

What Difference Does Digital Make?

Where do we start?

In the beginning, there was The Image. What the artist produced, what the illustrator drew, what the photographer shot was what you saw. Nothing had been added, altered, or rearranged. Today (if we are to believe the current visionaries of the design field) the “age of digital imaging” has arrived, and computers are now a part of the process of design, illustration, and photography. But what exactly does that mean? Is the arrival of the computer in visual communication a positive development or a negative one? What difference does “digital” make?

There are actually two ways answers this—the short way and the long way. The short answer is simple: Digital technology has given us faster design and production cycles, easier interaction with clients and the public, with lower costs and higher efficiency in communication. Sounds perfect, doesn't it? So, why isn't everyone using it? And why are some art directors, graphic designers, and corporate communicators still skeptical about its value?

Five years ago, many people were not just expressing doubt, but refusing outright to consider many new technologies that are now commonplace. And today, even though a majority of design has the fingerprint of digital technology, some people (you, perhaps?) still have not shed their skepticism.

Remember the standard development cycle for a brochure? It went: writer → editor → compositor → proofreader → designer → paste-up artist → lithographer → pressman → final product. Well, just recently, I saw the first computer-driven digital plate engraver that feeds a color press. Bring in your floppy disk with color separations on it and you are one button away from running off your copies. The eight phases leading to print are condensed into two or three. With the integration of digital technology into mainstream printing and production, the path between the event and the report, the product and the advertisement, the message and the medium is growing much shorter.

In fact, everything we have done since Gutenberg we can now do faster, with more precision, with better adaptation to market needs and at lower cost with the help of digital technology. Design and production techniques that use word processing, digital typesetting and electronic cutting and pasting (among other operations) were first produced in order to perform the same tasks as the typewriter, hot metal typography and the X-Acto-knife, but with more ease. The first difference digital technology made was to provide a designer with the same capabilities as before, but in a more flexible, controllable venue, i.e., on the computer screen. The first stage of digital technology changed the profession of design, but had no real effect on the final product.

In its second stage of development, however, digital technology attacked the very roots of the design process itself, expanding its domain into areas unimagined before the technology was actually in hand and being used. I am referring to what is possible now that was impossible before. And that is quite a lot.

Digital technology has given birth to a new domain of design that is as multi-faceted as the technology itself. The description of this domain is the “long answer” to the question of, “What difference does digital make?” And it is, without a doubt, an open-ended answer. Every day, the technology that has already changed visual communication more than any previous technological or political revolution, *itself* changes. Indeed it must, because the ability to make use of all kinds of data, provided in a multitude of formats, has become the primary task of today's visual communicator.

The new domain

Yesterday, the goal of a good designer was to simplify and achieve clarity, even if that meant omitting information. There were no conceptual or production tools available to make communication meaningful without sacrificing diversity. Today, the designer can accommodate the richness and variety of specifics, because new forms of digital technology have woven raw data and final design together into one seamless fabric. Instant access to events as they happen—stock market fluctuations, rocket launches, salvaging sunken treasure, the synthesis of a new drug to fight some fatal disease—gives the designer using digital technology a direct path to the actual information he/she is trying to convey.

Not too long ago, answering questions such as “What's the performance of environmentally friendly companies?” or “How will pending legislation affect the health of working Americans?” or “Where is the ideal spot to spend a well-deserved vacation?” would not require the use of a designer. After all, designers are not known for their number-crunching abilities. But now, with the availability of digital-based design tools, the designer is actually becoming a part of the process of extracting information from raw data and making it available to those who need it for communication or for planning service and

production. Believe it or not, designers help you find the answers to these questions. In a development that is as much sociological as professional, designers now play a major part in overcoming the symptom of “data rich and information poor.” This makes them as important to the scientific community and social institutions as it does to advertisers. And the reason is simple.

Instant access to data, without the active role of designers who use images, would be completely confusing. Just imagine having to understand computer language to withdraw cash from an automatic teller machine! Visual images facilitate understanding and, because they transcend the borders of language, a sense of global awareness. Designers are now an integral component of our worldwide communications grid.

In this sense, digital technology has given rise to something I will call “data delivery design.” This type of design, which could not even be imagined before the advent of digital technology, facilitates visualization of data regardless of its locality, format, or content. For example, a database of radio-astronomy observations of a new star, measurements of the action of a drug on a tumor, or traffic patterns in a city can be turned into just a few images which are much more powerful, efficient, and effective, than thousands of words. Not surprisingly, some designers, as well as illustrators and photographers, specialize in this type of visualization and presentation design, as well as in animation or in the design of various types of new media—Compact Disk-Interactive (CD-I), Digital Video Interactive (DVI), Compact Disk-Read Only Memory (CDROM), Commodore Dynamic Total Vision, or “compact-disk TV” (CDTV) and laser video discs.

Once any kind of data is deemed to have some value to the outside world, you need a designer. All kinds of databases—about our homes, gardens, food, clothing, law, medicine, exercise, travel and much more—become available to millions of computer users only through the work of the designer, who is expected to provide the appropriate window to make them comprehensible and useful. The designer makes the distribution of knowledge, as it applies to the needs of its users, meaningful. Whereas previously we needed books to find out how to operate tools or machines, today we use an electronic book of stored images to tell us what to do if a breakdown occurs. The designer of the digital age uses the power of images to make our interaction with tools, machines and new computer programs not only possible, but also easy.

Where Is It Going?

Without question, the world has become smaller and more integrated. Digital technology has played a part in this development. A newspaper or magazine company with offices around the world (like the *International Herald Tribune*, *Vogue*, or *Elle*) can now have an international network of information and images between locations. Yet it takes a new type of design skill to prepare such images and to process them in electronic layout for a variety of editions, adapted to different markets and for readers with different cultural backgrounds. The sharing of artwork, specs and updated information is almost instantaneous. The electronic camera makes the faraway event, the photo of which already has a space reserved in the paper, only an issue of telecommunication protocols; the satellite link will distribute production tasks where most advantageous. And with the advent of high-definition television (HDTV)—currently the worldwide visual digital image standard—the satellite link has become an immense tent over the continents. On one side of the world, designers can work on new fall fashions on a computer; on the other, machines driven by digital design specifications can produce prototypes; and in some third place, the fashion show can be electronically simulated. At the end of this cycle, the final product of global design awaits only the label: “Made in the World.” The invisible signature of digital technology and the design that integrates it guarantee efficiency and creativity.

Digitally based design has also conquered the 3rd dimension. Some designers are now so used to access to 3D that they forget what it meant to be forced to design on flat paper or art boards. They forget how much effort it took to have their designs projected in different planes and assembled as product mock-ups. Digital technology is reunifying the field of design as a whole. It brings specialty areas like package design, product design, and architecture back together—back to a single activity that results in visual images and objects through which we communicate, which we use, and which express our better understanding of human life and activity. To design in a space corresponding to our direct experience in the physical world is to give it back its natural condition. A book cover or a poster need never again be abstracted or seen as only 2 dimensional in the design process. These products will be tested and acknowledged in a world that is essentially 3-dimensional and, above all, not static, but dynamic.

When will it arrive?

Still skeptical about the effect of digital technology and what it promises? Nothing of what I have been describing here is the technology of tomorrow. All these products and processes are being used, tested and improved as I write. In fact, design capabilities like these are now not only becoming commonplace, but are expected. We now have designs that talk to us, simulate various situations and request an active user instead of a passive receiver, under the rubric “interactive”—probably the most characteristic aspect of digital design. Where text and image on paper are no longer enough, you can introduce digital voice synthesis or animation. Any literate person knows that a well-designed book page is interactive. So are paintings, telephones and cars. But with digital technology, we don't get metaphorical interactivity, but real interaction between us and the new design products. In the universe of digitally supported interactivity, the book designed for everyone (and for eternity) is replaced by the book designed for each one of us. Wishful thinking? Not at all.

Digital technology gives designers the capacity to acknowledge differences and to focus on the individual—a power they never had before. Where some still see mass production, mass consumption, or mass culture, the digital designer sees the individual, and uses the power of the new tool—and the new thinking that digital entails—in order to address the individual. While every Motor Vehicle Bureau knows how to handle requests for vanity plates, few “knife and glue” designers could handle individual expectations to the extent digital technology makes possible. *The Hartford Courant* (along with some other newspapers) will fax you—an evening early no less—your private newspaper, filtered in any way you wish to make your reading more efficient and to keep out the noise of ads or superfluous news articles that are not news for you. This, in line with similar design products, is living proof of the capabilities of digital technology. It places the control of design in the hands of the customer while allowing designers and users to interact during the process.

So, if all of this is so wonderful and so effective, what's the problem? Why doesn't the world seem to be getting easier? Simple. The technology is here, but it is ahead of us, economically, politically and practically—in some cases by a few steps, and in some cases by a long way. Our heads can spin at new inventions, programs and tools of design, while many of us still have trouble programming our VCRs! The VCR is, moreover, a good example of the value of digital technology and its capabilities: The best VCRs, the newest and easiest ones to work, are those with on-screen visual programming. Making the images communicate, instead of the buttons or the codes, is the key to making VCR technology accessible, and we need digital technology to open the door. But, realistically, how many of you are going to run out right now and buy a new one?

The electronic storage of images (especially on optical discs) opens up vast possibilities for making the entire world more visually oriented than it already is. At the workplace, images are replacing the longer language of instructions. Television, on the brink of its own digital revolution, is everywhere—from Channel 1 in schools, to the *Watchman* some look at while jogging. It is the “nanny” of the nation in the best sense. And, in turn, designing programs to communicate, to educate and to entertain is a challenging task that cannot be met without the use of digital technology. Desktop media computers offer digitally controlled editing, and the possibility of combining image sources previously considered incompatible. When analog video is digitally controlled—as in computer-driven laser discs or video editing—new avenues for more intelligent use of the entire medium are opened.

Look now, buy later

Visit a digitally oriented advertising agency. You'll love it! Not only can you see an ad designed, you can see the systems that are set up to review and customize it. The in-house network shows ads from a target market anywhere in the world—the international 30-second drama or comedy of this age, as it is played from Bombay and Tokyo to Toronto and Chillicothe. Thanks to digitally based design, interactive portability empties the suitcases of salespeople. NO more samples to carry around, not even heavy catalogs, always in need of updating. All anyone needs now is a laptop and a hook-up at the vendor's office, and BINGO!—“Just ask. I'll show it to you in living color.” Spare parts are represented in all their detail, even animated. The electronic catalog maintains profiles of users, records their expectations and provides economical solutions.

Designers today can even create sonic environments for their clients, sampling preferred rhythms and instrument combinations. And only one level ahead, interactive image and sound environments, with holograms and large screen projectors beaming images suitable for business transactions are already here. Just like the TV commercial says, “We now use our digital satellite to tell us when Tim Murphy needs an oil change.”

Video games, interfaces, virtual spaces and digital transaction environments all challenge the

digital designer, too. So do desktop publishing, desktop video, desktop media and multimedia design. Atlanta played its final card in the competition for hosting the Olympics by showing digital images of the future Olympic village, and of the opening ceremonies in a stadium that existed only on the electronic boards of its multimedia presentation. And it is the designers who understand and use digital technology who have made all of this happen.

What's the key to all this?

New assignments, new goals, new jargon and quite a bit of new hardware and software--all these components of digital technology are useless if the new designer, committed to the new thinking, skilled in the new methods, apt in using tools that are almost always computer programs, is not there to make them happen. So, in the end, the critical issue is not what is possible, but who makes it happen. Not the latest Cray computer, or the competing Fujitsu, not the new Sony drive or Adobe typeface, not even the next version of Quark or PageMaker is the key to the future. No, it is the people needed to pursue complex design projects.

Nobody should be fooled by the apparent ease of use of some of the new tools, or by the promise of an intelligent program, without understanding the role of the designer involved in making it work. Behind the new avenues opened by digital technology are designers of new applications and writers of programs who had the vision to go beyond previous design goals and beyond imitating design activities of the past. Do I have a biased perspective on digital technology and its role in changing the design field? You bet! As one who has had a part in its growth, I predicted 10 year ago that good designers would be the ones who used new technology to go beyond the current boundaries of creative thinking. It appears that I have been proven correct. While digital technology enhances talent, it is no substitute for it. The impact of digital technology has been to stimulate creativity, setting new goals for designers and, even more important, new standards of design.