

THE BRIGHTER SIDE OF TELEVISION:
DELIVERY OF INFORMATION IN THE VBI

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ABSTRACT

This article will attempt to describe the VBI to (and by) non-engineers, discuss some of the issues raised by the FCC's rulemaking and consider, in light of WGN v. United Video¹, the effect of the copyright laws on VBI teletext.

Television watching is undergoing some fundamental changes. Cable, satellite distribution and home video recorders have all had an effect on the use of the old TV set. Now a new technology, teletext, has arrived which, while not yet fully developed, could change the meaning of "watching television".

Teletext is a system for displaying information - text and graphics - on a television set in response to user commands. It delivers instantly access to news and sports information, entertainment guides, financial listings, emergency advice, educational material and recipes as well as entertainment such as horoscopes and video games. Some teletext services will probably be offered on a subscription basis while others will be advertiser supported, or both, depending upon the size of the audience and the medium's appeal to advertisers.

While teletext can be transmitted in a variety of ways, including over cable television lines or by radio or microwave signals, for the purposes of this article we are going to concentrate on the legal issues raised by broadcasting teletext

information over-the-air in the vertical blanking interval ("VBI") of the television signal.

The Federal Communications Commission has authorized TV broadcast stations to transmit teletext in connection with their regular television transmissions. On May 20, 1983, following over a year of public debate and comment, the FCC released a Report and Order which established technical standards and regulatory policies to govern broadcast teletext.

More recently, the FCC has proposed that television stations be permitted to employ their VBI's for various other data transmission services, such as paging services, in addition to teletext. The Commission is currently considering public comments on this proposal.

TELETEXT IS INTERACTIVE, BUT NOT TWO-WAY

First, a statement of what teletext is not: it is not videotex. Videotex requires a two-way communications path between the user and the system operator's computer. In a videotex system, such as the Mead Data Central's Nexis service or the terminal at an airline reservations counter, the user and the computer send information back and forth. Teletext, on the other hand, disseminates information in one direction only, making distribution via television signals feasible.

In the case of a VBI teletext service, the information is broadcast by a TV transmitter in a repeating cycle and received by all of the homes within reach of that TV signal. Each teletext page is digitally encoded and transmitted as a stream of binary electronic impulses. The user selects a particular page for viewing by pressing a button on a keypad, which sends a signal to the user's teletext decoder. The decoder scans all of the data as it passes by, "grabs" the data selected by the user and displays it on the user's TV screen.

A teletext user who wishes to see news headlines, for example, pushes a

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button on this keypad to display an index of the available news stories. By pushing another button indicated on the index, he can retrieve the desired story. The communication is between the television set, the decoder and the user. No signal is sent back to an off-premises computer, so the costly upstream path from the user back to the sender is eliminated.⁴

WHAT IS THE VBI?

The picture on a television set is created by a beam of electrons emitted from an electron gun which scans from left to right across the back of the picture tube screen. When the gun reaches the end of a line, it drops down to the beginning of the next line. When the gun reaches the bottom right-hand corner of the screen, it has displayed one television field. The gun then shuts off and returns to the top left-hand corner of the screen to repeat the process. The VBI is the time period during which no television picture information is transmitted in order to allow the electron gun to travel from the end of one field to the beginning of the next. It shows up as the horizontal black bar you see when the picture rolls and you must adjust the vertical hold.

The FCC established a standard for U.S. television manufacture and transmission: 525 scan lines per frame. Each frame contains two interlaced fields of 262 1/2 lines and is transmitted 30 times per second. The first 21 lines in each field constitute the VBI. Not all of these 21 lines are needed to separate the fields composing a television picture. Some lines in the VBI are available to carry information in digital form. For example, line 21 is currently used with some television programs to send closed-captioning for the deaf.⁵ Other lines are used to send a code which enables certain color sets to make automatic color adjustments or to identify the broadcaster and the place and date of the broadcast. All of this information is invisible - unless you have some way of decoding the digital data.

FCC VBI RULEMAKING

The FCC has taken a laissez faire attitude toward teletext. The Commission has left entirely up to the broadcaster such decisions as whether or not to offer a teletext service, whether to provide such a service on an advertiser-supported or subscription basis and whether to embrace a particular technical mode of transmission or display. The FCC has limited its role to designating the VBI scan lines on which teletext may be

transmitted and setting such minimum technical standards as are necessary to prevent interference to other broadcast services.

The FCC has authorized broadcasters to offer teletext service on six designated scan lines in the VBI which the Commission thinks will not cause interference on existing television sets and which are not reserved for other uses. Over nine years, as newer television sets replace existing sets, four more lines will be made available, increasing the quantity of information which can be transmitted in a given amount of time.

One controversial aspect of this designation involved the possible use for teletext on line 21, which as noted had been reserved for closed-captioning. A number of hearing-impaired television viewers have purchased "Telecaption" decoders which display the closed-captioning transmitted with certain broadcasts. These viewers were concerned that the success of teletext would make their equipment obsolete. On the other hand, teletext has the potential to offer the deaf a superior means of receiving information, including and in addition to closed-captioning, than was previously possible.

The Commission chose to withhold authorization to use line 21 for teletext for five years. How much information can be transmitted in a given amount of time is a function of how many VBI lines are made available for teletext (see the example of Teletext Arithmetic in the Appendix). While appeasing those who have purchased Telecaptioning devices, the FCC reduced the number of teletext pages which can be broadcast on the VBI and, consequently, the attractiveness of the service and its ability to gain a foothold in the marketplace. There seems to be no reason for the FCC to depart from its "hands off" approach in this area, as the competitive forces of the marketplace, in conjunction with the copyright laws (discussed infra), would assure that closed-captioning had a place in the VBI.

TELETEXT TECHNICAL STANDARDS

The Commission decided not to adopt a particular technical standard for teletext, but to let the marketplace determine which systems would be used. While the advantages of the open market philosophy are numerous, one area where its shortcomings are evident is the selection of technical standards. Television and radio broadcasts follow technical standards which are designed to create uniformity of equipment throughout

the country. A TV set purchased in New York will work just as well in Philadelphia and San Francisco. On the other hand, a lack of standardization in other areas, for example video cassettes and video discs, results in incompatible technologies, delays in their implementation, increased expense to consumers, and significant losses to all the companies which invested in the technology.

This question of standards was one of the most controversial of the rulemaking proceedings. While the Commission's "hands off" approach was preferred by some of the companies involved, for many U.S. companies a Commission abdication of decision-making in this area raises serious threats from foreign competition.

The existence of an open marketplace in the U.S. is questionable when all of the leading technological work in this area has been done in Europe and Canada, where it was supported by government subsidies. The U.K. supports an open marketplace in the U.S. because it needs the U.S. marketplace to expand. The U.K. system has six years of proven experience and claims a tremendous cost advantage over other systems.

In the view of many U.S. companies, however, the U.K. system is the horse-and-buggy of teletext. Many U.S. firms favor a standard known as the North American Broadcast Teletext Standard, which can deliver superior graphics and is significantly more flexible. These firms are concerned that without FCC intervention, the transient advantages in cost of the U.K. system would saddle the U.S. with a de facto standard which fails to fulfill teletext's potential.

The standards debate is not limited just to the VBI. While the FCC did not rule on teletext standards for cable, radio or other transmissions, the lack of a decision on a VBI standard will undoubtedly influence development in these other media.

The key to the development of teletext in the U.S. is reducing the cost of the home decoder unit. As in the early days of television and radio, a successful advertiser-supported teletext industry requires a significant number of homes with terminals which can receive the service, i.e., an audience. Proper standardization of teletext display devices, whether de facto or de jure, would have hastened the introduction of these services, by assuring decoder manufacturers the volume they need to cut costs.

WHO OWNS THE VBI?

The last significant VBI issue is often, if inaccurately, referred to as "Who owns the VBI?" The FCC's rules will permit broadcasters to transmit teletext with their television signals, but the question arises: are others who retransmit those TV signals required to include the VBI in their retransmissions?

WGN v. United Video

The courts have only considered the obligation to retransmit a broadcaster's VBI in one case, WGN v. United Video, supra, which arose in a copyright context.

WGN, a Chicago television station, was experimenting with teletext in the VBI of its regular programming. WGN is a "superstation," meaning that its signal is transmitted via satellite to cable television systems nationwide which elect to distribute WGN's programming. A WGN subsidiary operates a cable system in Albuquerque, New Mexico, which was to distribute WGN's signal to homes equipped with teletext decoders.

United Video, Inc. ("UVI") is the satellite common carrier which picks up WGN's signal and distributes it to cable operators, who pay UVI for the transmission. UVI does not obtain WGN's authorization for this retransmission because retransmissions by companies like UVI are not copyright infringements due to the so-called passive carrier exemption in the Copyright Revision Act of 1976.⁶ This provision provides that retransmission of a copyrighted television broadcast is not an infringement if the retransmitter "has no direct or indirect control over the content or selection of the primary transmission."

The controversy arose when UVI began stripping the VBI from WGN's signal and inserting its own when it distributed the signal to cable operators. The new VBI contained the Dow Jones business news service. WGN sought an injunction against this practice, claiming that it infringed WGN's copyrights in two of its evening news shows. The WGN teletext which was broadcast (and stripped) was a test signal during the first show, and a program guide and news story during the second show. WGN registered and claimed one copyright, including the teletext, for each of the two evening news shows.

The District Court found that by "primary transmission," Congress meant the copyrighted work being broadcast, whether or not it included teletext. The court found, however, that WGN's newscast and

accompanying teletext could not be covered by a single copyright as "they were not intended to be viewed together as a single work by the same viewer at the same time," 523 F.Supp at 412, and that the teletext was not part of the "series of related images" which made up news show. As a result, UVI remained within the passive carrier exemption when it stripped WGN's VBI.

The court also found that UVI's retransmission to cable operators was not a performance to the "public" even though those operators sent the signals to a general (albeit subscribing) audience, thus making it impossible for UVI's retransmission to be a copyright infringement.

The Seventh Circuit reversed, holding that the primary transmission is the complete broadcast signal, and the fact that the viewer has to switch from one picture to another to watch the teletext does not preclude the underlying program and the teletext together from being a single copyrighted work. The court set up a three-pronged test, requiring that a passive carrier must retransmit the original teletext with the underlying program if "the teletext is intended to be seen by the same viewers as are watching [the underlying program], during the same interval of time in which [that program] is broadcast, and as an integral part of the ... program." 693 F.2d at 626 (emphasis added). The court also expressly stated that its holding was not that WGN "owns" the VBI in the programs that it copyrighted, Id. at 628.

UVI petitioned for rehearing. In denying that petition the court took the opportunity to clear up some imprecise technical language in the original opinion, and to state that the "integral part" test is not a "loose and spongy 'relatedness' test More than 'relatedness' is required, and is present here." Id. at 629.

Although its test was phrased in precise language, the Court was nevertheless sloppy in applying it to the facts of the case. The teletext broadcast with the first of the two news shows contained test signals, and the second contained "a news story and program schedule." 523 F.Supp. at 408. Only the news story could pass the "integral part" test, as the other material was not even "related" to the news shows. Any other application of the test would indeed be "loose and spongy."

Under the Seventh Circuit's test the VBI may be stripped when it is not an

"integral part" of the underlying broadcast, since refusal to retransmit one of two separate and distinct copyrighted works is not an infringement. This is sure to be the case in many situations, as the market for separate teletext services, such as the Dow Jones news service which UVI transmitted or a brokerage firm's use of teletext to transmit information to its customers, is at least as broad as that for program-supplementing teletext, such as a sports statistics service during sports programming or closed-captioning for the hearing-impaired.

Nevertheless, the end result of the WGN case is to place retransmitters at the mercy of broadcasters. If the teletext is not retransmitted and subsequent judicial examination determines that the "integral part" test was met, then the cable company or resale common carrier will be liable for copyright infringement.

THE FCC "MUST CARRY" RULES

As part of its rulemaking, the FCC had to decide whether a cable operator who carries an off-air broadcast station should be required to carry the VBI of that station (in the absence of a relevant copyright) or should be permitted to delete data in the the VBI and even replace it with other data of different origin.

In the relatively early days of cable TV, broadcasters became concerned that if their signals were not retransmitted by the cable systems in their market, they would lose their audiences to these systems. Broadcasters are obligated to provide community programming, cover issues of local interest and present balanced discussions of issues of national impact. In order to assure the continued availability of local broadcast signals to local communities, the FCC adopted rules (the "Must Carry" rules) requiring the carriage by a cable system of the UHF and VHF television signals broadcast in its vicinity.

In the case of teletext, the Commission specifically chose not to impose any content requirements upon broadcasters. Nevertheless, broadcasters argued that communications policy, wholly apart from copyright, should compel a cable system to include the VBI teletext of the broadcast stations it carries.

The broadcasters argued that 1) the viability of teletext requires the FCC to assure it access to its full potential audience, 2) the VBI should remain under the control of the TV station licensee, and 3) cable systems will willfully delete

broadcast teletext in order to promote their own services.

Those opposed to mandatory carriage urged legal, technical and policy rationales. First, since teletext is a service ancillary to television broadcasting and without any obligation to provide local community programming, it should be classified with other ancillary services, such as pay television and low power TV, for which cable carriage is not required. Second, a cable operator may experience technical problems in the delivery of teletext. If so, it would be preferable to allow the cable operator and broadcaster to negotiate the steps necessary for the cable operator to deliver a usable teletext signal and to allocate the costs so involved. Lastly, the open marketplace approach favored by the FCC in other contexts suggests that the solution here is to allow the broadcaster and cable operator to negotiate between themselves the terms of cable carriage in the absence of a compelling need for government regulation.

The Commission, noting that copyright concerns are quite distinct from communications policy, rejected the mandatory carriage of teletext by cable systems. Accordingly, a cable system evaluating whether to retransmit a particular broadcaster's teletext needs to consider whether it meets the "integral part" test of WGN, and if not, it can then exercise its discretion with respect to such carriage. Of course, the cost of deleting the teletext signal and the attractiveness of the teletext offering to the cable operator's subscribers will likely deter cable operators in many cases from taking affirmative steps to delete a broadcaster's teletext.

1. 523 F. Supp. 403 (E.D. Ill. 1981), rev'd 693 F.2d 622, reh. denied 693 F.2d 628 (7th Cir. 1982).

2. Some companies, such as Time Inc., have experimented with the delivery of teletext in the full video signal of a cable channel, instead of in the VBI of a broadcast signal. The FCC has not sought to exercise jurisdiction over cable-delivered teletext.

3. Federal Communications Commission, Notice of Proposed Rulemaking, Docket No. 84-168, Released March 8, 1984.

4. The teletext system operator has no record of the page accessed by the user and, consequently, no new privacy problem is created.

5. "Closed" because a viewer requires a special decoder to display the information; "open" captioning refers to subtitles displayed over the video picture without the use of a special decoder.

6. 17 U.S.C. §111(a)(3).

7. The court also held that public performance includes "indirect transmission to the ultimate public," in this case the public being the Albuquerque cable subscribers, 693 F.2d at 625.

8. 47 C.F.R. §§76.51-67.

TELETEXT ARITHMETIC

How many teletext "pages" can you transmit in the VBI?

Constants

- o U.S. television picture resolution is 525 scan lines/frame ("NTSC").
- o The VBI is 21 lines/frame. The first 9 are not usable for data.
- o There are 2 fields in a frame.
- o U.S. TV "flickers" at the rate of 30 frames/second.
- o One line contains 27 data bytes (in the North American Broadcast Standard).
- o The FCC designated 6 lines for broadcasters to use for teletext.

Assume

- o An average teletext page is 1000 bytes.
- o Ten seconds is probably the longest a person will wait for a page ("access time").

Therefore

$$\begin{array}{r} 27 \text{ bytes} \\ \times 6 \text{ lines} \\ \hline 162 \text{ bytes/frame} \end{array}$$

$$\begin{array}{r} 162 \\ \times 2 \text{ fields in a frame} \\ \hline 324 \text{ bytes/frame} \end{array}$$

$$\begin{array}{r} 324 \\ \times 30 \text{ frames/second} \\ \hline 9,720 \text{ bytes/second} \end{array}$$

$$\begin{array}{r} 9,720 \\ \times 10 \text{ seconds max. access time} \\ \hline 97,200 \text{ bytes/10 seconds} \end{array}$$

$$\begin{array}{r} 97.2 \\ 1,000/97,200 \end{array}$$

Approximately 97 pages of teletext can be carried in the VBI with a maximum access time of ten seconds.

For full-field teletext delivered by cable, do the same arithmetic with 506 lines (i.e., 525-(2x9)-1) instead of 6.