

# Starting Over: Toward a True Electronic Literature

Theodor Holm Nelson

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[www.stg.brown.edu/conferences/DAC/](http://www.stg.brown.edu/conferences/DAC/)

<http://ted.hyperland.com>– Ted Nelson personal home page

<http://www.sfc.keio.ac.jp/~ted/> Ted Nelson, Keio Shonan Fujisawa Campus, Japan

<http://www.Xanadu.com>- Project Xanadu

## Note on Ted Nelson's remarks

By Greg Lloyd, April 2001. These notes try to capture the spirit of Ted's talk. The most quotable phrases are directly from my notes, but you should *not* consider this a transcript. Please see Ted's Possiplex autobiography, papers and YouTube series for a complete and accurate record of Ted's thoughts, straight from him.

## Ted Nelson Autobiography, papers, and videos relating to the subject of this talk:

*Possiplex: An Autobiography of Ted Nelson* by Ted Nelson, Feb 2011 Mindful Press [buy from Amazon](#)

*Geeks Bearing Gifts* by Ted Nelson, Dec 2008 Mindful Press [buy from Amazon](#)

*Computers for Cynics* – Video series by Ted Nelson, May 2012 see [TheTedNelson](#) feed on YouTube.

*Back to the Future: Hypertext the Way it Used to Be* by Ted Nelson and Robert Smith, Proceedings of Hypertext 2007, Manchester

## Introduction - Andy van Dam

It's an honor to introduce my friend and colleague Ted Nelson, whom I've known longer than anyone else in my adult life - literally since my freshman week in 1956 at Swarthmore College when he took me for some kind of extended intellectual bull session into a friend's room where there was a WOMAN !! student present - totally against the rules of the day prohibiting the opposite sex in single sex dorms except for Sunday afternoon from 2-6 with the door at least 6 inches open! Later that year my girlfriend at the time and now my wife Debbie and I had bit parts in Ted's variety show, which was arguably the world's first rock musical, where she played a dumb blonde and I a Russian spy.

We next re-connected at a computer conference in 1967 where he explained to me that he'd been working on something he called *hypertext*, a scheme for embedding links in documents and connecting them in some kind of network of associations. Since I'd used an associative memory simulator for my PhD thesis a few years earlier, this seemed like a very interesting idea to me, all the more so since I remembered vividly how I'd always preferred to read the most heavily marked up books in our College library because I learned so much from the marginalia.

Ted commuted to Brown on odd weekends in the fall of '67 and essentially set requirements and came up with design ideas for an experimental system that came to be known as HES - the Hypertext Editing System, a contemporary of Doug Engelbart's pioneering NLS and the first hypertext system on a commercial computer - the IBM S/360. This led to Brown's becoming the first school to take hypertext seriously. We implemented a series of hypertext projects including FRESS, which was used in the mid-70s for the first online scholarly community that did its reading, annotating, and conducting electronic dialogues on a British poetry and criticism web. We founded IRIS, the predecessor to STG; IRIS implemented Intermedia. We even spun off a commercial company in the early '90s, Electronic Book Technologies, which was the first to combine SGML with hypertext.

After HES Ted and I went our separate ways, lost track of each other and reconnected multiple

times until we, with Doug Engelbart, keynoted the first hypertext conference that was held in Chapel Hill NC in 1987.

During the '80s Ted came back to Brown and lectured on Xanadu, which he had already starting working on in the late '60s. Since then he had been scrambling to find a means to support himself, his acolytes, and their multi-decade development of this Holy Grail.

Mel Brook's *The Producers* comes to mind ...

During all these decades Ted has been a prophet with inadequate honor in his own land and only belatedly has gotten the recognition he deserves. He is Project Professor at Keio University in Japan and in March received a medal and the title of *Officier des Arts et Lettres* from the French Minister of Culture. Largely his lack of recognition in the US is his own fault because he is by design 'un agent provocateur', does not suffer fools gladly, and inundates you with his coinages - some of which stick, like hypertext, finally - and some of which do not. I especially like 'cybercrud' and 'intertwining', which is almost onomatopoeic. His entire life is intertwined techno-dreaming, defiance of intellectual convention and rigor mortis, and showmanship. Computer Lib/Dream Machine is still a fine example of an exuberant challenge to the status quo in which many visionary ideas lurk.

IF COMPUTERS ARE THE WAVE OF THE FUTURE, DISPLAYS ARE THE SURFBOARDS.

For example, he is clearly a pioneer in thinking about text in the sense of corpus, not just as a single book, set in a social context with a set of processes for creating and sharing information. In Ted's world there never was the crippling distinction of the current Web between authors and readers, who can at most annotate with yellow stickies. Ted was also the first person I know who took seriously the problems of intellectual property in the new digital age - with such proposals as micro payments and transclusion.

He theorized about hypertext fiction based on antecedents such as Nabokov's *Pale Fire*, and as early as the late '60s in 'No More Teachers' *Dirty Looks*, he laid the basis for much of Web-based, on-demand education as he excoriated the rigidities of the race-track 'curriculum' and hide-bound educational institutions.

One last anecdote. At the symposium we ran at MIT in honor of the fiftieth anniversary of the landmark article "As We May Think" by our field's Patriarch, Vannevar Bush, Ted was one of the keynote speakers. We carefully videotaped all talks for posterity with full backup, but towards the end of the symposium we discovered to our great horror that the crew of professionals we had hired had mistakenly recorded over Ted's speech on both primary and backup copy. Rather than throwing a well-earned shitfit, he graciously agreed to give his talk again, which meant that we got not to hear the same talk again, but a quite different talk on the same subject, just as stimulating and provocative as the first. I have no idea what rant he's going to deliver today, but I'm sure it will be a terrific start to this multi-disciplinary conference and another fine example of a cerebral performance art form that he invented and perfected - techno-standup comedy.

It is now my great pleasure to introduce the man who can dream 'six impossible things before breakfast' - Ted Nelson!

# Starting Over: Toward a True Electronic Literature

Theodor Holm Nelson

Thank you Andy. The problem is not "dreaming impossible things," it's showing people what *is* possible.

In every revolution, there is a time where some person stands up and says: "We have betrayed the true spirit of the revolution and must return to our roots." For the American revolution - Paine; For the French revolution - Danton; For the Russian revolution - Trotsky. For the hypertext revolution – *Me!*

Like most of you I loose an average of an hour a day to computer crashes, reboots and recovery. With a working lifetime of 80,000 hours and 40 million computer users - that is over 30,000 lifetimes a year. Wasted! Destroyed! By whom?

*Geeks.*

Originally, this meant someone who bit the heads off chickens as a sideshow act. Now it refers to people who don't get it. Don't understand human life, human emotion, or human thought. *The ones who created your software.*

What's a non-geek? I'd say *civilian* - But I could also say: poet, teacher, author, editor - or movie director.

And that points to the problem.

Software design is taught in the wrong department. *Interactive software is a branch of cinema.*

It requires the ability to capture events on the screen that affect the hearts and minds of the viewers. Software needs to be created by people who know how to present things - how to captivate the human mind by using the simplest, most universal means. And simplification is very hard.

Fundamentally, simplification requires someone in charge. It requires iron-fisted authority.

That's a movie director. Without authority, the work of the cinematographer, writer, set designer, actor, and choreographer fall into a shapeless, dysfunctional mess. Sound familiar?

In software, we're at the same stage as the movie industry in 1905 - *the cameraman was in charge because he was the one who understood the equipment.*

If you look at a mess like Microsoft Word today, you'll find that every misshapen form and feature is there - and looks as arbitrary as it does - because engineers create their own interface, then argue with other engineers to decide how to put the parts together. Then the engineers argue with the marketeers - who have no clue what to do, but have their own agenda.

Look at this [*Microsoft file explorer*] interface. Every folder has a name. You open a folder to find more folders and files, and so on. It's been like this for 50 years.

That's because computers are hierarchical devices. Right?

Wrong! Computers are made to simulate hierarchy *because the geeks didn't have any better ideas.*

That's how engineers think. If the humanists think differently, "We'll have to straighten them out, right?"

And what have they given us? The great work of the past twenty years has been devoted to making computers simulate two things:

- Hierarchy, and
- Paper!

The holy Xerox PARC started simulating paper in the 70's. And made a pretty good simulation.

Why simulate paper? *Because Xerox is a paper walloping company.*

The smoking gun is right there in the unofficial history of PARC - *Dealers of Lightning* - where Dick Shop says: "Documents are just black marks on paper." Right?

But Xerox PARC is famous for its inability to ship anything.

So they gave Steve Jobs a tour - and showed him everything.

The result is the peculiar worldview that the Macintosh represents computer liberation! You've all seen the famous 1984 commercial with the courageous woman runner, throwing a hammer through Big Brother's wall screen. Liberation?

No! By tying little pictures of paper to files and the programs that created the files - Apple made things even worse. Now, instead of programs designed to work with just about any kind of file - mixing, matching and combining actions to do what people want - you have:

- A program, and
- A software company that owns the program
- For every kind of file

*Not just a simulation of paper, but multiple, incompatible simulations of paper!*

The Macintosh took away people's fundamental right use what they create in any way that they want to.

*[points to Acrobat window with table of contents in left panel, page view in right panel]*

And the crowning glory is this - Adobe Acrobat

- Simulated hierarchy on the left
- Simulated paper on the right

The Web is also a simulation of hierarchy and paper. You address things by URL. And if you look at a URL, you see that it's a server name, followed by a hierarchy that leads to a file.

A document = a URL. A document is synonymous with the place it is stored.

No! This is exactly the nightmare I have been trying to prevent.

What is the part of the document that should be abstracted, generalized, and used to model create a persistent representation of the tissue of thought? I had an idea long ago - Xanadu. And now it lives again ([www.xanadu.com/xuWeb.html](http://www.xanadu.com/xuWeb.html), [www.xanadu.com/TECH/xuTech.html](http://www.xanadu.com/TECH/xuTech.html))

An alternative to hierarchy must be:

- Extensible
- General
- Simple

I call the result animated crossed lists - and the system, ZigZag  
[[www.sfc.keio.ac.jp/~ted/ZZ/ZZsum.html](http://www.sfc.keio.ac.jp/~ted/ZZ/ZZsum.html), [www.gzigzag.org](http://www.gzigzag.org)].

I'm writing a paper for *Scientific American* - to be published this August. But here's a preview:

*[Interactive ZigZag demonstration - my notes on Ted's introductory remarks]*

Take a spreadsheet. Everyone knows what that is: a collection of cells with two neighbors along each dimension. Pretty simple.

Now let's throw away everything about spreadsheets that we don't want.

- 1) **Spreadsheets are rectangular** - Why? Because we have to print them! No! Out goes that assumption.
- 2) **Spreadsheets have lots of empty cells** - Why? Because they have to be rectangular! No! The only cells we need are cells that have content - and an occasional cell to glue things together.
- 3) **Spreadsheets have edges** - Why? Because they have to be rectangular! No! Just glue the min and max cells along at the extremes of each dimension together - like a circle.
- 4) **Spreadsheets have two dimensions** - Why? Oh, forget about it. Just connect things in an arbitrary number of dimensions.

Here's an example. My "family tree" Note that it's actually a lattice, not a tree.

That's because in *my* family women as well as men have ancestors! A traditional "family" tree shows women appearing by spontaneous generation.

*[Ted demonstrates navigation and correlating selections in the ZigZag lattice]*

*[Ted demonstrates parallel text face - lines connecting links in different views]*

*[Ted reviews Xanadu edit trail - highlighting drafts, parallel text face display of changes from initial to final draft of the Declaration of Independence. Screenshot from original Xanadu. See [www.sfc.keio.ac.jp/~ted/XUsurvey/xuDation.html](http://www.sfc.keio.ac.jp/~ted/XUsurvey/xuDation.html)]*

*[Ted reviews theory and practice of transclusion. The text model of Xanadu is in essence an Edit*

*Display List (EDU) of text drawn from a common pool. Transclusive structures and indices make creation and maintenance of incremental edit history and micropayments for Transcopyright possible. See [www.udnax.com](http://www.udnax.com)]*

*[grl note: Xanadu's primary abstractions have many parallels with Context Change Control. Context's text space / code space abstraction came from FRESS (son of HES - designed by Ted, Andy, Steve Carmody, and Dave Rice), as adapted and extended by Charlie Sorgie (who worked on FRESS as a grad student at Brown). Ted's enfilades do not incorporate the change object encapsulation of the Context I+/D\* spanning tree model, but appear to model arbitrary branching history and explicit transclusion using similar lower level structures. Udnax says that parallel versions are reconciled by after the fact comparison, see [www.udanax.com/green/febe/versions.html](http://www.udanax.com/green/febe/versions.html).]*

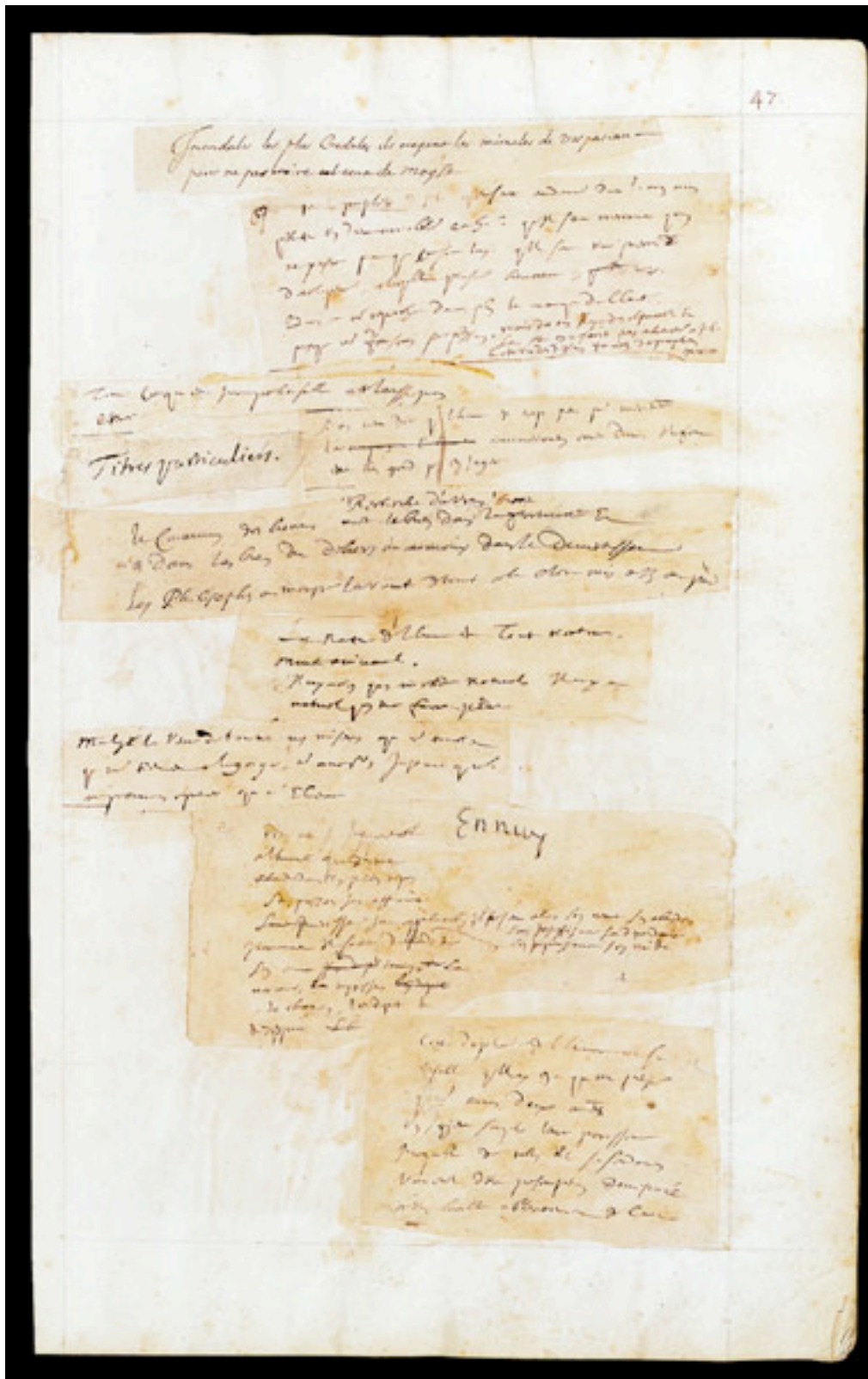
I've shown you what a parallel text face really looks like, and how transclusion can be use to create a world where transcopyright makes it possible for the content creators to be rewarded for their work- while making it possible for all of us to gain access to it.

I have one more feature to show you – real cut and paste.

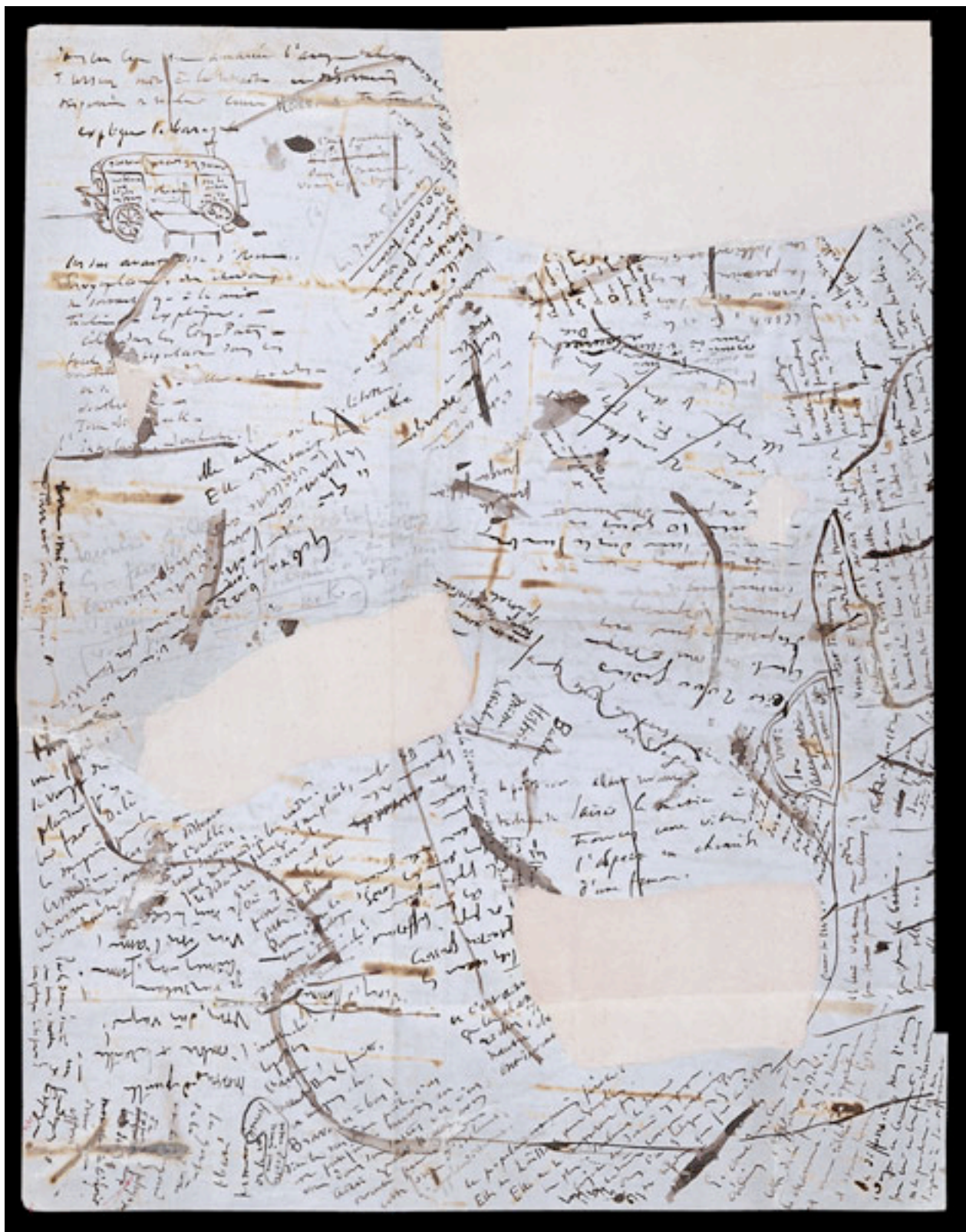
For hundreds of years, cut and paste meant the process by which authors and editors physically cut a manuscript into pieces, moved them around on a page or table to see how the parts fit together, and pasted an arrangement that suited them into place.

The Bibliothèque nationale de France had a great exhibition of manuscripts, including this from the papers of Blaise Pascal [see *Brouillons d'écrivains* at [www.bnf.fr/pages/expos/brouillons](http://www.bnf.fr/pages/expos/brouillons) or for an automatic translation use Google or AltaVista, see [Drafts of Writers](#)].

Take a look at this [picture of a manuscript collage – looks like magnetic poetry on a page]



**Blaise Pascal, Pensées**  
Manuscrit autographe, 1656-1662  
498 p. précédées des f. A-E, 43 x 28 cm  
BNF, Manuscrits, Fr. 9202, f. 47  
[www.bnf.fr/pages/expos/brouillons/grand/10.htm](http://www.bnf.fr/pages/expos/brouillons/grand/10.htm)



**Victor Hugo, L'Homme qui rit**  
Brouillons et notes préparatoires  
134 f., 37,5 x 29 cm  
BNF, Manuscrits, N. a. fr. 15812, f. 18 v°  
[www.bnf.fr/pages/expos/brouillons/grand/37.htm](http://www.bnf.fr/pages/expos/brouillons/grand/37.htm)



Not an abominable hidey-hole for text! The Macintosh ‘clipboard’ totally perverted the definition of cut and paste – it’s more accurate to call it ‘hide and plug’ [*at the 50<sup>th</sup> Anniversary Vannevar Bush Symposium, Ted said ‘hide and vomit’- grl*].

Again the geeks have taken away a fundamental tool, and told us what we have to use in its place.

It’s like going up to Rembrandt, and saying “Well, we’ve decided that you can keep painting for us, but instead of these little brushes – from now on you have to paint with ... THE CAT.”

In order to get out of this trap, we have to fight and win a standards war – and standards are all about packaging, not technology.

Take railroads in the 1820’s. Different companies needed to agree on a standard gauge – width between tracks – in order to make their equipment compatible. One of the greatest engineers of the age – Isambard Kingdom Brunel – built the Great Western Railway with a seven foot gauge that would make it possible to build trains which run safely at enormous speeds – hundreds of miles an hour.

But we ended up with a narrower rail gauge – the same separation as the wheels of a Roman chariot. Why? Some say that narrow gauge backers got Brunel drunk the night before he was to make his pitch for the wide gauge. And Brunel's strongest supporter was none other than Charles Babbage!

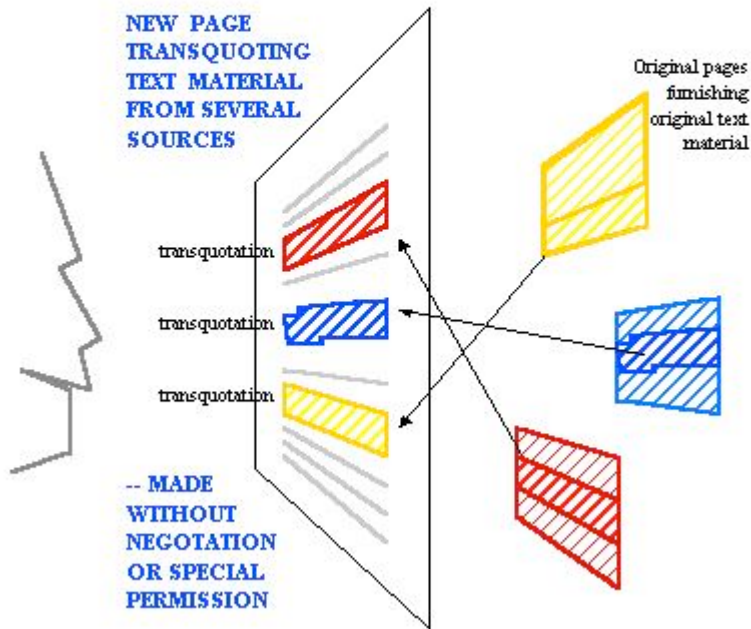
It’s the same with the World Wide Web – a packaging standard, not a technology. And to make progress we have to face three cults:

- Mainstream – Bill and the boys
- Macintosh – Steve the Salesman (the only person who can sell Apple’s switch to Unix as something other than a defeat)
- Linux – A system that is only free if your time is worthless

The Linux line is not mine – I wish it were. See <http://www.linuxsucks.org/>

And I have to admit that the Macintosh is the best-tuned interface – that’s because, for all his faults, Steve Jobs is a great director

**TRANSPUBLISHING:  
A Basically Simple Concept--  
Republishing without Complication**



From [www.sfc.keio.ac.jp/~ted/TPUB/TPUBsum.html](http://www.sfc.keio.ac.jp/~ted/TPUB/TPUBsum.html)

So, we have to deal with a collective nightmare of no-one's individual doing, that has nothing to do with what's really important:

Making literature - the ongoing stream of connected discourse - accessible to any reader, in a form that recognizes the rights of every creator.