Chapter 6
Riffing on Ted Nelson—Hypermind

Peter Schmideg and Laurie Spiegel

PS:

After taking a computer course at Harvard in 1960 Ted Nelson began a mystical journey. He started exploring the possibility of liberating text from paper, of developing a means whereby writers could harness text in a manner closer to human cognitive patterns: i.e., the way words flowed through our minds. In 1965 Nelson coined the term hypertext. Ultimately, in his brilliant 1974 book, *Computer Lib/ Dream Machines*, he laid down the foundation for a communications theory transcending text. Hypertext became hypermedia. Imagery and sound played roles equal to text. Nelson realized that personal computers with multimedia capabilities must burst the boundaries of artistically rendering internal reflection.

LS:

It all started with Ted's being a thinker as well as a writer. Literature, as it existed, was constrained by its pre-written form, by the voice, by the mouth, by our one mouth into von Neuman-esque single-file, one-word at a time sequences, not the way thoughts, words, ideas swarmed in parallels, groups, flocks, words and ideas associating, intermixing and dancing in counterpoint in Ted's mind. How to write

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Peter Schmideg was an actor, writer, director, and a radio personality. Laurie Spiegel is an electronic music pioneer and the creator of Music Mouse.

Note: I constructed this asynchronous conversation in 2014, interposing my comments into transcription excerpts of a telephone interview of Ted Nelson by Peter Schmideg recorded August. 2, 2000 as they appeared on Peter's illuminationgallery.net website's Ted Nelson web page, to simulate the kind of conversation the three of us many times experienced in person together as friends. Each bit of "dialogue" is tagged with the initials of the speaker: LS for Laurie Spiegel, PS for Peter Schmideg, and TN for Ted Nelson. Sections culled from an interview with Ted Nelson are bolded. – LS

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that, and capture more of the mind in written literature? How to embody actual thought process in language? Clearly more dimensions would need to be added to conventional sequential text. There would need to be a new way of writing for a new kind of literature, but flat paper would never be able to accommodate it. So don't forget that other book of his, *Literary Machines*.

PS:

James Joyce and Marcel Proust, perhaps the two greatest writers of the twentieth century, struggled to make language transcend itself. Joyce's *Ulysses* and *Finnegans Wake* carry multimedia undertones. Joyce was fascinated by cinema. In 1909 he tried setting up the first chain of movie theaters in Ireland; alas, not being much of a businessman, his venture failed. The nighttown sequence in *Ulysses* is an attempt to fuse literature with cinema. Readers are walked through a surreal, tactilely visual mindspace. *Finnegans Wake* violently soups up printed text. In the reader's mind words explode into images and sounds. Marcel Proust's *Remembrance of Things Past* serves as a virtual reconstruction. To write it, Proust cloistered himself in a cork-lined room, allowed memories to overtake him. His sentences positively ripple, veer toward a truth at the edge of text, beyond language, as past events three-dimensionally enmesh themselves within the thread of his thoughts. Today *Remembrance of Things Past* would take the form of an ultimate home page, incorporating text, graphics, scanned photographs and paintings, audio, video, etc.

LS:

And a timeline. Intersensory writing, would be another great challenge. Proust even put in a soundtrack by mentioning specific musical works so they'd be playing in the reader's imagination as a sort of a soundtrack, and of course he used sensations such as odor and taste to enrich and extend what the reader experienced. But these were allusions, associations, not illuminations incorporated with what was being written as a part of the full sensorium of experience as we live it, and all word after word.

PS:

Metaphysically speaking Ted Nelson's Project Xanadu is Proust wired, electronically/digitally expanding stream of consciousness. Borrowing its name from Samuel Taylor Coleridge's unfinished poem, "Kubla Khan," which endeavored to capture an artist's dreamspace:

> In Xanadu did Kubla Kahn A stately pleasure-dome decree…

Project Xanadu represents virtual liquid consciousness.

LS:

Consciousness, the experience of being alive, and the unstoppable drive to find a way to create a new medium of expression that would more fully capture and communicate and express all that traditional literature lacked – the ideas and the driven artistic need for them, not the technology, not an engineering vision or vantage point or concept, these were what unfurled Project Xanadu in Ted's mind. Ted was a young artist in search of a medium capable of capturing what no existing medium could. It was a vision, just as Coleridge's *Kubla Khan*'s Xanadu had been. But to make it usable would require technology, real physical earthly nuts-and-bolts practical engineering kinds of technology as well as much structural design work.

PS:

Electronically storing people's books, records, and communications was first proposed by Vannevar Bush at MIT in the early 1930s. "As We May Think," a 1945 essay Bush wrote for *Atlantic Monthly*, made the idea more generally known. Bush's concept, Memex, was a sophisticated combination of microfilm and microphotography. It would be years before computer technology caught up with Bush, years before microfilm ceased to be the primary non-paper medium for storing text and images.

LS:

And even those then-wonderfully-futuristic visions of electronic storage lacked more than the most rudimentary cross-associative intersensual multidimensional parallelistic interconnectable multipath structures of the way the mind thinks. But it was a start, and certainly closer to the Xanadu of experiential media than plain text as it existed in books.

PS:

In 1969 the Pentagon introduced the ARPANET (after ARPA: Advanced Research Projects Agency), which through the 1970s and 1980s gradually evolved into the Internet…and then in the 1990s we had the World Wide Web.

LS:

And watching this evolution, so near yet so far from what might have been, must have been ungodly frustrating to Ted, like a wrong fork taken in what could have been the right road. Some of us watched similar just-not-the-same evolutions of what we had hoped would become the realizations of our own visions.

PS:

Project Xanadu is Ted Nelson's holy mission. It all began in 1960 with that computer course at Harvard. Vannevar Bush and the Internet came to function as practical triggers. However, over the years, as he discovered the work of some remarkable computer programmers and computer artists, Nelson broadened his vision.

LS:

Let's call it "Phase 2" then starting from 1960: trying to realize, to implement the vision. Funny things can happen to a vision on the way to Real Life. Things bog down in specifics, details, subprojects, tangential tasks, and a vision might not be communicable to one's tech-level collaborators in the first place, or might overlap with theirs but the implementation skews in the someone else's direction. The pros and cons of doing tech alone are that you are not constrained by anyone else's tendency to go a different direction or do interpret an idea another way, but what you create is limited by your own technical skills—a dilemma.

PS:

Ted Nelson's *Computer Lib/Dream Machines* had two front covers, no back cover. One front cover was for *Computer Lib*, which dealt with computer politics and tech. Flip the book over, start reading from the other cover and you have *Dream Machines*, dealing with the visionary use of computers. Stylistically *Computer Lib/Dream Machines* was modeled on Stewart Brand's *Whole Earth Catalog*, interspersed with hip illustrations, weaving odd stories and quotations into the text. The book was not meant to be read in a linear fashion. For 1974, it was completely revolutionary.

LS:

The forms Ted's early books took showed the essence of the problem. We simply don't think in sequential streams. Those early books of Ted's did their best to circumvent the limitations of words on paper. Their forms wanted to jump out into multiple dimensions. If he could have put hyperlinks between the ideas on different pages his books would have been too densely knotted up to be able to even open. Those books came closer to how the mind thinks, structurally, than any other books I can think of.

Xanadu was all about making non-sequential, non-hierarchical media a reality, a human common practice. As Ted put it himself in his book *Dream Machines*:

> Of course, if hypermedia aren't the greatest thing since the printing press, this whole project falls flat on its face. But it is hard for me to conceive that they will not be.

PS:

Then Tim Berners-Lee packaged the Internet for the masses, with Andreessen tossing in graphics. Years earlier Ted Nelson had intended to stretch the Internet's boundaries, as well as making it universally accessible. Sadly, HTML allowed Berners-Lee/Andreesen's web to spread like wildfire. Graphics and still images only enhanced websites' magazine feel. Instead of flipping through paper magazines, people pointed and clicked their way through ersatz electronic'zines. Ironically, audio/video capabilities furthered this paper ambiance. Since audio/video clips demand specific software (i.e., players), they are self-contained within their own virtual space (defined by these players) outside the virtual paper space (defined by HTML) of websites. Full screen video scarcely negates my point; in fact, it proves it. Over the web full screen video is either present or not: i.e., experienced in and of itself. Shockwave is no different: just animations embedded within their own software. Ted Nelson's version of the Internet was seamless, absolutely fluid.

LS:

The existing web as a set of containers for simulated pre-internet media. Yup.

PS:

Which brings us right back to James Joyce and Marcel Proust, authors whose writings swung toward multimedia…seamless multimedia; virtual reality…virtual reality not in the sense of Jaron Lanier, but Antonin Artaud.

Most people believe Jaron Lanier coined the term virtual reality in the early 1980s. Indeed, virtual reality is considered synonymous with the interface glove and head-mounted. But Artaud put those two words together – "virtual" and "reality" – back in the early 1930s. Artaud's virtual reality was a modern equivalent of alchemy.

Antonin Artaud (1896–1948) was a poet, surrealist, theatrical visionary. In the "The Alchemical Theater," Artaud wrote:

> All true alchemists know that the alchemical symbol is a mirage as the theater is a mirage. And this perpetual allusion to the materials and the principle of the theater found in almost all alchemical books should be understood as the expression of an identity (of which alchemists are extremely aware) existing between the world in which the characters, objects, images, and in a general way all that constitutes the *virtual reality* of the theater develops, and the purely fictitious and illusory world in which the symbols of alchemy are evolved.

Artaud envisioned alchemically charged multimedia environments physically enveloping, spiritually transforming audiences. In theater (as actor/director/writer/producer) he never came close to fulfilling his vision. This was partly due to a lifetime of drug abuse, but mostly because he was working in theater. Artistically Artaud longed for fluidity, seamlessness, a blurring not only between different mediums, but one that existed between artist and audience. Modern theater audiences were emotionally shut off from such shamanic possibilities. In the 1920s and 1930s film and radio were rigidly one-way mediums. Computers were in their most fledgling state and the Internet did not exist.

LS:

Ted and Artaud share that frustration of unrealized visions of new media fitting our mind's ability to experience.

It's amazing how much technological innovation has its inspiration in the arts, or in the human impulses that give rise to artistic expression. The literary and philosophical genesis of Ted's thoughts on informational structure are part of this aesthetic experiential innovation-motivating thread that runs through our species creations as a navigator piloting the unexplored technological spaces we are populating.

It makes additional sense in that both of Ted's parents were major figures—the director Ralph Nelson and the actress Celeste Holm—in the dramatic arts. He must have felt insignificant when he was young, with his famous parents getting so much attention. He outdid them though, creating, not repertoire in existing forms, but new informational structures with unprecedented aesthetic properties, whole new media to populate. We can now take for granted following stories with multiple endings, or choosing our own paths through narratives, poems that shuffle themselves into different shades of meaning, multi-stream multiscreen fiction with multitasking audience members each finding their own meanings, process pieces that once set in motion will continue to reveal additional evolutions, algorithmic music generators that never repeat… These kinds of meta-artistic creations point us toward new uninhabited potentials for expressing our experience the way the mind knows it subjectively, the way we think that we think we perceive. I guess this is sort of an ultimate case of "The medium is the message." Ted created new media initially because he needed them as an artistic being. Then instead of populating them with his own art, he made his life's work the struggle to give us as much freedom of structure as he could, so we can express, interconnect and begin to capture better the ways we experience thought in our minds. Or at least that was, I think, the vision before other people's ideas and interests pointed the Internet's evolution in the directions it took.

PS:

Marshall McLuhan, who, to the best of my knowledge, wasn't familiar with Artaud's theories, had this to say regarding computers in his 1964 book *Understanding Media: the Extensions of Man*:

> Our very word "grasp" or "apprehension" points to the process of getting at one thing through another, of handling and sensing many facets at a time through more than one sense at a time. It begins to be evident that "touch" is not skin but the interplay of the senses, and "keeping in touch" or "getting in touch" is a matter of a fruitful meeting of the senses, of

> sight translated into sound and sound into movement, and taste and smell. The "common sense" was for many centuries held to be the peculiar human power of translating one kind of experience of one sense into all the senses, and presenting the result continuously as a unified image in the mind.

LS:

The ultimate interconnectedness would be shared consciousness, which the various arts tend to aim for, putting our individual expressions through the narrow bottlenecks of language, music, visual art and our species' other various mediating structures.

PS:

Ted Nelson wrote in *Computer Lib* (1974):

> Everyone should have some brush with computer programming, just to see what it is and isn't. *What it is:* casting mystical spells in arcane terminology, whose exact details have exact ramifications. *What it isn't:* talking or typing to the computer in some way that requires intelligence by the machine. *What it is:* an intricate technical art. *What it isn't:* science.

LS:

He is right. Programming can be an art, although often it is hack work instead—just like in any other art.

TN:

For some reason people seem to think I don't understand computers simply because I don't buy into the prevailing paradigms—for example, the path name and hierarchical directories, which must be eliminated… We need a different world and how to built it is the question; not how do we take one more step toward the light because that's like trying to pile up chairs to reach the moon. It won't work.

LS:

Sort of like the mythological "IBM Man-Year": Instead of a programmer working for 365 days on a project, hire 365 programmers to work for just 1 day. But yes, hierarchy and other Aristotelian structures were helpful when data was scarce 2,000 years ago, but they don't fit what and how we experience the rich info ecology we now live in or the way our minds perceive.

PS:

Antonin Artaud sought the Holy Grail via alchemical theater, virtual reality. Artaud propounded magical realms transcending physicality. Computers can help us hone the physical world internally, reshape its virtual reality in cyberspace. Ted Nelson points toward interactive software synthesizing disparate media, breaking them down to their most basic form: in the case of text, a single letter; with graphics and still pictures, any part of an image; with audio, a lone sound, solitary intonation, or note of music; with video, a frame. Coded properly such software could generate a fierce hypermedia cascade reflecting the way words, images, and sounds rush through our minds. Wired globally, one might tap universal consciousness. Vaporware? For the moment, yes, but Project Xanadu is moving in the right direction with Ted's ZigZag as a first step. And since how future artists and information providers reap benefit from their wares must impact culturally every bit as much as style and content, Transpublishing, Ted Nelson's alternative approach to copyrighting, also brings us closer to the broader vision.

LS:

Yes, *ZigZag* is another of Ted's quite interesting innovations in informational structure. It puts the user in the place of a single point of consciousness that is able to move along any of many dimensions, moving associatively, by quality or characteristic instead of connecting stuff by symbolic reference or position in a hierarchy. I think it may well be much closer to how our human memories locate info within our own minds than the index tables or hierarchical nested directory structures or symbolic links we're so used to seeing info organized into.

ZigZag might also be a productive structure to create works of multisensory art within, as has been the cased already with hyperlinked text. ZigZag is more of an environment that the user inhabits. Depending on what someone builds into a ZigZag data space, you could wander along many multisensory paths, taking unexpected turns down the dimensions of color then branching off into textures or shapes, or from a sound to a flavor… Maybe multivoice music-like counterpoint could also be explored in the paths through ZigZag's spaces, with cognitive dissonance resolving to cognitive harmony—or whatever. I could see my *Music Mouse* software running around inside a ZigZag space.

Transpublishing and the way linking would have been done were Ted to have designed the Web, these deserve much more thought than they're getting. One of the great deficits of the existing public web, with its one way links is that there is no way to trace anything back to its origin, no provenance. It's as thought it's all forward-thinking, rootless.

PS:

I asked Ted about Vannevar Bush's essay "As We May Think."

TN:

I think I read it when it came out in 1945. Since I was eight, my memory is necessarily incomplete. Everyone else who would have been in the family is now deceased. But we did subscribe to the *Atlantic Monthly*, and I think there's a very good chance I read it at that time.

LS:

That might have been a bit of a mind-blow at age 8. Then again if the magazine lay around the house a few years, he could have read it when he was older. It's fun to think that that paper might have been the original non-standardizer for the way Ted's mind works.

PS:

Of course, he became thoroughly familiar with the essay later, printing it in its entirety in his book *Literary Machines*.

LS:

Lest we forget it, and/or because so few know it.

PS:

Then I asked him, "Were you more shaped by writers like James Joyce and Marcel Proust or by filmmakers like Sergei Eisenstein and Orson Welles?"

TN:

Both. I was an intense media kid. I remember my first movie experience was walking down the aisle of a theater in rural New Jersey and Shirley Temple singing on the screen. I just froze in my tracks. A goddess was singing to me.

The moment included even the smell of the carpet and the Coca Cola. From there, cinema was always my church. But then we read a lot at home, and Shakespeare was essentially the god of the house. So between these different media I never saw any conflict. To me, all media were one from the very beginning.

PS:

And I asked about Project Xanadu.

TN:

I hated the idea of things becoming unavailable…and still do. Preservation, access, unification are central. As soon as I saw in 1960 that media would all be digital…well, then why have separate media anymore? It would all be one… to me it's all hypermedia. We need to be able to create structures much richer than there are now. Yet the notion of really blending these things is just as foreign to these guys today because they're so locked into the particulars of individual pieces of software and that's got to be stopped.

LS:

Not only individual pieces of software but for many centuries before, individual art forms, separate sensory modalities, human expressions hierarchically categorized into specific art forms: text, art, music, and their subspecialties. The computer is the Rosetta Stone for all the human arts. All media are representable within the single digital domain, all structures and shapes within each of the arts being translatable into all others and specifiable or editable with very similar tools and techniques. But the way software is being designed preserves the inherited separations between them that unnecessarily compartmentalize our experience and keep expression and communication from becoming far closer to experience as we live it inside of our individual minds. Béla Julecz back at Bell Labs called this the *Cyclopean Retina*, the cognitive locus at which we humans experience all our diverse inputs as one integrated perception.

PS:

In *Computer Lib*—remember, this was written in 1974, pre-Apple Computers, pre-Microsoft, indeed, pre-Altair, which came out in 1975—Ted wrote:

> A new era in computers is dawning. The first, or Classic, computer era used straightforward equipment and worked on straightforward problems. The second, or Baroque, computer era used intricate equipment for hard-to-understand purposes, tied together with the greatest difficulty by computer professionals who couldn't or wouldn't explain very well what they were doing.
>
> But a change is coming. No one company or faction is bringing it about, although some may feel it is not in their interest. I would like to call it here the DIAPHANOUS age of the computer. By "diaphanous" I refer both to the transparent, understandable character of the systems to come, and to the likelihood that computers will be showing us everything (*dia-* across everything, *phainein-* to show).
>
> In the first place, COMPUTERS WILL DISAPPEAR CONCEPTUALLY, will become "transparent," in the sense of being parts of understandable wholes. Moreover, the "parts" of a computer system will have CLEAR CONCEPTUAL MEANING. In other words, COMPUTER SYSTEMS WILL BE UNDERSTANDABLE. Instead of things being complicated, they will become simple.

LS:

Not exactly what we've ended up with, with so many layers of hardware and software APIs interacting.

PS:

What does Ted Nelson think of the notion of a *diaphanous computer* today?

TN:

I've had my nose to a narrower grindstone.

PS:

Narrower…?

TN:

In the sense that what I'm trying to do is create portable data that is location-free. The web fetishized the hierarchical directory and path name, now called a website. This was completely evil. You wanted exactly the opposite: data that could be replicated without location and always recognized wherever it was. Turning my attention to that is one of the principle things I'm on now.

LS:

This is not to be confused with the *location-free* model that is now called *the cloud*. That's more like a return to the old architecture in which a large central computer would be accessed from many different terminals, except today's access devices are smarter and usually portable, such as iPhones.

Instead, what Ted appears to envision is more than portability in terms of access location. It includes, I suspect, that the way the data is structured can be different amongst the "locations" it is perceived from. This might be like a variety of filters on different cameras, but instead of filtering frequencies of light or of sound, the filters would be based on cognition-compatible structures, more like kinds of presentations, windows into different structures of perceptible space.

I think, but am not sure, that such a data space might be associatively structured, with links amongst common parameters, common values of parameters, possibly much like ZigZag's space, though Ted probably just means a single instance viewable from anywhere in many contexts via links.

PS:

I mention "The Death of the Author," Roland Barthes' essay advocating a neo-socialist Nirvana with free flowing information and no copyright laws.

TN:

Which, by the way, because of people's natural tendency to hoard information, for either political, strategic, or other reasons, is an unfortunately impossible dream. I see copyright as the one way creative individuals can get a leg up, no matter what the techies say. There was always a hidden agenda with them. "We'll just destroy it because it is manifest destiny that it be destroyed." I too want Nirvana, although not socialist, nor neo-socialist. My aim is figuring out rational principles of availability and access that are fair to all parties and legally workable. Techies put forth that since everything can be copied, therefore, we'll just destroy copyright. Today I'm dealing with a very brilliant, very rich techie who simply says, "I'll just buy a library, digitize it, and then the

publishers will have to deal with me." I'm saying we have to be a little more delicate about it.

LS:

It's a vision from the info consumer's side, not from the creator's. It ignores the investment of time, energy and thought into the creation of whatever's being accessed or copied. Still, there is a lot to be said for public domain ownership including "open source". It has to be the creator's decision of course, what level of ownership to respect.

PS:

Mark Harden's Art Archive has a vast array of beautiful scans. For all intents and purposes, it's a virtual storehouse of art treasures dating back to cave paintings. The site's philosophy is that people should feel free to lift five or six images for non-profit purposes. Yet does not reality dictate that anyone can lift as many images as they please and put them to whatever use?

TN:

There's two realities. At the Battle of Trafalgar, or some such battle, Admiral Nelson declares, "Full speed ahead!" His assistant protests. "But what about those ships?" Nelson, holding up a telescope to his blind eye, the eye everyone knows is blind, replies, "I see no ships." Or…"Do what I said." When you say "reality dictates," there are a lot of realities… So that is why I do not countenance most of today's so-called web standards… We need something much better and it is my duty to try to make a different reality which can supplant that other reality. I mean, a few hours on the web and you can have a whole lot of gifs and jpegs. Now, those things are being posted with a lot of implicit assumptions which the courts will be settling later, and whether you can repost, etcetera, is entirely uncertain… By the way, all these museums that are trying to claim copyright on 2000 year old things that they happen to own, God knows what's going to happen with that…like copyrighting the human gene.

PS:

Computer Lib decries "the creeping evil of Professionalism." "I see Professionalism as the spreading disease of the present-day world…"

TN:

I guess my claim at this point on that subject would be that everybody is seeking greater legitimacy and better pay for what they do, whether welding chips together, typing, or passing on the supposed validity of art objects. Professionalism is the stance that "I am highly trained; therefore, my work should be very expensive." In the case of what Talcott Parsons called professionalism, a highly technical definition, we have an association which governs entrance to the trade based on competence and training. So there's considerable similarity between the Plumbers' Union and the American Sociological Association. The upside is charlatans are pushed out of the field. The downside is talented but unqualified people are pushed out and you don't have all the options you should.

LS:

Nowhere is that professionalism elitist class more obviously breaking down than music. There used to be clear distinctions based largely on expertise: Do you read

and write music notation? Do you play an instrument with great skill? Do you have a path to your audience through any of the established distribution bottlenecks (music publishers, radio stations, concert venues, record labels)? Computer technology has put those criteria into the past. Anyone can now create music, notation or instrumental skills being no longer required due to many new digital interfaces to sound. Anyone can netcast, podcast, stream, or publish music online. The line between *professional* and *amateur*, to the extent that it survives at all, is too blurry to be useful. And the same goes for visual art, writing, photography, cinema, leaving perhaps only the most physicality-mired creative professions relatively proficiency class based. This lack of a professional élite that can be clearly differentiated from non-professional creative workers is part of why the economies of the various arts are in such chaos due to computer tech.

Now the most stable economic value seems to reside more so in the tools used for creative work, marketed as intellectual property in themselves, instead of in what is made using them. But the design of tools for creative work is too often no longer being done by their users, and such tools often very much limit both creative conception and output. Too often they require a work to be highly preconceived in advance of even launching software to explore. Often they present a menu of templates for project types and standard formats within a medium, shunting their user into one a prefabricated standard form. And for Ted's main medium, words, we are still locked into sequential text editors in which it would have been impossible to write Ted's earlier books.

Laziness? Lack of imagination? Conservatism? Fear? Or a market-based, profit-based, tool-building industry that knows its bread is buttered by lowest common denominator non-thinking? Or maybe we are simply expecting things to change more radically, faster than they can, because while technology can speed up and get cheaper very quickly, other changes require profound paradigm shifts in the assumptions of entire social cultures.

TN:

I always wanted creative control of software and it's taken me till now to get it. I didn't realize that since the techies thought they could design interactive software no one in the world had any right to tell them otherwise. The decision process of Hollywood applies, a market system whereby people's claims to magic are centrally dealt with, so that some people are deemed to have magic, like Spielberg, because they reliably bring in money. That being the simplest and most easy to measure criterion of magic. Those who have a different kind of magic that doesn't bring in money, like Orson Welles, don't get the backing, and there's a whole big middle ground. I was definitely a disciple of Welles. When I was 15 I joined something called Cinema 16, a movie society. I attended a few of their screenings. What it really drove home to me was that you could make very inexpensive films, very personal films. I remember "L'Atalante" by Jean Vigo, a lovely low-budget French film about a canal boat people lived on. Then we had Norman McLaren's stuff. The Scottish animator just drew on film, drew on the soundtrack, creating short films with pens and pencils. His work was a great surprise to everyone. But it was also the fact that it was pack-

aged by the National Film Board of Canada. If they had not somehow given it their imprimatur I think no one would have given McLaren a chance. Still, I was impressed by how much you could do with very little. I was going to be a low-budget filmmaker, work my way up in Hollywood…until I saw a computer and that was my undoing.

People keep asking me how Xanadu is different from the web. It's like how is plankton different from the Queen Mary. There's just no resemblance. When it comes to preservation, access, writing—yes, writing itself, a horrendous problem just not understood by technical people—version management, rights management, reusing content and knowing you're reusing it, original context, regarding all these things the basic Xanadu model was entirely straightforward. Content would be registered, given final addresses, and we would distribute lists of content, essentially what are now called EDLs—Edit Decision Lists. Which is to say now put this here, put that there. Each piece of content would be paid for as you bought it from the rights holder, upon choosing it from the EDL. This is an extremely clean model. What I'm doing now is moving it forward into the web, trying to simplify it because in the 1988 Xanadu model we had it all gummed up with proprietary techniques. Ah, there we were in 1988, colossally efficient…and the web just threw out everything. Rights, management conversion, seeing context, seeing origins, unbreakable two-way links…forget it. They got it all wrong, but it can still be fixed. The courts are going to stomp in… The crackdown is coming and it's going to be so nasty, and they don't get it.

I'm just trying to create the rational system the web should have been in the first place and would have been if we hadn't screwed up politically. Tim Berners-Lee fashioned a way of pointing at conventional files and conventional directories via path names, visible to the user, over the Net. To me the notion of files and hierarchical directories is an unfortunate tradition that messes up the very nature of content. Marc Andreessen added Technicolor, all the special effects garbage he could cram in, glorifying, fetishizing these hierarchical directories which are now called websites and are located at URLs. So you have one-way, ever-breaking links, a shop window model, whereas you don't want to have to put it in a single place. That's like saying that such and such a book is the book you'll find on the fourth shelf, third from the right. It's ridiculous. The book should have a title and be retrievable from anywhere without the so-called URL. It's all about the politics of standardization. The political moves required…I hope I'll be able to make them. It's not websites themselves that are limited, but the keyhole through which you have to look. The main question is whether in this chowder that is the web we can create a new channel which is clean and clear and that's what I'm trying to do.