Other Comments:
The purpose of these comments is to challenge the underlying assumption asserted by content providers with regard to the purpose and necessity of digital broadcast copy protection. Our arguments are that digital media is not uniquely susceptible to piracy, that high-quality programming is not being held back by the lack of a broadcast flag, that consumers are not particularly interested in so-called "high quality programming" anyway, and that digital television is not about a better picture.

Myth: Digital Formats are Uniquely Susceptible to Piracy

Prominent in this notice of proposed rulemaking is the following statement (Paragraph 1):

"Without adequate protection, digital media, unlike its analog counterpart is susceptible to piracy because an unlimited number of high quality copies can be made and distributed in violation of copyright laws."

We challenge this statement that digital media is uniquely susceptible to piracy.

Certainly, one of the most prominent and recurrent arguments of the content industry interests is that "digital piracy" is far worse than "analog piracy" and thus justifies the imposition of additional protections unnecessary for analog media. We refer to this argument as the "analog fallacy." The fallacy is that analog piracy is not nearly as threatening as digital piracy because analog copies degrade with every generation while digital copies remain pristine no matter how many copies are made. While true in a strict sense, the fallacy is that most of the assumptions necessary for this argument to be true are not realistic. For example, one prominent proponent of this argument is Sen. Fritz Hollings, who made this statement when introducing the Consumer Broadband and Digital Television Promotion Act (CBDTPA):

The reality is that a lack of security has enabled significant copyright piracy which drains America•s content industries to the tune of billions of dollars every year. For example, the movie studios estimate that they lose over $3 billion annually by way of analog piracy. In order to pirate copyrighted movies via analog formats, an individual makes an illegal copy of the movie (sometimes by taping it in a movie theater with a personal video recorder) and then distributes it, in analog form, at discount. However, because subsequent copies of analog movies degrade over time, there is a limit to the success of this type of piracy.

In a digital age, however, the piracy threat is exponentially magnified. So on the Internet, copyrighted content - be it a movie, a book, music, or software - travels in a digital language of 1s and 0s, and every copy of that content, from the 1st to the 1000th is as pristine as the original. Also, unlike an analog pirated movie, which must be physically packaged and transported, a digital copy can be sent around the world on the Internet with a single click of a mouse. The copyright industries are

justifiably worried about distributing their content on the Internet absent strong copyright protection measures. As Internet access becomes increasingly available over high-speed, broadband connections, these worries will only heighten.

The first problem with the analog fallacy is the assumption that, even when distributing content in analog form, the original bootleg "master" is also analog and will ultimately suffer from degradation, as a VCR tape would after a number of viewings. However, this assumption doesn't stand up to scrutiny. Let's use Hollings' own example of someone recording a movie in a theater with a camcorder. Chances are, and the likelihood of this increases every day, the camcorder is digital. This means that the original bootleg "master", from which all further bootlegs will be made, is digital. If the camcorder recording is a second generation copy, then the digital copies made from the camcorder will also be second generation copies. Analog copies made from the camcorder recording will be third generation copies. That's it. There will be no fourth generation, no fifth generation, no n-generation copies marching into a dessicated future of analog degradation. This, despite the fact that the original media was analog.

Obviously, when burning bootleg DVDs, the bootleg "master" is almost certainly going to be digital. However, there is no reason why pirates will not use digital masters even when recording to analog media, such as VHS tapes. Indeed, if one were making pirate videos after a movie had been broadcast on today's analog television, it is almost certain that the "master" copy would be digital.

Whether the content providers like it or not, we live in a digital world. Even if media is analog, the chances are that the copying tools will be digital. Consequently, there is no more distinction between "digital" and "analog" piracy. Content in "analog" formats is as susceptible to piracy as content in "digital" formats. The argument concerning "analog degradation" is no longer true, if it ever was. To the extent that the content industry willing releases content in analog formats, there is no legitimate reason for them to withhold the same content in digital formats.

Of course, in one aspect, digital copies are often subject to more purposeful degradation than analog copies. With analog copies, pirates will attempt to mimimize degradation in order to be as successful as possible. In the case of digital bootlegs, however, the original copy is frequently purposefully degraded through use of compression technology. A "CAM" recording has lousy quality to begin with, but the original file size is still going to be very large, several Gigabytes at a minimum. In order to reduce the file size, to make distribution via the Internet easier, the file will be compressed, almost certainly with a "lossy compression" scheme. Lossy compression means that some of the data in the original is thrown out; the scheme "loses" some of the data. While this makes for a smaller file, it also means that the file has been degraded in quality as well.

This points out another false assumption of the analog fallacy - that the initial bootleg "master" copy is pristine. Digital copies may be flawless, generation after generation, but that does not really matter if the master copy is flawed to begin with. In such cases, the flaws themselves are reproduced generation of copy after generation. Thus, every bootleg made from this "master" will be a "pristine" copy of a low-quality original.

For the forseeable future, digital copies are much more likely to suffer from purposeful degradation as opposed to analog piracy. If anything, the claim should be that digital piracy of television is uniquely susceptible to wholly inferior copying.

The analog fallacy also assumes that the quality of bootleg copies makes a significant difference to the level of piracy. However, the significance of the quality of the bootleg as a factor in piracy is undetermined. All other things being equal, of course, the quality of the bootleg will make a difference, but not all factors are equal. At present, and for the forseeable future, most people face significant barriers in obtaining pirated goods. Like other illicit goods, there are significant costs associated with obtaining pirated materials. In the realm of physical copies, bootlegs are only available in shady areas from less than reputable dealers who are seldom easy-to-find and are not typically around very long. Certainly, there is no recourse if the goods are shoddy (they almost always are) or misrepresented (attempt to buy a copy of "Attack of the Clones" and get a copy of "Look Whose Talking Now" instead).

In cyberspace, similar barriers exist. Attempting to find pirated materials through a search engine will likely lead the average consumer down an endless path of mousetrapping "warez" sites without any actual pirated materials available. Those looking for bootleg materials must also contend with the possibility that they will be downloading malware, such as viruses or Trojan horse programs, instead. It goes without saying that downloading a compressed television show can take hours and, as noted above, the compressed movie is likely to be of lousy quality. Finally, even if the user finds what appears to be the right file, they can be duped just as in the physical world.

What this means is that the desirability of bootleg television seems to have little to do with the quality of the bootleg. When most high quality content is readily available at the local Blockbuster to rent at $2.50 for a few days (with guaranteed availability) or is available for purchase for less than $24 (or even cheaper "pre-viewed"), quality would not seem to be a significant consideration with regard to whether a bootlegged version is desired. Thus, the content industry's obsession with the "pristine" nature of digital copies is misplaced. Some bootlegged content may or, more likely not, be "pristine" copies, but the consumer of such pirated works is never going to be able to guarantee that they will be able to get one of the "pristine" copies.

We are living in a digital world and, despite Hollywood's desires, that is not going to change. As long as content exists in analog form (which it must if we are to perceive it), it is only one-generation away from being digitized. The only way to prevent this sort of digitization is through totalitarian controls on all digital devices. Thankfully, that is highly unlikely to happen. Moreover, even if such controls were partially successful and digital bootlegs were thereby somewhat degraded in quality due to this digital-analog-digital conversion process, that would not appear to be a significant barrier to piracy. Once digitized, the only controls available are those controls that are available for digital content generally. This means controlling distribution, not copying. Reasonable regulation would focus on other methods of limiting illicit distribution in general, not control of consumer devices.

Myth: No High Quality Programming for Digital Broadcast Without Copy Protection

First, it is important to note that there is no guarantee that content providers will make so-called "high quality programming" available for broadcast even if the broadcast flag is mandated. All of the proposed benefits of this rulemaking are speculative, while the costs are concrete and immediate.

Second, since the proposed need for a broadcast flag is with regard to high quality programming, it seems odd that there is no clear guidelines on how such a broadcast flag would be used. Would it be permissible to use a broadcast flag for programming that is not "high quality"? What about programming in the public domain? All the reassurances in the world are fine, but how can the impact of a broadcast flag on the consumer be properly gauged without some guidelines as to permissible and impermissible uses of a broadcast flag in the first place? A poor bargain for the public indeed, if DRM is mandated and restrictions on DRM are not addressed at the same time.

Third, just what, precisely, is this so-called high quality programming? Is NBC keeping the best episodes of "Friends" in a vault somewhere until the broadcast flag is approved? Is the next season of "Survivor" not in HDTV format because of fears of piracy? We don't believe that the content providers are arguing that news and sporting events would be broadcast in HDTV except for the lack of a broadcast flag.

The most likely candidates then, for "high quality programming," are movies previously available through theatrical release. However, these would be strange candidates for a high degree of protection. If the fear, as the content providers claim, is piracy, then broadcast versions of theatrically released movies would be the least likely to need additional protection.

By the time a movie for theatrical release will be shown on broadcast television, it has already been made available in the movie theaters, pay-per-view, enhanced cable televsion, and DVD/Video. Each of these means of distribution has their own leakages due to piracy. Indeed, the main complaint of Hollywood recently has been the fact that their movies are available on the Internet nearly simultaneously with (or even prior to) their release in theaters. Despite efforts to copy protect DVDs, programs that will copy DVDs are readily available. Indeed, major movie studios claim that they have no case or controversy with regard to one of the most notorious providers of these programs (321 Studios). Finally, unless the FCC makes all existing digital television equipment obsolete, a significant amount of non-broadcast flag encumbered equipment will remain available that can readily copy so-called "high quality programming."

It is clear that the reasoning for increased protections for broadcast digital television programs is specious. Content providers are providing their works in formats that are susceptible to widespread digital piracy. Their assertions notwithstanding, content providers will provide their works were they can make a profit. If they haven't made their content available on HDTV yet, it is more likely due to the lack of an installed base than fears of piracy.

Furthermore, what are the incentives for such piracy? So-called "high quality programming" on broadcast television will actually be much lower

quality than anything available through alternative channels. Unless we are much mistaken, programs available for broadcast will still include commercial breaks and be edited for television (perhaps even edited to "fit your screen" - no guarantees from the content providers). Given that the works will be available for piracy through other channels without commercial breaks and without editing out the "naughty bits" no self-respecting pirate would be caught dead with a broadcast copy.

Moreover, the incentive for piracy of digital television is very low. By the time a theatrically released movie is available for broadcast viewing, the market for bootlegs copies is virtually exhausted. Bootlegs based on the theatrical showing will have been available, bootleg DVDs will be available and inexpensive new or used legitimate DVDs will still be available. Before the bootleg of the television broadcast can be made, the movie will have to have been shown for free via broadcast. This doesn't leave much incentive for piracy of television broadcasts.

Myth: Consumers Will Buy Digital Television Equipment if High Quality Programming is Available

Despite the assertions from the National Cable and Telecommunications Association, it is far from clear that increased availability of "high quality programming" will convince consumers to spend $1,000 - $3,000 for digital television equipment. Any increase in digital equipment sales will be marginal at best. After all, the availability of "high quality programming" will itself be marginal, a small portion of the overall programming schedule. Or does anyone think that the availability "Everybody Loves Raymond" in HDTV glory is a compelling reason to spend a significant amount of money?

In some ways, the argument that consumers are simply waiting for high quality programming to take the leap into digital television is a throwback to the late 1970s when HDTV was first proposed. Today consumers already have a myriad of choices for high-quality programming. Satellite, cable, DVDs, the Internet are all available to tempt consumers and their dollars. For $1,000 one can get a digital television that, even with high quality programming, is less than compelling when compared to the fairly robust home theater DVD system one can get for the same amount of money.

Is there any gurantee that this high quality programming will be exclusive to digital broadcast television? If not, it is unlikely that consumers will buy digital televisions in order to gain access to it. Why spend more money to gain access to content you already have access to? The improvement in quality would have to be impressive, but improved picture quality pales in comparison to interactive media like DVDs.

Even if the content is exclusive to digital broadcast television, how "high quality" is it? Will content like the recently broadcast exclusive television movie "Home Alone 4" really encourage people to switch to digital television?

Given the above, it is not likely that availability of "high quality programming" will significantly increase adoption of digital television. Indeed, the additional circuitry required will increase costs and decrease consumer demand. More importantly, however, mandated DRM will substantially decrease consumer demand. Experience has shown that when consumers are given the choice between substantially similar content, one

with digital rights management and one without, they shun the digital rights management choice. This is particularly relevant in context where consumers have existing expectations of what they can and cannot do with content.

No DRM system has succeeded without being substantially superior all alternatives. HDTV is not substantially superior to analog television enough to prosper despite DRM.

Here is one way to spur acceptance of digital television by making lots of high quality programming available: require DVD players to have a digital output (currently an industry consortium requires that they only have analog outputs). If consumers could take advantage of the high quality of DVD video with their new digital televisions or decoders, that might be of interest to consumers.

Myth: Digital Television is like Regular Television with a Better Picture

The switch from analog to digital transmission provides a significant quantitative change in the quality of television transmission. Of course, when discussion turns to digital television, one hears of all the wonderful possibilities. Digital television, it is said, is not simply an improved display, but is an entirely new platform for multimedia content. For example, digital signals can be manipulated and processed with far greater ease than analog signals. Analog signal processing requires special purpose circuitry that cannot readily be changed and is expensive to manufacture and distribute. Digital signal processing through software is much more flexible and can be easily updated and distributed.

However, few of these advantages of digital television require digital broadcast transmission. Instead, the digital processing can take place at the receiver - the television set itself. An analog television broadcast can easily be digitized at the television receiver, just as the analog frequency tones of a modem are converted to a digital signal. While the analog video signal might be somewhat degraded compared to a truly digital transmission, this is usually not a great consideration - particularly when most consumers also have access to high quality analog broadcast signals via cable or satellite. Furthermore, much of the additional information that has been imagined accompanying the digital image - such as statistics or trivia for sporting events - does not have to be broadcast, but can be made available through other distribution networks (i.e., the Internet). It is not the quality of the transmission signal that makes digital television revolutionary, but rather the ease of processing a digitized signal in conjunction with data about the original signal (i.e., metadata).

Indeed, the collective focus on digital transmission may actually have obscured this fact. Digital transmission is not necessary to realize most of the advantages of digital television, yet it often seems that television broadcasters are waiting for digital transmission to be adopted before embracing the digital revolution. In short, the status quo seems somewhat backwards. For instance, there is an enormous population of consumers who own analog televisions that are able, through satellite or cable providers, to reap the main benefits of digital transmission - more channels, better image quality and reception. However, in order to make the switch to digital transmission, consumers will be required to buy either an expensive digital TV set, or a digital receiver that converts to a standard analog output. Moreover, these expensive digital receivers will provide few, if

any, additional capabilities that satellite or cable do not provide. Unsurprisingly, consumers have been hesitant to transition to the digital transmission future.

Although the transition to digital has been mandated, it has not gone smoothly for a number of reasons. The primary one being that digital transmission alone is not a compelling enough reason for consumers to adopt digital receivers which, chicken-and-egg fashion, are necessary to create compelling business (and regulatory) incentives for broadcasters to switch to digital transmission. In contrast, since most of the advantages of digital television technology can be achieved independent of digital transmission technology, consumers are adopting digital television technology as stand alone devices, in the form of Personal Media Recorders (PMR) such as TiVo, ReplayTV, Moxi Media Center and UltimateTV. Although still primitive, PMRs are not only the future of digital television - they are the present of digital television. While broadcasters wait for digital transmission, digital television is already here.

Digital Television is, essentially, broadcast video (moving pictures with sound) that has metadata associated with it, can be processed digitally, and has some local (but networkable) storage capability. In this definition, "broadcast" is an important qualifier. Not only does "broadcast" distinguish digital television from such non-broadcast forerunners as multimedia CD-ROMs and DVD, but it emphasizes the distributional characteristics of the medium, such as its• one-to-many and ephemeral nature. Here the term "metadata" simply notes that a digital television video signal has additional information associated with it, whether it is data (such as sports statistics or stock quotes), graphics (logos or layout elements), another video, or something else entirely. Of course, both the video and metadata must be capable of digital processing (otherwise it would not be digital television). Finally, local storage capability is an extremely important but little recognized aspect of digital television. Moreover, this storage capability is networkable, that is, the information stored can be shared with other devices.

Conventional analog televisions have no local storage capacity. The television broadcast signal is received, displayed and discarded milliseconds later as soon as the screen•s image is refreshed. While this is effective for conventional TV, it will not work for digital television. For example, unless there is some form of persistent, local storage, associated data will last only as long as it is being broadcasted, such that an Electronic Programming Guide (EPG - TV Guide on your digital television) will have to be constantly refreshed in order to be useful. PMRs take the necessity to its logical and obvious end by storing not only the metadata associated with broadcast video, but the video stream itself. With a PMR such as TiVo, for example, one never watches the broadcast "live" but slightly delayed as the incoming video signal is stored on hard drive and then immediately streamed to the television screen.

There are, of course, analog videocassette recorders. While VCRs do appear to provide many of the same benefits as PMRs - recording shows, etc., VCRs are far inferior. Although people occasionally recorded television shows with a VCR, such efforts were annoying at best and frustrating at worst. It is not that the consumer is too stupid to program a VCR, but that the effort was not worth the hassle. Most VCRs require the consumer to navigate a maze of menus and submenus in order to enter specific channel, start and stop times for every show to be recorded. There was the

proprietary VCR+ technology which made it somewhat easier to program shows to record by entering a short numerical code, but that required the consumer to reference a printed television guide in order to determine the numerical code necessary to record a particular show. Programming the VCR was actually easy, however, compared to maintaining even a handful of videotapes. Do I have Simspons on the TDK tape or is TDK the Sopranos? Having determined the proper tape, a great deal of effort was necessary to determine the blank elements - such as fast-forwarding to the end of the previously recorded show. However, this made deletion and organization far too difficult - what to do with the tape that has two episodes of Monty Python you want to save bracketing a rerun of X-Files that you do not want to save?

PMRs eliminate most of the hassle associated with programming VCRs to record. Designating a show to record is far easier, since one simply navigates an online guide of available shows, picking which ones to record through a consumer-friendly interface. More complex recording options are also simple. For example, TiVo•s "Season Pass" will record all new episodes of a particular show - an entire season, skipping reruns and keeping track of any scheduling changes, such as shifting from Thursday nights to Mondays or being preempted by the Oscars. More important perhaps is the ability to quickly find and retrieve what has been recorded. Instead of hunting and searching for the right tape (not too mention rewinding to the correct start point once that tape has been found) PMRs list shows in an easy-to-navigate interface. With a couple of clicks you can watch the episode of Antiques Roadshow you recorded last night, or the episode of Great Performances you recorded last week.

Beyond ease-of-use, analog recorders are extremely limited in their capabilities as compared to digital recorder technology. For example, persistent digital storage is the element that transforms the nature of broadcast from a linear experience to a non-linear one. While it is possible (if annoying) to record shows on videotape for later viewing, it is persistent digital storage that allows one to "pause" a live broadcast. If the phone rings while watching the news, a viewer can "pause" the image to answer the phone. While the image is paused, the PMR continues to record the live broadcast so that once the viewer returns to watch television the ongoing show can be resumed. Such delay also permits viewers to rapidly skip through portions of the show or commercials. While VCRs also incorporate such fast-forward scanning capability, their mechanical constraints cannot compare to the near instantaneous response possible with digital PMRs. Some PMRs also include the ability to jump through stored video in 30 second increments (skipping most commercials with ease) or to jump back through video a few seconds (eliminating the "what did he say?" debates).

Although consumers have been somewhat slow to adopt PMRs, the market is quickly gathering steam. For example, both satellite and cable broadcasters have made available combination set-top receivers that incorporate PMRs. Some degree of PMR capability will almost certainly be standard in most television accessories, such as DVD players. It should be noted that the Moxi Media Center, a combination cable receiver/PMR/DVD/CD/etc. device was awarded "Best of Show" at the 2001 Consumer Electronics Show, the premier show for consumer devices.

The Moxi Media Center is also important because it is, in fact, the first true PMR. Devices such as TiVo and ReplayTV are currently restricted to

recording video only - which is why they are often referred to as "Personal Video Recorders". The Moxi, on the other hand, was designed from the start to copy and record both music and video. Consumers can use Moxi to "rip" CDs onto the Moxi•s hard drive - turning the Moxi into a digital music jukebox in addition to a digital video recorder. The same is not true for DVD video however. Due to the Digital Millennium Copyright Act it is not currently legal for the corporation behind Moxi to distribute a device that can copy and store DVDs on a hard drive. It should be noted that the Moxi also permits individuals to store personal media (such as personal photos and video). The flexibility in use of media demonstrated by the Moxi is an important milestone - differences in how various media are handled are diminishing (i.e., convergence).

Convergence is an important issue in this rulemaking. Any decision the FCC makes with regard to digital rights mangement for digital television will likely leak into all other media technologies. As media devices converge, creating media jukeboxes that let consumers choose from all the media available to them, these new converged devices will have to incorporate broadcast flag technology. In essence, the FCC will not simply be mandating how televisions are to be manufactured, but virtually all future media devices. Even computers will not be immune, as software that decodes the digital broadcast signal will almost certainly be freely available. Will computers be required to have embedded broadcast flag technology for the monitor output (or any output for that matter)?

The importance of networking is demonstrated by both the Moxi and ReplayTV which also include inherent networking capability. With the Moxi, consumers will be able to share their digital files throughout the home, so that although one might have told the television in the living room to record the latest Ken Burns production, the viewer will be able to watch the documentary in the bedroom. In addition, the Moxi•s music jukebox will make all of a consumer•s music available wherever there is a television or stereo in the house. Following another path than the Moxi, ReplayTV takes the network outside the home, allowing consumers to share digital video with other ReplayTV owners, so that, for example, one individual can send a missed episode of the Ken Burns series to another ReplayTV owner. This trend is continuing, as the recently announced TiVo Series2 will also incorporate the ability to connect to other multimedia devices. Ultimately, both types of networking, inside the home like Moxi, and outside the home, like ReplayTV, will be standard unless copyright owners are successful in their efforts to prohibit the practice.

Both local storage and networking capabilities continue to advance rapidly. One important fact to consider is that hard drive storage capacity is doubling every nine months, twice as fast as Moore•s Law, which holds that microprocessor performance doubles every eighteen months. Disk storage space, once a precious commodity, is becoming abundant and cheap. A 160GB drive (capable of storing months worth of music or several days worth of video) can be purchased from major retailers for less than $300. The availability of massive, portable digital storage is changing consumers expectations. Consumers increasingly expect to carry their entire music library with them; they will soon wonder why that will not be possible with their favorite television shows. Of course, the content industry claims that this will not be a problem, but they are mistaken or misleading.

Indeed, the sole purpose of a broadcast flag is to prevent consumers from easily shifting media. For a variety of reasons, too obvious to go into

here, the broadcast flag will not foil determined pirates. The only people inhibited by the broadcast flag will be the average consumer who merely wants to have the most convenient access to content possible. Current DRM technology cannot allow this to occur. How will consumers "register" devices that they own so that data can be freely shared among them? If the devices are not to be registered to their owners, how will the DRM prevent the data from illicit distribution? When the old TiVo wears out how will consumers transfer their saved shows to a new device? An old, broken television was something that was simply thrown away, but next generation televisions will be similar to computers. Users will have to save existing data before putting the device in the garbage.

Home networking, once the realm of technophiles, is rapidly growing as network friendly software and hardware become more common. Wireless protocols such as 802.11b eliminate the need for homeowners to install CAT-5 cable throughout their home and new software (such as the very network friendly Windows XP) make connecting new devices nearly as simple as plugging in an appliance. Consumers will not tolerate devices that do not play friendly with others. Unfortunately, consumers may not have a choice since such wireless devices will have to incorporate broadcast flag technology, lest they leak the signal into an unprotected format. Computers, especially, will be required to abide by the broadcast flag lest consumers have too much control over content. Is the FCC really in the business of regulating Microsoft Networking and Microsoft Media Player?

Of course, the eventual success of digital television will hinge not on the technology itself, but on the technology•s ability to enhance existing (or create new) social practices. One of the reasons (beyond cost and ease-of-use) that so-called Interactive Television has not yet been successful is that most attempted applications conflict with existing social practices surrounding television. Television watching has often been a group activity - families gather for favorite sitcoms, team fans come together to view sporting events, and teenagers flock to MTV. Moreover, even if most television viewing is solitary, the potential for social interaction is always prominent. A television is almost always situated so that several people can view it at once and it is frequently a prominent (if not the prominent) element of the main living space. This is unlike computers, which are frequently relegated to spare rooms or the corner of another space, such as a bedroom. Computers are rarely a prominent feature of the main living space of a home. This is usually because the social practice surrounding computers is a solitary one - who wants someone watching over your shoulder as you write email or surf eBay for another collectible? This is perhaps the biggest reason (among others) that WebTV (which permitted users to surf the Internet and access email via the television) was never a widespread success.

Yet, many of the early attempts at Interactive Television focused on providing users with enhancements that were not socially oriented. If families fought over control of the remote with regard to whose show would be watched, how would the ability to purchase items in the middle of a show or access more information increase the social interaction? Believing that this sort of interactivity enhances the viewing experience is akin to believing that party lines enhance the telephone. On the other hand, the PMR enhances the social aspect of television watching by enabling viewers to more effectively control how and when they watch television. There is less need to fight for control of the remote since PMRs make it simple to shift viewing times of shows. She can watch her football game live because

the PMR quietly allows him to record Discovery Channel•s special on climbing Mt. Everest in the background for later viewing. Channel surfing is less insistent since an Electronic Programming Guide is always immediately available. A busy couple whose schedules do not allow them to enjoy a favorite show together can easily shift the program to a mutually convenient time. Moreover, networked PMRs enhance the social aspect outside the home. Television has always been social outside the home - a show is truly popular when people discuss it around the watercooler at work. Now, not only can people discuss the shows, they will be able to share them. Missed the first couple episodes of the new series everyone is talking about? Have a friend send it to you. This form of social television watching behavior will undoubtedly spawn new communities, and improve communication among existing ones.

This is the present and future of digital television. Mandate the digital broadcast flag and this future will be crippled, to no avail.