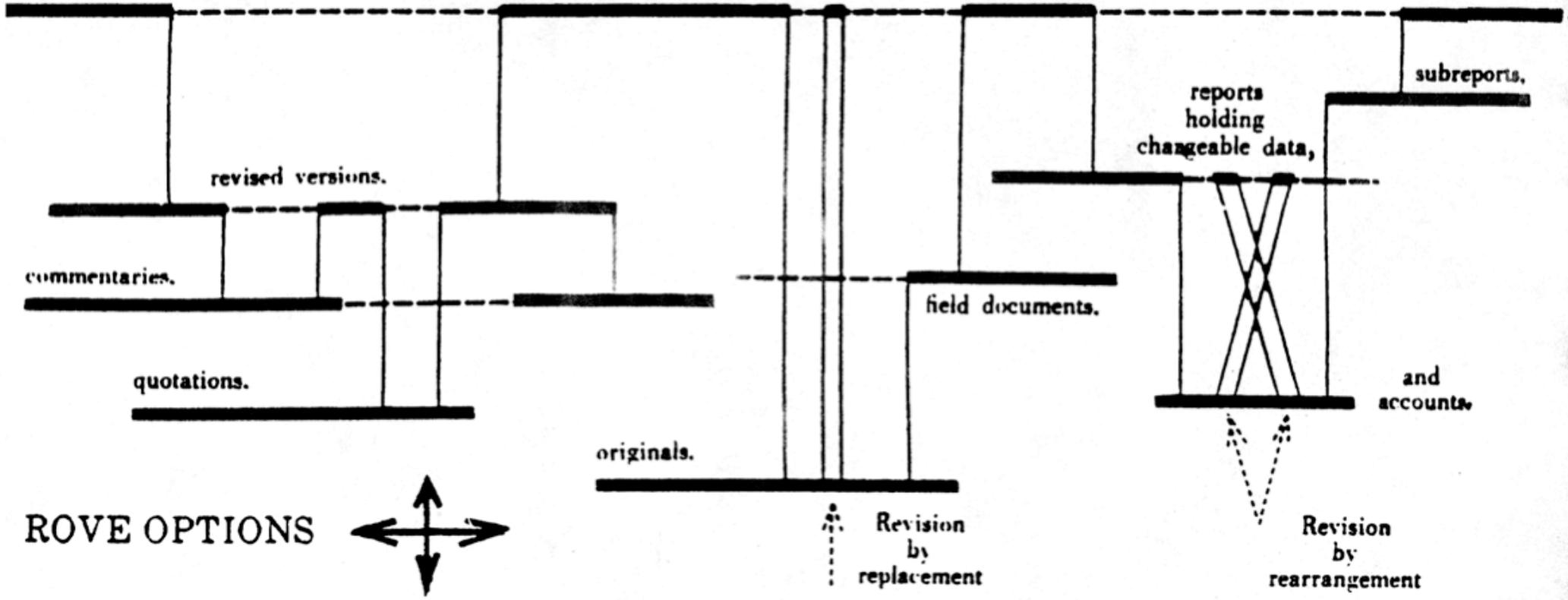
On-the-fly assembly

LAYERS OF WINDOWING TEXT. Each horizontal line is a document.

In a library:
top document
windowing to

WINDOW SANDWICH

In a business system:
general report
windowing to



Xanadu, the business

- Envisioned as a utility, with user payment for each document read.
- Payments go to support network (Xanadu) and pay authors of documents read (for the bits they authored, aka micropayment).
- Same rate of payment for all public bits, network policy that everything publicly readable is also transcludable (remix now what was published an hour ago).

None of this happened.

(Though, with funding from Autodesk, most of it was implemented on a technical level, and the source code is now available.)

How does Xanadu compare with the web?

- Both well and poorly.
- Xanadu looks good when we realize that, instead of the ultimate archive, much of the early web is now 404. Similarly, while we live in the age of remix, the Web mostly serves up big, untranscludable chunks.
- But in some ways we're much better off with the web...

The web explosion

- The web is valuable for making such a vast amount of information available.
- This explosion was made possible by the web's openness and non-proprietary nature.
- Anyone on the Internet could add to the back end (put up a web server), innovate on the front end (create a new browser), and roam freely.
- No need for permission or registration, no worries about the company (no danger of Enron).

The library vs. micropayment

- It's also good because Xanadu's financial model (micropayment by the individual) is incompatible with the ideal of the public library. (And, in a link/transclusion world, with open writing.)
- I'm here as an author, and it was through the public library that my desire to write was born.
- Limited "information credits" are no solution.

Micropayment, continued

- Bookstores and public libraries (regressive and progressive ways of paying for books) coexist because multiple copies are needed.
- I don't know how to solve the library problem for the network, but until we do I'm opposed to micropayment.
- Luckily, the web has created the expectation of a library. (Not a “culture of piracy” but a “culture of the library.”)

Where are we now?

- There's a danger we may be moving toward a network that combines the bad aspects of the web and Xanadu.
- We may lose the open/nondiscriminatory access that created growth, without gaining the Xanadu archive.
- DRM may undermine the library ideal in more ways than Xanadu, without enabling remix culture.

What next?

- Hopefully this historical comparison is one more example that can help us articulate that current proposals aren't a good deal for the public.
- Also, we can see (in the less copyright-obsessed areas of the web) work that starts to combine the best of the web with Xanadu-like functions. (E.g., blogs, permalinks, and aggregation.) We want to encourage this, not let it pass into impossibility.