Will TVs and PCs Converge?
Point & Counterpoint

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"The television and computer are about to converge!!!"

"Then again, they're *never* going to converge!!!"

These two statements represent one of the most interesting ongoing debates in telecommunications: whether technological, organizational, and social factors related to computers and televisions have gotten to the point that the two devices are converging into an "information appliance" which may be termed a "tele-puter." (Or "compuvision." Or something equally ridiculous.)

One way to present this debate is in an essay that clearly and logically lays out the arguments and counter-arguments, providing an "objective" analysis of the facts. This article is not going to do that. Instead, we are going to present you with the debate we've been having between ourselves for the past few months.

At stake is the future of both the computer and television industries, with implications for entertainment, education, and telecommunications networks of all types. With so much at stake, we believe it is more important to present at least two sides of this debate in a subjective fashion, providing you with information to help you make decisions that will impact or be impacted by the convergence question. (We also want to stress that our viewpoints are not exhaustive—there may be a third or fourth perspective on this debate that should be presented in a future issue of NTQ.)

We'll jump into the debate by considering factors impeding convergence, then take a look at factors pushing convergence. Each

of us will then reply to the other, and we'll end with some points of agreement.

**Arguments Against Convergence**

Augie: The strongest argument against convergence of the television and the personal computer relates to the manner in which each device is used. Television is designed for consumption by groups, while almost all personal computers are used by a single person at a time. As a result, the typical television picture is viewed from a distance of seven to 10 feet—regardless of the screen size—and a computer monitor is viewed from a distance of 12 to 18 inches—again, regardless of screen size.

The difference in viewing distances is important because it differentiates the manner in which people receive and relate to the information transmitted via either medium. The close proximity to a computer monitor makes the computer a much more immersive experience, occupying the primary attention of the user. On the other hand, the small angle of viewing means that watching a television is a much less immersive experience than using a computer, with a corresponding drop in attention level. In effect, the separation between the television viewer and the screen creates a "cognitive distance" that allows television viewing to frequently become a secondary activity to such things as conversation, eating, reading, etc.

The fact that television is a social medium will also limit the desire by audience members to use a computer in the same manner. The input controls for a television are relatively simple (power, volume, channel selection, etc.), allowing
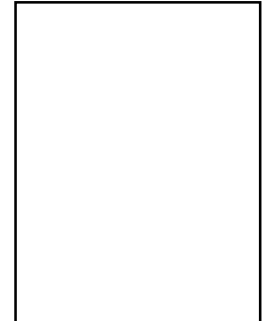
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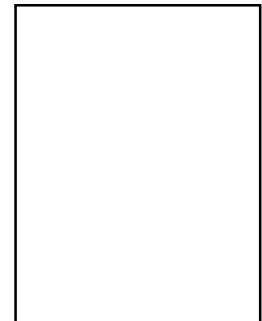
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viewers to easily negotiate choices (and anecdotal evidence abounds regarding battles over the limited number of choices available with a TV remote control). The computer keyboard, on the other hand, must be more complicated because the computer offers a vastly increased array of choice to the user. It is difficult to see how two or more people will regularly want to "surf the Web" or engage in other group activity (other than games) with the computer as the focus.

This is not to say that people don't have a need for a computer—at least 40% of the general public has demonstrated such a need by purchasing a home computer—but most computer applications are designed for use by one person at a time. The degree of interactivity implicit in computer applications ranging from information processing to surfing the Net suggests the desirability of the immersive relationship condition provided by close proximity to a computer monitor.

The next consideration related to convergence is utility. There is no reason to believe that convergence will take place simply because two functions can be merged into a single device.

Most households contain numerous examples. In the kitchen, we have devices to remove heat from food (refrigerators) and devices to add heat to food, but the two functions are never found together. Furthermore, as we start to consider a merged television/computer as an information appliance, we see that most people want variety in their appliances. For cooking food, most kitchens have a range, an oven, and a microwave oven, with some also having toaster ovens, toasters, convection ovens, electric grills, and charcoal grills. Clearly, one device can do most of our cooking, but we choose to acquire specialized devices to do the job.

The technology for converging television, radio, prerecorded music, video playback, and other mass media into a single device has been available for decades, but nearly all users prefer separate devices for each function. Even when use of one

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device requires another, such as using a television as the display device for a VCR, the norm is separate devices for each function, making it easier to upgrade each device and limiting the impact when one device malfunctions.

The same logic applies to our "information appliance." A merged television/ computer would include a number of compromises that would diminish its ability to fully function as a television *or* a computer. When given a choice, most people will probably choose to keep the functions of computer and television separate in order to enjoy the maximum utility out of both.

This is not to say that technology won't allow a television to be used as a display device for a computer. It clearly has, leading to a number of failed products. Coleco's Adam computer and Commodore's Vic20 computer are just two examples of a number of computers introduced in the 1980s that were designed to use a television screen as the display device. Indeed, if convergence were inevitable, then we would expect to see similar such devices for sale today. We don't.

One reason for the lack of convergence is the comparatively low resolution of most television screens when compared with computer monitors. Some might argue that all we need for convergence is better television monitors. I argue that Apple and Sony have already gone down that road, found it desolate, and returned to their respective highways. In the early 1990s, these two companies introduced a marriage of their technologies that was supposed to represent the future of both technologies. Sony marketed the device as a Trinitron television with a built-in Macintosh computer, and Apple sold it as a Mac with a Trinitron monitor. What it was called didn't matter—it failed in the marketplace. There is little reason to believe that things have changed in the past six years.

Scott: The preceding argument dances around the most important evidence for convergence of the computer and television into one appliance. Clearly, we are seeing

the convergence of computers with almost every electronic device that we touch. Processing power is built into cars, microwaves—you name it. And now our televisions, with sophisticated captioning, picture-in-picture, and channel memory, are, to some degree, computerized. But that really begs the question: Will we see devices that operate as both a traditional computer and television?

Computers have insinuated themselves into our lives in a host of different ways, and they are used for many different purposes. Each of these purposes encourages a different type of interaction. Some types of interaction, such as word processing, data analysis, and graphic production, are impossible on any device other than a computer. However, some of our most important computer interactions could utilize an information appliance—basically, a television containing simplistic computer elements.

One area that is the most promising for our tele-puter is the Internet. There are several devices on the market that allow you, through a set-top box or attached peripheral, to access the Internet and, specifically, the World Wide Web. This type of Internet television holds the most promise to become a prototype for the converged information appliance we are discussing.

When we talk about the possibility of television and computers merging so that users can cruise the Internet from their couches, let's keep a couple of things in mind. First of all, people want to access the Internet via their televisions. A Yankelovich Partners survey asked 1,000 people who were not on-line what method they preferred to access the Internet—52% said via their television, while only 31% preferred a computer. Pick up the Sunday newspaper, and you can see why they prefer the TV to the computer. There are more "Dear Nerd" columns with computer advice than "Dear Abby" ones.

The lesson that comes through for any person thinking about going on-line is that it is harder to make your computer work than your relationships—and, in the 1990s, that is

a frightening prospect. The full-page computer advertisements read like hieroglyphics. Knowing how much RAM and hard disk storage to get and which modem with what kilobits per second to buy is intimidating. We have invented incredibly powerful computer technology, but it is complex and, frankly, confusing. And the pages of advertisements for used computers shows the fate that await those who make the wrong decisions. For those not already using one, the computer is too expensive and confusing for basic on-line access. Consumers are looking for an Internet device that is as easy and inexpensive as their favorite electronic device, the television. They want their ITV (Internet TV).

Second, the merger between television and computers has already happened. There are three variations now available at your local computer store. But let's talk about WebTV, the one that has the largest installed base of users and, I believe, the greatest chance for consumer acceptance. WebTV is both a product and a service. The product is a set-top box that plugs into your TV and your phone line. The service is an Internet access account. Put simply, WebTV puts the Web on your television screen.

I know, I know, I remember the Vic20, but WebTV is the space shuttle to that earlier technology's Sputnik. It looks great. The key is the way WebTV processes Web pages to accommodate the difference between computer and NTSC display systems. A Web page on WebTV isn't identical to one viewed on a computer, but it is sharp, clear, and very readable (even at a viewing distance much greater than those we typically use with computers).

Why do I think WebTV will pioneer the merger between TVs and computers? Two reasons: It's cheap and it's easy. At $300 to $400 for the hardware (after a price drop in early spring 1997), WebTV's price is comparable to that of a high-end VCR. While this price range doesn't qualify WebTV as an impulse buy, it is one that places it within reach of many, if not most, consumers. And this price tag compares very favorably with

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the other Internet option, the computer, weighing in at over $1,500!

Even the most computer impaired individual can make WebTV work. There is no new technology to understand; the only decision the consumer has to make is whether to purchase the optional infrared keyboard—and they should, because it is a good one. I watched a person with very little computer experience go on-line, send e-mail, and browse Web pages in under 10 minutes. There were no disks of software to install, no manuals to read, and no external devices to connect. It truly is as easy to install as a VCR—okay, easier. And using WebTV is easy as well. The keyboard has keys labeled for each of the functions an Internet user needs ("e-mail," "send," "favorites," "recent"). Using the keyboard is really more like operating a television remote than controlling a computer.

One of the biggest arguments against the merger is that making the technology affordable and easy is always accomplished at the expense of power. There is always concern for the growing division between the haves and have-nots in the information age. With its reduced abilities, will Internet TV become the device for the "almost haves" or, more dangerously, the "practically have-nots?"

A major barrier to the development of Internet television is the understandable and yet unfortunate (and unnecessary) tendency to link the medium with the content. In this case, for most people, the Internet and the computer are inseparable. But if we break this association, we can start to appreciate the full value of Internet television. The television method of accessing the Internet will never be the same as the computer method. The sacrifice of power for price and ease-of-use will always distinguish these two channels.

Today, the difference between the two is manifested in more capabilities for the computer channel. Of course, if there are 50 million people hitting the Web on computers and only 35,000 using WebTV, which would you design for? But the fact that there are more features built into the

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computer channel does not mean there are inadequate capabilities built into the television channel. Broadcast radio has lower fidelity than CD audio, yet millions of people use the radio. Unlike videotapes, broadcast television is interrupted by commercials, but people still watch broadcast television.

I believe that Internet television can offer those core capabilities that motivate use of the Internet to begin with—viewing Web pages, viewing pictures, and hearing audio. And I would argue that, although they are certainly exciting to read about in the trade press, most Web users don't even take advantage of the state-of-the-art capabilities available on the Web. For instance, although it provides high-quality audio via the Net, only a small portion of Web users have downloaded the software necessary to hear RealAudio on their computers. (And, coincidentally, WebTV can run RealAudio out of the box.)

As more consumers adopt Internet TV, I anticipate that new features and capabilities will be developed specifically for the television channel—features that might not work as well via the computer channel. WebTV uses the slogan, "The Internet for the rest of us." Although many users will pay for the features and augmented capabilities of the computer channel, there are many other users who will be satisfied with less— that's why they make sedans *and* sports cars.

We also need to be aware that convergence moves from both ends of the spectrum. Television isn't just becoming like computers, computers are becoming like television. At the latest National Association of Broadcasters meeting in Las Vegas, Microsoft announced plans to put television receivers on computer video display cards. When the new digital television signals begin broadcasting, these specially-equipped computers will be ready to display not only your word processing documents, but also CNN and *Friends*. This won't change the home market much—it is hard to envision pulling out our big screen TVs for our Pentium machines with 15" monitors—but it

will definitely be a new way for broadcasters to capture eyeballs in the workplace.

Rebuttal

Augie: Scott's arguments make it clear that the technology used in computers and televisions is converging, but the convergence of technology is only the first step needed if these two technologies are to become interchangeable. The key issue to consider is the utility of a television set as a display device for a programmable personal computer.

In the case of today's television sets, the answer is clearly "No." Despite Scott's glowing reviews of the way that WebTV enlarges text from the Internet to make it readable on a television set, the low scan rate and artifacts of the current television system make it more difficult to read almost anything on TV than on a computer screen. (And, by the way, it takes two or more WebTV "screens" to display the same information that is on a single computer screen.)

Digital, high-definition televisions, which will be realized in 1998, promise to provide a near-equivalent to computer monitors in display resolution—if they are actually purchased by the public. Other factors, however, will still keep the television from becoming the display device for computers.

In addition to the social factors mentioned earlier, consider the lack of success of almost every form of interactive television. Since the birth of the interactive "Qube" cable television system in the 1970s, virtually hundreds of efforts at implementing interactive television have been attempted, and almost all have failed. These failures include interactive game shows, instantaneous polling, interactive video catalog shopping, and information retrieval via teletext. (The biggest success is television shopping, which uses decidedly low-technology to generate $4 billion per year in U.S. sales.)

In almost all of these efforts, the failure cannot be attributed to shortcomings in technology. The technology worked as planned, but users, for whatever reason, shied away from adopting the interactive technologies. Considering the wide range of interactive applications attempted, ranging from education to entertainment and from information retrieval to transaction, my conclusion is that television users don't want to use their TV for anything other than watching television programs. Television programming is too deeply ingrained into the American psyche for it to be pushed aside by a new type of communication.

Those people who want the features of the Internet or any other computer application will buy a computer with a dedicated monitor. The slow sales of WebTV devices (fewer than 35,000 units during the 1996 Christmas shopping season and only about 100,000 units as of early spring 1997), despite a massive advertising campaign, is an important indicator of the weak demand for this particular form of interactive television. One final WebTV note: Whereas most computers are designed to be upgraded with faster modems, more memory, etc., the simplicity of the WebTV systems also limits its versatility.

Scott: Although I might disagree with Augie on several points, his argument that people don't seem to want WebTV cannot be denied. But we differ on why that is. I believe there are two significant barriers to the widespread acceptance of some kind of Internet TV: pricing and marketing.

I'll address pricing first. At present, the pricing of WebTV is competitive with the predominant Internet device, the computer. However, if WebTV seeks to be the "Internet for the rest of us," it must set its sights on a different class of competition. WebTV must compete in the arena of video peripherals— video games, satellite dishes, and VCRs. In this market, $300 to $400 is too expensive. The manufacturers of WebTV receivers must lower the price of a complete system so that it is comparable to video peripheral devices, in the neighborhood of $200 to $250.

If WebTV hardware enjoys the same type of price decline as computer hardware, this price reduction is reasonable in the

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short term. But should price reductions such as this be impossible, WebTV would do well to emulate PrimeStar's strategy of leasing satellite television decoders. This strategy would give WebTV an element it is currently lacking—an opportunity to trial the technology.

The second barrier is marketing, and, in this area, WebTV has frankly dropped the ball. In creating a new class of technology, it is not enough to build it and hope they will come. WebTV marketing has not focused on showing how or why WebTV will work for those aspiring to be on-line. WebTV's television advertising seeks to establish name recognition for WebTV, but fails to tell us why we should recognize the name "WebTV." Its marketing includes no information about how the device works, how much it costs, or even where to purchase it. Instead, we have an old man walking through his TV, telling us that we are living in the golden age of television.

The disappointing sales figures for WebTV can be directly attributed to the ambiguous marketing and advertising strategies. The only people who "get" these ads are those who are already on-line, explaining why WebTV's biggest sales are with people already connected. In fact, much of WebTV's behavior suggests that they don't understand the Internet at all. For instance, WebTV doesn't even own the domain name www.webtv.com. Those attempting to gain more information about WebTV on-line by typing "webtv" into their browsers are sent to an amateurish page that contains neither information about WebTV nor links to where such information can be found. This is really unforgivable.

In addition, WebTV has ignored an important lesson about expensive information products. Encyclopedias and computers have taught us that children are sometimes the most important gateway to the consumer market. If consumers are considering taking a risk on an expensive product (more than $200), a safe rationalization is that it is for their children's education. To date, WebTV's marketing efforts have not shown the educational value of their product—which is

strange because it has so many educational uses. A simple ad showing how a student can use WebTV's Internet capabilities to find information that can then be used to write a research paper would do far more to boost sales than all the visions of the beach or flamenco dancers WebTV features in its current ads.

Part of the problem might be related to the fact that WebTV describes both an information service, provided by a company known as WebTV, and consumer hardware, currently provided by Philips and Sony. The same coordination of efforts by these companies that brought WebTV to market could play an important role in developing a practical image of the product.

This discussion brings us back to our original question: Are the television and computer converging? I maintain that the answer to the convergence question can't be found in technology. Computers will not be able to do everything that televisions can do and vice versa, and today's users are sophisticated enough to know that. Instead, the real barriers to convergence are related to how these products are positioned in a competitive market. I would argue that once these next-generation information appliances are properly positioned in the minds of users, the process of convergence of these two important consumer technologies will begin in earnest.

As a parting shot, let me note that Microsoft is in the process of purchasing WebTV for $425 million. If I had to bet on anyone who could iron out the kinks in convergence, I would put my money on Mr. Gates—he has a pretty good track record.

Summary

We agree on four things:

- *Advances in digital technology will cause computers, televisions, and their peripheral devices to more closely resemble each other.*

- *Virtually every television set sold after 2000 will have a microprocessor, memory, and other computer technology built in.*
- *The prices on computers and televisions will converge, with digital televisions becoming more expensive and computers becoming cheaper.*
- *Companies producing software (of all types) for computers and the television industry will continually attempt to enter each other's markets.*

The unresolved question is whether these technological and organizational factors will lead to a merger of function. We eagerly await the answer. NTQ