

# The Future: New Ways of Solving Problems

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## How would you define the terms “visual communication” and “computer graphics”?

Everybody is involved in visual communication. When you start to talk about people using technology to communicate visually, most of what we use the computer for today is for simulating paper. We are seeing now with hypermedia the move from using the computer to simulate paper to using it as the place where you create information and perform manipulation and actually see things—models of real, imagined, or projected worlds.

Ted Nelson in *Computer Lib/Dream Machines*, sees computer graphics as a branch of movie-making, and in a program like HyperCard there are a number of things that might be familiar to people who have edited movies. But the production of any film or video is also very complex and involves a lot of people. And it looks as if the production of multimedia pieces is going to be handled the same way. The kind of structure—the director/producer arrangement—that needs to be in place today for a video or film will eventually be available to individual graphic designers allowing them to work interactively in multimedia productions.

**Hypermedia is a term used to describe the integration of graphics, text, speech, and images (and, potentially animation and video) into a unified software environment. Hypermedia has also been described as an online, customizable file cabinet, as compared to today’s systems, which are more like electronic page turners. What applications can you see for such technology, particularly in the areas of education and design? For a technology such as hypermedia to work, users will need a massive database. What sorts of changes are needed in, say, schools and government so that these technologies can be used effectively?**

In a July 1945 article in *Atlantic Monthly*, President Roosevelt’s science advisor Vannevar Bush set out a post-war agenda that imaged such an environment, a world in which not only do you have text, numbers, photographs, drawings, color, animation,

and moving video but they are interactive so they don't have pre-built connections; you can make your own connections. To be truly effective, you would need to have a large network that is as easy to use and transparent as the telephone system is today. There might be computers at university libraries, in schools, in local communities, perhaps even commercial networks all over the world.

One of the great experiences of going to a large library is looking for a particular book and not finding it, but discovering something even better right next to where the book should have been. That would be the property of one of these systems, except the book you were looking for would never be checked out. It would be right there and available to everybody. The means of making connections would also be immediately available. And whether the connections were rigidly hierarchical or very serendipitous would depend on the people making the connections, not the designers who set up the system.

**Despite all the advances in technology over the last 20 to 30 years, the medium used for most of our visual communication continues to be a flat piece of white paper. Will we see a shift in emphasis from this medium to, say, video as the main vehicle for our ideas and messages?**

The computer screen is still at lower resolution than a laser printer. But screens of 200 dots per inch with eight bits of gray scale information are being demonstrated at computer shows. Screens are also starting to get smaller, and soon you'll be able to get flat screens. So it's possible to foresee a time when the quality of a computer image is as good as the quality of a printed image, and the computer itself is as portable as a book. At that point, you start to say that if the image quality is equal, there are things we can only do with the computer because information there is always malleable, whereas in the book it is fixed or "embalmed," as one observer put it. Because information in computer form is flexible, you can organize it in a number of different ways. You can build multiple structures or multiple paths through the same body of information. But even today, we need improvement in the ability to connect information across different programs and to get beyond two-dimensional simulations.