

The crafting of media

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The strange revolution of our information environment has only begun; yet it has begun in such an obscured and clouded form that the public sees only various meaningless disguises.

The all-purpose machine, as von Neumann called it, has been falsely promulgated to the public as the so-called *computer*, numerical, uncompromising, demanding and intractable. It has profited certain computer companies to make "computers" and their associated techniques incomprehensible and awesome; these same companies now seem unprepared for the widespread public revulsion to this image of the computer. It has profited some computer companies to build ungainly and obscure systems for business purposes, badly related to what their business customers do; and to con the customer and his poor employees into believing it has to be that way; this keeps the hapless customer on the hook indefinitely. These same companies now seem unprepared to have their all-wisdom questioned.

I would like to employ the word *cybercrud* to mean, in general, putting things over on people using computers. Cybercrud is one of the most important specialties, if not the economic backbone, of the computer field. The promotion of false or clumsy approaches to a problem as "scientific," the frequent claim that "the computer has to have it that way"—when a certain thing could be programmed very differently—are cybercrud.

But the computer is an all-purpose machine, and the computer display—a screen programmed to present text and pictures somehow stored in the computer—is a universal miraculous communication tool, as Ivan Sutherland showed in the early sixties with his Sketchpad system. And computer prices, unlike other prices, go down relentlessly. Expensive as these devices may be today, within the decade small good ones will cost a few hundred, at most a few thousand dollars. As we learn to free ourselves from cybercrud, the question becomes not, "how do I relate to this sinister, demanding artifact?" but "what is the grooviest way to use this thing?" The human environment can now be wholly, wonderfully redesigned. What do we want? What do we want?? What do we want???

Until now, our media—letters, books, television—have been based on specific inventions and technical connections. But no longer are specific inventions of special importance: information may be commuted to any form, functioning networks may be built connecting any device to any other device; total trans-pluggability has come. (Imagine if you will a device with a red oval 2-inch TV screen, a set of chimes in the natural key of C, a smell generator capable of giving off most smells, and a foghorn. Should the F.C.C. authorize this combination as a broadcast medium?)

The design of media is thus in a sense a new art; before, we could tinker little with the package. I suggest the term "fantics" for the art and technology (in that order) of showing things; the crafting of media for human communication purposes is therefore its most important franchise, something like "city planning" in generality. Making things look good, feel right, and come across clearly should be a general objective.

We should distinguish between media and facilities. A facility is an available activity, or function, like a movie splicer or desk calculator. A medium is a set of presentation elements, and relations among them, that may be used by a person to create an object, environment or experience for someone else.

Creating media that are *organized*, then, clear and easily related to the human mind, is our task. Creating media that are focussed, or gently converging, is the delicate part. Rather than present a user with ideas and activities stretching limitlessly in all directions, a presentational system should help organize his work and attention.

This is the age of option. For instance, we may have anything we want on display screens—text or diagrams or both, moving or flickering or interacting or whatever. What do we want?

This is also the age of crunch. Ecstatic possibilities must survive various forbidding or shaping factors that might cut them down. In the design of media these include not merely economics and technicalities (such as transmission rates on phone lines), but social structure and motivation (what will the teacher put up with in the classroom? Why don't students use the language laboratory?).

Hypertexts and *hypergrams*, then, are two new species of media for the computer age: personal, dynamic, and contradictory of the heavy-handed and stupid "computer" in the general stereotype. Hypertext, or writing that can branch or perform, is seen in the *Software* show's "Labyrinth" piece, wherein the visitor may browse through a maze of writings on the screen. "Hypergrams," branching or performing pictures, will be the pictorial equivalent. Designing the detailed activities of the presenting systems is an important task, demanding technical knowledge, love and appreciation for words and pictures, and a sense of alternatives and inspiration.

The new age will not be "scientific." The word "scientific" is obsolete (except where specifying the activities and problems of scientists), like the adjectives "modern" and "streamlined." The technological imperative is a fake, computerization can take whatever form we wish it to; therefore we must learn about computers in order to wish better. As Burnham says at the end: "... *Software* makes none of the usual qualitative distinctions between the artistic and technical subcultures. At a time when esthetic insight must become a part of technological decision-making, would such divisions make sense?"

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Bush, Vannevar, "As We May Think" in *Atlantic Monthly*, June 1945.

Sutherland, Ivan, *Sketchpad: A Man-Machine System*, Lincoln Laboratory, Lexington, Mass.

Nelson, Theodor H., "Getting It Out of Our System" in Schechter (ed.), *Critique of Information Retrieval*, Thompson Books, 1967.

Nelson, Theodor H., "No More Teachers' Dirty Looks" in *Computer Decisions*, September 1970.

Nelson, Theodor H., "As We Will Think", to be published.