Online Video and Audio Programming

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THE ONLINE WORLD

Online video and audio, also known as multimedia, sometimes referred to as interactive media, officially arrived in the early part of this century. For a while, the prospect of a monumental new communication medium had the NASDAQ stock index making record-breaking increases. The comic strip *Doonesbury* parodied how easy it was to parlay an idea into an empire with no worry of showing a profit. Former cable MSO MediaOne (now owned by AT&T Broadband) coined the phrase "This is broadband. This is the way" (which baffled most people who read the slogan on billboards). And now the new online media are the subject of a conference paper!

With the official debut of broadband culture, some observers were reluctant to foresee any merger between the two worlds, broadcast and computer, because of the inherent differences between watching TV (passive) and using a computer (active). On the other hand, one bold prognosticator (Richard Baskin of Intertainer) predicted in 2000, "Five to 10 years out, there won't be a difference between a television and a PC. You'll have intelligence, network and display, and it will be all over your house, and you'll watch some things on the TV, some on the PC."[1]

Definitions

What is broadband? Broadband is the high-speed delivery of digital information: video, music, text, data, etc. over wires, cables, and through the air. In many ways, digital information has changed the media world. For example, global online advertising is projected to overtake global TV advertising spending by 2005, when U.S. online spending alone is expected to reach $32.5 billion.[2]

Multimedia is a word commonly used for digital forms of media. The world of live and recorded information and entertainment is influenced by newer forms of multimedia, like e-mail, video games, instant messaging (a live form of e-mail), and group discussions (chat).

Streaming is the digital distribution of audio and/or video in near real-time.[3] Also known as webcasting, streaming differs from broadcasting because the connection is one-to-one, rather than one-to-

many, even though anyone with a computer and a connection to the web (World Wide Web, or www) can receive pictures and sound. Many websites provide streamed content, live or recorded, using Real Player, QuickTime, or Windows Media standards.[4]

The streaming technique is based on a time-delay called buffering, which prevents slight delays from interrupting the flow of the program. Buffering is less than perfect, sometimes resulting in jittery video in a very small frame on the computer screen. But, however imperfect, it's video on demand: what you want, when you want it, almost in real-time.

In addition to webcasts, broadcast networks have developed synchronized interactive links between its evening news broadcast and websites. Every sports event has an enhanced viewing online feature and a logo in the corner of the screen to remind viewers that they can access game statistics or enter contests. Even syndicated game shows play-at-home online enhancements.[5]

Flash animation is a low-frame rate technique friendly to slow connection speeds and compressed video.[6] Notwithstanding the growth of broadband, made for online video has needed to capitalize on low frame-rate, as with flash animation. One of the reasons *South Park* episodes were so easy to download off the Internet in the late 1990s was because the animation was so crude (not to mention the writing!). The creativity of online programs that emulate the *South Park* stlye of edgy humor is important to building an audience base while the web waits for unbuffered real-time streaming.

Conceptual Framework

When an innovation comes along that fundamentally changes the way we view the world, the term *discontinuous change* is used. At first glance, the use of online technology to distribute radio and television programming appears merely an extension of broadcasting, another way to receive the content, as with cable and satellite. The key difference, however, is the interactivity between the user and the programmer. The seemingly infinite number of choices is another important difference. By 2001, there were over 100 million internet hosts (comparable to channels)!

With the "a la carte" nature of program offerings on the Internet, many of the programmer's tasks go out the window: instead of schedules of limited choices, the online audience has an abundant menu of near-limitless choices.[7] Every listener and every viewer constructs his or her own media landscape. Even those audience members not online (or too distracted to schedule their own options) are able to use personal video recorders (PVRs) as program-seeking robots, where automatically-recorded shows can be played back in any order, at any time (including while they're being recorded!) In this content-on-demand world, nobody spends the same time enjoying the same program as anybody else.

Although it is safe to define online programming as *media content available through a computer screen or speaker that displaces or substantially supplements the use of noncomputer media content*, it is easier to say what online programming is not. It is not a web page that promotes programming delivered over conventional channels, nor is it those archived sound bites and video clips found on journalism sites. It is not limited to live and taped shows, described above as streaming content, but can represent virtual events like chat rooms and event simulations. It is not repurposed content that has already been seen, although it may be simulcast material that is shown live on another medium.

Conceptually, online programming compares to other programming as shown in Table 1. The list of differences is nonexhaustive but helpful in framing the relative position of online distribution. While these distinctions may seem peripheral to *how* programming is strategically scheduled, these conceptual differences are crucial for programmers' understanding of *why* new media are fundamentally unlike the old familiar media.

Table 1 Strengths and weaknesses of media delivery systems

	Reach limited by	Revenue streams	Bandwidth	Interactivity
Broadcast	Geography	(1) Advertising	High	One-way
Cable/Satellite	Channel capacity	(2) Plus subscriptions	High	Mostly one-way
Online	Bandwidth	(3) Plus merchandise	Low	Two-way

Ordinary over-the-air radio and television are limited by geography. Networks were developed to link together stations to create a national service. Multichannel media (cable and satellite) became collections of networks, limited by shelf space to about 500 digitally compressed channels. Online is free of geography and channel capacity, but limited by the small pipe (bandwidth) through which programming must flow. Bundled fiber cables are gradually replacing old-style coaxial cable (and telephone lines). Cable and DSL (high-speed Digital Subscriber Loop phone lines) pushed delivery speeds beyond 300 kilobits per second by 2000 and DBS satellite offered 400 kilobits per second by 2001 (although television-quality distribution requires several megabits per second to achieve true broadband). Faster speeds produce better video and audio quality (see Table 2).

Table 2 Bit rate versus quality

Quality	Frames per second	Transmission method	bits per second
Television	30	satellite, copper cable, high bandwidth internet (LAN)	1.5megabits
Film	24	Satellite, copper cable, high bandwidth internet (LAN)	1.5megabits
high quality internet	15	medium-high bandwidth internet T1 connection (LAN); DSL; cable modem	384kilobits
medium quality internet	8	low bandwidth digital internet ISDN connection (phone line)	80 kilobits
low quality internet	3	modem (phone line)	28.8 kilobits

The very essence of programming strategy is linked to how revenue flows from consumer to program producer, with the programmer as middleman. The key distinction between broadcasting and multichannel distribution has been the number of revenue streams: over-the-air radio and TV stations rely almost entirely on *advertising* while cable/satellite services have dual income from advertising *and* subscriptions. Online programming added a third stream, from merchandising that allows point-and-click purchasing of items related to the media content, including the products and services that once solely occupied the commercial breaks within the shows.

All three forms of media programming in Table 1 have offsetting benefits and drawbacks. Although it only has one revenue stream, the "free" element of broadcasting allows nearly complete audience penetration: 98 percent of U.S. homes receive broadcast radio and TV stations. Thus broadcast advertising is so much more efficient than advertising on cable or the Internet, which means broadcasters can charge more for their commercials. Cable/satellite programming attracts more revenue than all of broadcasting, but the splintered channels and lower household penetration (about 80 percent) make multichannel media less likely to compete for advertising. Or so it was at the onset of broadband programming.

Finally, online programmers are limited by low bandwidth in the quality of programs: streaming audio and video were initially restrained by tiny video windows and audio reception hiccups caused by slow connect speeds. Furthermore, the ability to attract subscribers (except for content not readily available elsewhere, like pornography-on-demand) is limited by the "free" nature of the Internet. Users expect to get everything free on the Internet, even copyrighted materials. Web providers who charge must compete with those who are totally advertiser-supported (and with the pirate services that share their content with everyone for free). Finally, the online household penetration is only about 50 percent, although the long-term trend is away from television viewing. According to Veronis, Suhler & Associates, the average adult devoted 3,448 hours to consumption of consumer media in 1999, increasing by 22 hours from 1998. Some 44 fewer hours were spent watching broadcast television in 1999 compared with 1998. Time online increased 31 hours.

Audience shifts were responsible for a slowing in the growth of conventional television advertising, and an annual 40 percent growth rate for online commercials.

Still, *there are some monumental positive features of being an online program supplier.* There is no license required, as with broadcasting, nor any FCC regulation. No one *owns* the Internet, so being online erases location as well as time and space. There are no networks and no syndicators; everything is *local* (but received worldwide). Moreover, the distinction between distribution and content is tenuous, because there are very few distributors: content is *really* king. There are no bricks and mortar. The staff size is much smaller. Most crucial to this book, the job of programmer becomes the job of librarian. There is not much "scheduling" because everything is available all the time. Whether listeners and viewers prefer to create their own media landscapes remains to be seen, but the online world is not a particularly friendly place to middlemen (like distributors, packagers, and *programmers*) because, by its nature and design, it has no middle. Unlike media companies, there's not much to prevent immediate consumption following the creation step.[8] Programmers online are better known as content providers.

Aesthetically, online programming is dissimilar from the nature of what it imitates. Until radio, mass media (magazines and newspapers) had only sight to rely upon. After sight and sound, cinema and television elevated the experience to sight, sound, and motion—the most dynamic medium the world had seen. For fifty years, television (both broadcast and multichannel) reigned supreme, even though it lacked interactivity.

Analog broadcast is both expensive and difficult to manipulate. Online audio and video is much less expensive and easier to integrate with other forms of media. The hourly cost of online usage fell to 41 cents in 1999 from $2.27 in 1998, going from one of the most expensive media to one of the least expensive in just six years. For the user, getting connected to online media is less expensive than subscription television, sometimes even *free* from advertising-supported web portals.

Interactivity. As noted above, interactivity is key to the online world, for better or for worse (see Table 3). Some who have examined the online world have chosen to think solely in terms of interactivity. It would be useful to look at one of these frameworks.[9] By 2004, Forrester Research anticipates that over $60 billion will be generated by interactive applications, organized below by the first, second, and third revenue streams we introduced on our conceptual model:

- $11 billion in annual advertising revenue
- $42 billion from subscriptions, plus $3 billion in VOD
- $7 billion in e-commerce

Table 3 The Dark Side of Interactivity

How can anything named cookie be a threat to privacy? Online access is interactive, thus two-way. But it's two-way on *both* ends, meaning that you're being watched by the content providers. How? First, your unique address is traceable. Forget about the anonymity of watching TV or listening to the radio. Second, most web browsers let the sites you visit leave a "cookie" behind on your computer hard drive. This cookie tracks your online behavior and can be accessed by giant marketing databases (much like the way your purchases are tracked at the grocery by that little plastic card they encourage you to use).

Some people are not concerned that marketers gather such information. After all, it is aggregated into impersonal data sets that don't care who you are (or what you do) as long as trends can be spotted. But data collection could become pernicious if it's used against you. If you're worried, learn how to get rid of those cookie files. It's as easy as finding a file named "cookie" or "cookies.txt" on your hard drive, and deleting it. (Don't be surprised if you have to repeat this procedure on a regular basis.) [end of box]

The interactivity model has five categories:

- internet-on-TV
- personal TV (PVRs like TiVo and ReplayTV)

- interactive program guides or navigators
- enhanced TV
    - e-commerce
    - interactive advertising (t-commerce)
    - impulse sales
    - ancillary program information
- video on demand (VOD)

When it became obvious to mainstream media that interactive technologies were here to stay, most of them got busy diversifying their distribution. Consultants advised them to look at the creation process as a one-time affair and the exhibition process as following multiple venues.

THE CONTENT PROVIDERS

Who is behind all of this media convergence? Microsoft, for one. Bill Gates sees a big future in video and was eager to invest $5 billion in AT&T Broadband to further his WebTV service. The WebTV $299 boxes being designed for DISH-TV (Echostar) for 2001 were configured with 6.8-gigabyte hard drives to allow video downloads. In 2000, Microsoft also launched a new interactive satellite-TV service with DirecTV called UltimateTV, again featuring a $499 set-top box with dual-tuners capable of recording 30 hours of video while watching another channel. The second tuner also let the user download other kinds of computer data (e.g., e-mail, stock prices) while watching TV.

AOL entered into an agreement to make PVR-maker TiVo its programming service. The $200 million agreement set the stage for a $249 set-top box similar to the Microsoft device. The hope is to drive new revenue streams, using a remote control and a keyboard. AOL is be well-positioned to provide web content, having bought Time-Warner in 2000.

AOL is a portal, also known as a walled garden, where content is kept somewhat separate from the rest of the Internet (which brings solace to parents of young children). Yahoo is the other major portal. With most media, there is room for at least three "giants," so it is

reasonable to expect more portals in the coming years. Ironically, the major television networks (e.g., ABC, NBC) that tried to become major portals were unsuccessful and many withdrew from the playing field by 2001.

The Major Players

If the online world was already a mature medium, there would be little need to explore the growth of tiny companies vying to become major players. For radio and television, and even cable and satellite, the major players are already known, with occasional reconfigurations from mergers and buyouts. But a clear picture of who would be the major online players had not quite emerged by 2001.

What about streaming media? At the NATPE convention in 2000, the major players were Microcast, Sandpiper, Akami (which later bought Intervu), and iBeam. A summary of major players in interactive television (see Table 4) came from a June 2000 article in *Cablevision* magazine, but is likely to evolve considerably in the next few years.

Table 4 Interactive TV players

Walled Gardens and Content Providers

ACTV www.actv.com regional interactive-TV sports programming nets

America Online www.aol.com Walled garden and content provider

Broadcom www.broadcom.com "Generation Y" content focus with extreme sports show

CableSoft www.cablesoft.com Develop systems in conjunction with Motorola set-top cable boxes

Excite@Home www.excite.com Largest cable modem service in U.S. Excite Chello is largest in the world.

Future TV www.futuretv.com Web access, home banking and T-commerce features, plus smart-card and debit-card applications

ICTV www.ictv.com Distribution

Intertainer www.intertainer.com Match interactive TV with video-on-demand. The interactivity side of this ledger includes T-commerce, interactive/personalized ads and facts to find as you pursue on-demand viewing.

Liberty Digital www.libertymedia.com Liberty has a deal with AT&T Broadband for distribution of up to 12 ITV channels

Meta TV www.metatv.com Develop interactive applications for cable operators, concentrating on home shopping, other T-commerce services and advertising

Metabyte Networks www.mbtv.com Best of two worlds--interactive electronic program guide and personalized video instrument à la TiVo or Replay TV. The more cable subs use this interactive guide service, the more personalized it gets for them, as "thumbprint" software embedded in the format automatically directs users to their favorite content.

NDS www.nds.com Subscribers play director of the games they view. Other content forays include home banking, multi-player games and interactive ads.

Net For All www.iecommerce.net Latino interactive-TV marketplace. Multilingual (English/Spanish/Portuguese) service has plenty of features, including Web access, e-mail, news/stock ticker, play-along games and e-mail.

NTN Communications www.ntn.com Interactive games via restaurants and sports bars nationwide, looking to break into cable.

Peach Networks www.peach-networks.com Owned by Mircosoft.

Source Media/Interactive Channel www.sourcemedia.com Interactive program guide and local/national information services. Source also has VirtualModem, a patented product that delivers high-speed Web and multimedia content to TVs without a modem or PC, all from digital cable hardware.

Transcast International www.transcast.net

Tribune Media Services www.tribune.com Interactive program guide via Zap2it

TV Guide Interactive www.tvguideinc.com Leader in interactive program-guide field.

TVN Entertainment www.tvn.com Video-on-demand, e-commerce, healthcare, games, education and investment-service applications.

Twin Entertainment www.twinentertainment.com Games service

WorldGate Communications www.wgate.com Internet TV service, complete with channel hyperlinking capabilities, has 20,000 subs, eight MSOs deploying it in the U.S.

ZapMedia www.zapmedia.com Hopeful mainstream provider, in league with former cable operator Gannett.

Operating Systems and Middleware

Canal Plus U.S. Technologies www.canalplus-technologies.com Set-top boxes bundling Wink Communications' e-commerce tech with its wares. Company also partners with Concurrent Computer to add VOD functionality.

Emperor Systems Software www.tvlinus.com Linux as set-top operating system.

Liberate Technologies www.liberate.com Liberate positions itself as the Microsoft OS alternative, and has investments from several cable operators, including Comcast and Cox.

Microsoft www.microsoft.com Set-top operating system along the lines of Windows.

OpenTV www.opentv.com translate OpenTV's global success into domestic deals.

Power TV www.powertv.com Set-top boxes.

Spyglass www.spyglass.com Partner with OpenTV

Sun Microsystems www.sun.com Java language in cable set-tops

Infrastructure and Tools

Accelerate TV www.acceleratetv.com Be-all interactive-delivery mechanism

Cisco Systems www.cisco.com Equipment maker, wannabe content provider.

Extend Media www.extend.com Distributing interactive TV across a variety of platforms, including wireless devices, by using advanced multi-format publishing systems.

Intellocity USA www.intellocity.com Content development, developer tools and infrastructure design.

Mixed Signals Technologies www.mixedsignals.com Hardware and software are used to create and encode complex interactive TV, such as enhanced versions of *Jeopardy* and *Wheel of Fortune*.

Telecruz Technologies www.telecruz.com Provide platforms

Universal Electronics www.uei.com Work wireless keyboards, remotes and Palm-type devices into every cable operator interactive-TV rollout.

Video Propulsion www.videopropulsion.com Digital video products are this new-to-cable firm's specialty, good for enabling e-mail, shopping and Web browsing on the tube.

Wink Communications www.wink.com E-commerce/info delivery service is available to 200,000 cable subs in 20 markets;

Source: *Cablevision*

One problem with discussing start-up companies in the same breath as established companies is knowing that many of these companies will be acquired by others or go bankrupt before the ink is dry on this page. Nevertheless, it is useful to see what companies were up to in the wild and wooly early days of online media.

Shakeouts

The major media corporations, especially NBC, had been quick to jump on the interactive bandwagon, even before the turn of the century.

But Wall Street reality set in early in 2000, and the big shakeout began. NBC Internet (NBCi.com) shed its other brands (Snap.com, Xoom.com and Videoseeker). Some saw the downturn being caused by television's inability to drive business to the web, and some players' focus on the consumer sector, rather than the more lucrative business-to-business sector.

A good case study is what happened to webcaster DEN, which raised $62 million in venture capital in six months and burned $5 million a month. Their content was truly extreme, which led to very strong appeal. One compared it to the golden age of sitcoms. But the downfall stemmed from some well-known advice: good-fast-cheap, you can only have two. DEN tried to do all three and became an overnight failure.

Another path to failure is overconfidence. ABC had a disastrous experience with its go.com website that attempted to become a portal. Despite the network's tremendous promotional resources, the online experiment lost out to Yahoo and AOL, which specialized in the online world, where ABC only dabbled.

STRATEGIC CONSIDERATIONS

Selection Strategy

If program strategists are middlemen, and the Internet has no middle, then what is the role of program strategy? *Selecting* online programs seems totally different from the old media environment. There are, however, enough similarities to discuss how programmers can make the transition from a time-bound broadcast world to the a-la-carte online world.

Daypart Compatibility. This strategic theme was considerably weakened with the advent of theme cable channels in the 1980s and 1990s (e.g., Game Show Channel, Cartoon Network). But *the true goal of dayparting is to target groups of people;* the use of a time segment is only a means to an end. Online programmers who select programs for a given website can match their content to a *compatible* audience.

In the earliest days of streaming video, the distribution of materials was a novelty, so targeting was minimal. Streaming was done because it was possible, not because there was any market demand.

Mainstream formats from television, for example, could not be expected to warrant the users' effort to download because it was easier to just watch TV.

The typical early online user was a young male. Programmers needed "edgy" content that met the sensibilities of pleasure-seeking youth. The most successful programs became iconoclastic cartoons like *The God and Devil Show*, which was reminiscent of *South Park* humor. Of course, the most extreme form of early program content for online programming was pornography, which has been a driver of early adoption of all kinds of new media innovations, from old wooden stereopticons, right through the 8mm film and Polaroids, up to the first VCRs and CD-ROMs.

In August 2000, the majority of online users officially flipped from male to female. Nowadays, the typical online user no different than the typical television viewer. Thus, the strategy used by the cable theme channels will find a new home online, with the key difference being the user's ability to select from a list of options (**online menu**). *The programmer, as always, must construct an online menu that is compatible with the desired visitor to the website.*

Habit formation. Freed from time constrains, the Web can show anything, anytime. Programmers must count on first-time visitors being so impressed with the online content that they will **bookmark** (save the address of) the website. Present studies of **website repertoire** already note that users have a limited number of favorite sites (so much so that the idea of "web surfing" has become outdated). Major sites (portals) like Yahoo and AOL function as *networks*, in the broadcast sense of the word. Different categories (called **links**) of content are presented on a main screen menu, sorted by interest area: news, sports, weather, travel, shopping, etc. Many users go first to these sites as a jumping-off location for finding what they need to know. One strategy for programmers is to align themselves with a portal. Or, in the case of Time-Warner and AOL, allow one's empire to be bought by a portal.

Another strategy for content providers is to be an *independent* website, not unlike the old independent television stations. Here the programmer must rely on the second kind of major site, the search engine, such as AltaVista and Infoseek. Even those users who first visit a portal will often try a search engine, too. *Programmers must*

decide whether to offer their content via major sites or to go it alone, hoping to be found by the search engines. The job of habit formation falls to making a first favorable impression, such as being the best weather radar site or the best online auction site.

Audience Flow. When it comes to the notion of audience flow, most online sites, once again, follow the cable television model for specialized theme channels. The main strategy is to invite audience flow in and out.

On the other hand, online programmers can cross-promote content by including new offerings on the same page as the established content. If surfing (the online world's answer to grazing) is really less common nowadays than in the beginning, new services will need a programming strategy, beyond promotional support, to attract an audience. The spinoff approach and the tie-in approach used by broadcasters should work well for online content providers. Some examples of these approaches are discussed toward the end of this paper.

Conservation of Program Resources. Just as broadcast and cable programmers recycle material to optimize its value, online programmers put as much material onto their online menus as possible. Unlike schedule-bound programmers, the online content providers are not forced to rotate or rerun offerings because everything is continuously available.

One unusual consideration may influence some providers to limit the availability of their material: many programmers believe that perceived scarcity makes content appear more valuable to the public. For example, Disney carefully limits accessibility to its old classic films on videocassette to make them seem more special when they briefly become available in stores. If online content becomes too common or too readily available, the perceived worth of the products (as compared to premium materials) may be diminished. One argument why cable viewers spend so much of their time watching HBO is because they pay extra for it, and the extra use justifies the cost. The lesson for website program services seeking subscription fees is to keep the content "special" and original.

Breadth of Appeal. Online content is not immune to being categorized as broadcasting or narrowcasting, even though the term

webcasting does not differentiate. So far, the size of the online audience for broadband entertainment and information is not large. Thus the strategy has been to *narrowcast unique content* (avant-garde films and edgy cartoons) and to *broadcast mainstream content* (sports, weather, news, commerce).

The number of web users who would be willing to stream video is presently limited connection speeds. Until the rate of transfer problem is finally resolved, programmers must emphasize short-length materials. Given the ever-decreasing attention span of adults, the online environment is well-suited for delivering brief programs. Even so, the speeds are getting faster and the competition between cable modems and DSL, like the competition between cable and satellite, has driven down the cost of broadband connections.[10]

Those who toil in the programming business should take heart that regardless of the technology and distribution, *content is still king*. Programs have to have broad (or narrow) appeal to meet the consumers' needs and wants. Even if the audience starts paying more for entertainment and less comes from advertising, the nature of the product will remain the same: Comedy, drama, and human interest will prove enduring appeals.

As for specific online programming strategies, we know as little about what works and doesn't work in this new medium as television did during its inception. Or radio in its early days—many honestly thought it would be used for education! It's probably too early to pass along any tried-and-true methods.

John Gaffney at *Revolution* magazine interviewed some key players in the online world about whether the web would grow up to be like TV.[11] Several good strategic points were made about a medium in which a Victoria's Secret webcast drew two million users and in which a small webcast (AtomFilms) was making deals at the Cannes film festival:

- Short is good

  As mentioned above, programmers should create online content that will download quickly. Perhaps content providers can benefit from the ever-shortening attention span of the audience.

- Generation Y is the unknown, otherwise the potential is small

  Thus, the near term is not threatening, much in the way cable TV was not a big bother to broadcast during the early years. As for Generation Y, which is a huge audience for this textbook, old strategies will need to give way to new strategies. Multiplexing is the ability for people to attend to several media activities at once. Young people have it and their parents often do not.

- Speed must improve

  This may seem too obvious. The trick is to ramp up the quality wherever possible. Online video is fighting to catch up with NTSC video, standardized way back in 1941. Drawing even with the newer ATSC digital video standards must seem impossible without greater bandwidth (larger pipes) and faster speeds.

- Innovations take time

  Progress is incremental and innovation happens on its own schedule. For programmers, the lesson is do not overpromise. The public is smarter than you think, as ABC learned with go.com and NBC discovered with its snap.com website.

- Games have the best growth potential

  Online games, contests, gambling, and competition are probably the "next big thing" in terms of interactive program content. This area has been previously unexploited by the media, simply because the media were not yet interactive. Furthermore, the unregulated online world can more readily run lotteries than other media can.

Scheduling Strategies

As discussed above, dayparting is a minor consideration for online channel because, as with the case of cable and satellite channels, the

choices are plentiful. Radio and television stations have *one* channel, so it makes sense to target the *one* demographic group most likely to be watching at a particular time of the day or day of the week—by age, gender, or lifestyle. Interactive shows exist in nearly-limitless cyberspace, where shelf space is endless. Likewise, flow is not very important for online programming, either. Digital media can be ordered without regard to time or space. Even old media can be rescheduled to meet the tastes of the viewers, when filtered through a personal video recorder.

Tiering is one scheduling strategy that successfully makes the transition from the analog to digital world. It is likely that consumers will purchase more of their programming as done with premium multichannel programming. Indeed, much of the premium multichannel programming (e.g., HBO, Showtime, Encore) has already moved to a random-access schedule with the advent of digital set-top boxes and PVRs.

MEASUREMENT

Nielsen//NetRatings and Media Metrix measure the size of the online audience, using two different methods: online panels and server-side audits. Both methods report mostly cumes. Measuring total reach is a good tactic when a "channel" has not yet attracted a substantial audience. When convergence of the media takes place in the next dozen years, ratings and shares will prove useful tools for online programming that garners a larger core of users.

Until that time arrives, here are some realities regarding the choices made by audience members in how they spend their time with media, especially the cable and broadcast channels in a new online media environment. While the number of TV/cable channels available to the average U.S. household has increased from 41 channels in 1995 to 62 in 1999 (an increase of 48%), the number of TV/cable channels viewed has only increased from Table 4 in 1995 to 13.1 in 1999 (an increase of 25%). Thus, over a four year period, the number of channels has increased nearly twice as fast as the number of channels actually viewed or used by viewers (channel repertoire). This trend suggests that viewers' usage of growing channel variety is not even coming close to keeping pace with the rapidly increasing number of available channels. The implication for TV programmers is clear: attracting and keeping an audience for a specific channel or the programs on that channel has become increasingly difficult. Like diners in their favorite restaurants who generally order the same few items, viewers tend to stick with previous choices that have proved rewarding and adequate to meet their needs.

Just as the increase in available channels brought about by cable had a major impact on the existing broadcast channels, the Internet is now having an even greater impact on how viewers use their cable/satellite/broadcast channels. Again, there is a parallel trend to be found in people's choices of websites used versus the number of available websites. Data indicate that as the number of websites has shown enormous growth, the number actually used by Internet customers has increased only marginally. Web users have begun to reach a comfort level where they usually access the same sites each time they go on-line. An occasional new site is added or even accessed regularly, but the core number has remained rather small and consistent. Whatever lure that "surfing" held in the first few years of the World Wide Web, the most recent research indicates that habit formation is at work.

The average Internet user in 2000 was on the net 19 times per week for an average of 30 minutes per session, visiting an average of only 11 unique sites; time spent per site was about 53 minutes and time spent on the net was about 9.5 hours per week. The total number of web sites in 2001 totaled 2 billion, continuing to grow daily. Again, each user has quickly become very selective in relying on a very small number of sites for normal use. An ineffective site (one which presents user obstacles) is only a mouse click away from disappearing from the screen, similar to TV viewers who, remote in hand, are ready to change channels when the program fails to maintain their interest.

How web use affects viewing and listening to traditional media is not entirely clear. Early audience surveys of web users showed that to accommodate web use, they cut back on some of the time ordinarily spend watching television. Later research has shown that heavy web users spend even more time with traditional media than light web users.[12] These studies also found that many heavy web users are using other traditional media at the same time as the web. Overall household use of both television and radio continue to increase, despite the competitive presence of the Internet. While the number of web users had topped 65 million at the end of 1999, average daily household TV viewing had increased to an all-time high of 7 hours and 24 minutes. Average time spent listening to the radio had risen to 21.5 hours per week among those 12 years of age and older.[13]

Although the overall time spent with traditional media may not have been affected by the presence and use of the Internet, how people use traditional media in fact has changed. Network television audiences continue to shrink as a percentage of the total audience watching television in all day parts, most notably in prime time where the number of total TV viewers is highest, and for news and information programming.

The Pew Research Center surveyed the national news audience at the turn of the century. Among the many findings, several are important for our attention to audience research. They are summarized on the first page of the Pew report:

> Traditional news outlets are feeling the impact of two distinct and powerful trends. Internet news has not only arrived, it is attracting key segments of the national audience. At the same time, growing numbers of American are losing the news habit. Fewer people say they enjoy following the news, and fully half pay attention to national news only when something important is happening. And more Americans than ever say they watch the news with a remote control in hand, ready to dispatch uninteresting stories. To some extent, these trends are affecting all traditional media, but broadcast news outlets - both national and local - have been the most adversely affected.[14]

Beyond news and information content, the Internet has changed the face of television and how audiences use television and how they think about what television represents as a communications medium. Nielsen's Home Technology Report has described how and why some of these changes have occurred and continue to occur.[15]

The report observes that fundamental changes have taken place in terms of (a) the content itself; (b) the content delivery means (e.g., cable modems, satellites, wireless networks); and (c) the content receiving tools (e.g., TV sets, hand-held wireless devices, monitors). Content receivers include the TV set now being used to deliver Internet content, PCs being used to deliver TV programming, and special purpose devices for specific Internet applications.

Like the national/local ratings for broadcast, cable, and radio, Internet audience measurement has proven to be a very difficult and complex process. Companies are refining the process and constantly testing to find new and better ways to measure web audiences, the task is daunting. Nielsen's Home Technology Report describes some major complications that make accurate measurement very difficult. As an example, because of increasing interactions happening with users on their PCs, information collected at the web site level is less and less clear about how content is actually being consumed. In this case, PC users may access a website and perform other operations while keeping the website on-line. Such uses may be widespread and varied but would be considerably different from the user who went to a site, used it, and then closed it.

The Online Audience

Who are the users of website content? Who watches (or listens to) online content? Is it just a bunch of college kids with high-speed connections? The U.S. had 78 million web surfers in April 2000, with equal numbers of men and women. The Internet, once the toy of young people, had become dominated by adults in their 40s. Only 21 percent of homes with incomes under $15,000 were on the web, but 78 percent of those with combined family incomes of over $75,000 had Internet access. Only about 9 percent had connection speeds higher than dial-up 56kps. Broadband connections in 65 million homes (31 percent) were anticipated by the end of 2003.

Another clue to the activities of the audience for web programming is clear from overall online usage. The 1999 statistics in Table 5 show a substantial percentage increase in Internet activity and spending.

Table 5 CONSUMER MEDIA USAGE, 1998-'99

	Hours per person		
	1999 (Estimated)	1998 (Actual)	Change
Total TV	1,579	1,573	+0.4%
Broadcast TV	840	884	-5.0%
Network-affiliated stations	660	708	-6.8%
Independent stations	180	176	+2.3%
Subscription/video services	739	689	+7.3%
Basic networks	632	582	+8.6%
Premium channels	107	107	0.0%
Radio	1,037	1,050	-1.2%
Recorded music	288	284	+1.4%
Daily newspapers	154	156	-1.3%
Consumer magazines	81	82	-1.2%
Consumer books	94	95	-1.1%
Home video[*]	57	56	+1.8%

Movies in theaters	13	13	0.0%
Videogames	48	43	+11.6%
Internet	97	74	+31.1%
Total media	3,448	3,426	+0.6%

	Spending per person		
	1999 (Estimated)	1998 (Actual)	Change
Total TV	$188.55	$168.78	+11.7%
Broadcast TV	--	--	--
Network-affiliated stations	--	--	--
Independent stations	--	--	--
Subscription/video services	$188.55	$168.78	+11.7%
Basic networks	na	na	na
Premium channels	na	na	na
Radio	--	--	--
Recorded music	$63.07	$61.54	+2.5%
Daily newspapers	$51.85	$51.39	+0.9%
Consumer magazines	$39.51	$38.30	+3.1%
Consumer books	$88.73	$84.35	+5.2%
Home video[*]	$97.51	$92.14	+5.8%
Movies in theaters	$32.18	$31.16	+3.3%
Videogames	$21.01	$18.45	+13.9%
Internet	$39.89	$30.78	+29.6%
Total media	$622.31	$576.90	+7.9%

na = not available; * playback of prerecorded tapes only. Not all columns add up to totals, due to rounding.

It appears that the audience for online programming is not much different than the audience for other types of programming. Having a high-speed connection favors young males in 2001, so that explains most provocative content on streaming sites. But not everything is

experimental or crude. As more people come online, and as more get faster connections, the web looks more like a mainstream medium.

Internet Behavior

A study by Ferguson and Perse found that web surfing was not exactly a substitute for television viewing (although it was seen as being just as diversionary), primarily because online activity is less relaxing.[16] ABC's executive vice-president of Internet media Dick Glover contrasts the difference as the lean-back experience of TV versus the lean-forward experience of online media.[17]

As early as 1997, Nielsen Media Research (in a study commissioned by AOL) found that homes connected to online services watch an average 13 percent less television per day than non-Internet homes. Although prime-time viewing was only lower by 6 percent, the loss during the 4:30 to 6:00 pm time period was 17 percent.[18]

Later in this paper, we will see that the big television networks are creating online content to complement their prime-time and sports schedule. What makes the networks think that computer users will be watching television while they're online? It is because 44 million web users, according to a 2000 Gartner survey, report using their online browser at the same time they watch TV. The number was projected to grow to 52 million by 2001.

A February 2000 report from Statistical Research, Inc. (SRI), suggested that, when it comes to Web activity, the average Internet user is not always an explorer. It reported that 34% of yesterday visitors to an average Web site return to the site every day, and that 62% of those visitors have the site bookmarked in their browser. In addition, 85 percent of yesterday Web users reported visiting just one or two sites during a typical 3-hour daypart (website repertoire). But the SRI report also reflected Internet users' adventurous side, with surfers reporting searching the Internet (57%) and looking for product information (46%) more often than any other activity except email.

Just as demographics have evolved, so will behavior. In the 1950s when television was new, people would watch *anything*. Later they became more sophicated and predictable. *The challenge for online programmers is*

to stay current with the desires of their audience. While this is true for other media, it is especially important for media in their infancy.

Impact on the Mainstream Media

For someone operating from with the established media, staying informed about trends in online programming is important to maintaining audience share. More important, mainstream media can spot new opportunities by following the new developments in the online world. The flipside of opportunity is threat, so it also pays to know what looms over the horizon. This section recounts some of the threats (and opportunities within) the status quo.

Video

Network Television. The major networks all developed websites to promote prime-time programs and provide archived clips, but it wasn't until near the turn of the century for them to get really creative and do made-for-online programming.[19]

Testing new primetime shows online also came into vogue about the same time. For example, in late 1999, Fox Entertainment commissioned a new TV series that would spend months on the fox.com site before moving to the Fox broadcast network. The creator and producer for the show previously did the movie hit *The Blair Witch Project*.

In June 2000, Warner Brothers announced the online debut of a new animated comedy series *The Oblongs* to debut the following year on its network The WB. Potential viewers of this "edgy" comedy could tune in 25 original 30-second animated sketches produced separately for a Theoblongs.com website. In another example, The Anteye Network, at www.anteye.com, bet $600,000 that the Web is a good testing ground for pilots. After a contest where web surfers voted on content, six winners were awarded production deals worth up to $100,000 each, to create pilots that Anteye would help shop to TV studios.

But the first real signal that prime time was being influenced by online programming was NBC's animated series *God, The Devil, and Bob*, which briefly aired in March 2000. The program was based on a popular online animated series called *The God & Devil Show* at the www.entertaindom.com website. Apparently, the bawdy content of the website made the online series more appealing than the toned-down version that was given an ill-fated try-out on NBC. It became obvious that youth-audience success online did not necessarily translate to the mass audience of prime-time television.

Enhancing existing series is another way for broadcasters to use online content. For example, Fox decided in March 2000 to stream ten-minute webcasts a half-hour before the last six episodes of *That '70s Show* of the prime-time season. Such tie-ins are a way to promote shows that have been on the air awhile. The arrival in primetime of hit game shows like *Who Wants to be a* Millionaire and reality shows like *Survivor* also gave networks a chance to hold the audience attention even after each episode had ended. In the case of the second week of the *Survivor* series in June 2000, for example, CBS.com saw an increase of 44 percent of their unique (cume) audience, with 600,000 visitors as compared to 417,000 visitors the previous week, according to a Nielsen//Netratings online press release.

Sports content lent itself to the idea of expanding the reach of live NFL Football telecasts in 1999 to Austria, The Netherlands, and Singapore. The events were sold to broadband users, as part a PPV package. In the United States, viewers were receiving "Enhanced TV" on ABC Monday Night Football. In 1999, between 50,000 and 90,000 viewers were logging on to each games online simulcast. In terms of **stickiness**, a measure of time spent with a website, the viewers were averaging 40 minutes of connect time, motivated by access to live statistics, trivia polls, and an online game that let them win points by predicting the next play. Surprisingly, only 2 percent of the users were young males—60 percent were age 26 to 45.

The National Basketball Association also got on the convergence bandwagon, bringing computers together with television. The NBA showed multiple webcam coverage of the All-Star Game on www.nbc.com, where viewers could choose camera angles. Nielsen//Netratings revealed in June

2000 that a WWF "King of the Ring" promotion boosted visits to its websites by 64 percent in one week.

Political coverage of the summer 2000 conventions was scaled back for the traditional network news operations and vastly expanded on their online counterparts. Nearly 100 websites covered and webcast parts of the proceedings. AOL had a skybox cam 24 hours a day, one of many such setups. The viewer had the capability of communicating directly with floor correspondents of the dozens of e-journalism websites.

Network imitators. Some of the streaming media sites that emulate the offerings of a broadcast network are: EYada, Laugh, ClickMovie (featuring dozens of classic TV shows), and Entertaindom (best known for the animated *God & Devil Show*). The animation sites seem to attract larger audiences.

Flash animation continues to be a favorite method for these animation sites because it looks good but does not require much bandwidth. Net animation houses as Spunky, Mondo Media and JoeCartoon.com are not based in Hollywood, but they aspire to be big studios. Even users with slow-modem connections can enjoy these sites, many of which are provocative (see Table 6). *South Park* creators Trey Parker and Matt Stone were lured to produce flash animation for Shockwave. (Most web cartoon sites rely on Macromedia's Shockwave Flash.) Mainstream producers also took note. The Carsey-Werner production firm (*Roseanne, 3rd Rock From the Sun*), for example, opened an animation division.

Table 6 Online Animation Websites

www.entertaindom.com wb
www.mondomed.com
www.joecartoon.com
www.atomfilms.com
www.bde3d.com
www.doodie.com
www.level13.net
www.staytooned.com
www.shockwave.com

www.spunkyproductions.com
www.ifilm.com
www.cartoonnetwork.com

Aside from pure animation sites, there were other webcast sites in June 2000. Here is a list of sites not shown in Table 6:

www.dreadnought.com
www.shorttv.com
www.thebitscreen.com
www.pseudo.com
www.playtv.com

These sites generally feature short films made by avant-garde filmmakers just getting started. Occasionally sites will put old, public-domain films and TV shows just for the sake of having content.

Local Television. With regard to webcasting, individual stations got into the act with repackaged and simulcast local news content by such programmers as Zatso, BroadcastAmerica (NewscastNow.com), SeeItFirst.com and Microcast.tv (see Table 7), to name a few. The real potential for local stations is for t-commerce, which markets online products via over-the-air TV commercial links. Similar to e-commerce, which exists solely online, t-commerce is in the survival plans of many television broadcasters.

Table 7 Where in the world is Tuvalu?

Most people have never even heard of the small Pacific island Tuvalu, but they can appreciate the significance of its two-letter country code: TV. Every nation has an Internet code that routes incoming connections, like .br for Brazil and .it for Italy. An enterprising California start-up company called dotTV and its parent Idealab agreed to pay the Tuvalu government $50 million over 10 years for the rights to the .tv domain name. So instead of going to www.microcast.com, you can visit

www.microcast.tv instead. Each company that adopts the domain name pays $1000 a year for a creative address like FrasierCrane.TV or up to $100,000 for names like news.tv or sex.tv.

Local broadcasters are looking for ways to use their spectrum to create new revenue streams, beyond advertising. One idea is to send information from the television to the personal computer (see Table 8). A different idea is for companies like Broadcast Digital Cooperative, iBlast, and Geocast to help local stations provide content to personal computers via over-the-air broadcasting, using part of the digital spectrum set aside for HDTV. The bandwidth of a broadcast signal is much wider than broadband or DSL, so the opportunity to have real-time streaming is exciting.

Either method enhanced local station's ability to get started with t-commerce. Rather than have only one revenue stream (advertising), local stations could sell subscriptions for a second stream, and facilitate the sale of merchandise for a third stream.

DigitalConvergence.com, for example, is a company who set a goal in the year 2000 to sell local broadcasters, advertisers, retailers and others a chance to deliver enhanced content from the television to the PC, rather than the other way around. Unlike Wink and ACTV who offered offering programming and commercial enhancements via digital set-top boxes, DigitalConvergence.com's technology was available to anyone with a television and computer within 20 feet of each other. The company's proprietary technology--:CRQ, a phonetic acronym for "See Our Cue"--was based on an audio cue encoded into the vertical blanking interval of the broadcast signal. This allowed the system to work with video delivered over the air, cable or satellite, even recorded video.[20]

The audio cues sent the user directly to the particular Web page that coincided with the TV message, or could be stored for later. Because the audio cue was in-band and could not be stripped out, the system worked with other enhanced services. It used technology that has near-100% penetration: basic free television, according to the company executives. No special cards or set-top boxes were required. The only

limitation was the number of homes with Internet connections, then about half of the United States.

DigitalConvergence.com had also developed a print application--:CAT (keystroke automation technology)--based on the same concept as :CRQ. A scanning device, built to look like a cat and to split off the cable running into the PC's mouse portal, read a code on a printed page and delivered Internet addresses to the computer. Once installed, the :CAT read codes from practically anything--from printed news to UPC codes on packaged goods. Two enhanced spots per half-hour is the limit set by DigitalConvergence.com, but stations had unlimited use of cues for content and promotion. Another limitation DigitalConvergence.com imposed was that only two stations within any local market could license the technology.

Cable/Satellite. Cable operators have a two-pronged approach to online programming. First, they sell high-speed connection via cable modem through services like Excite@Home and RoadRunner. A list (see Table 9) of cable modem services show the number of subscribers in early 2000. Second, they (and DTH companies) provide programming content that competes with (or complements) online viewing. DTH satellite is offering high-speed Internet access (with a telephone line return loop because DTH is one-way).

Table 9 Cable Modem Subscribers

CABLE MODEM SERVICES	AFFILIATES	SUBSCRIBERS
Charter Pipeline	N.A.	N.A. (4/00)
Convergence.com	N.A.	5,518 (4/00)
Excite@Home	60	1,500,000 (4/00)
HSA	80	16,099 (2/00)
Internet Ventures	4	1,700 (2/00)
ISP Channel	67	10,044. (4/00)
Optimum Online	2	31,474 (4/00)
Power Link	30	37,000 (3/00)
Road Runner	44	730,000 (4/00)

Source: www.cvmag.com

Oxygen always wanted to be an established cable channel, but had its first incarnation as a web channel because streaming media presents an opportunity for wannabe cable networks to audition their content. MeTV was the opposite situation: a web-page first and then a PPV service (streamed movies for $5 with a $200 set-top linked to a PC).

HBO introduced fans of its *Oz* drama program to new webisodes at its www.hbo.com/oz site in advance of the telecasts on HBO in the 2000 fall season. And Showtime borrowed a page from the broadcast networks in 1999 when it simulcast a high-draw telecast, the Tyson-Norris boxing match, with interactive camera angle selection by the subscriber (at an extra fee above usual Showtime subscription).

After 20 years, CNN started to see its ratings decline in 2000, partly because so many people were getting their information online. If you can't beat 'em, join 'em (they say), so Turner Broadcasting invested $1.2 billion over five years to develop handheld-wireless online access to CNN. Their goal was to maintain the dominant position as a news provider anytime, and now, anywhere.

Video on demand (VOD) became a reality for cable operators who did online interactive trials using set-top boxes from Motorola and Scientific-Atlanta. Some of the platforms (computer operating systems) included Liberate, MicrosoftTV, OpenTV, and PowerTV. The actual program services came from these companies: Intertainer, Diva, ICTV, Wink, and RespondTV.

The pay movie services are cautious about internet PPV, wanting to be sure that the rights they buy *include* internet rights. On the other hand, Playboy Television was one of the first cable premium channels to push online PPV, back in 1998, in a deal with MindSpring.

Encore got creative in its multibillion-dollar 1999 licensing deal with the Disney studios, when it unveiled a service called SVOD. Subscription VOD uses a video file server to store and deliver pay movies whenever a subscriber wants them, with full VCR functionality.

The primary advantage of internet VOD over conventional PPV is that the former can be completely automated. Subscribers get their content and it's played as if they put a dollar into a jukebox. But for a movie to download in five minutes or so, even at the high compression

rates used in most software, the end-user must be equipped with access lines supporting throughput of about 3 megabits per second. Someone with a typical digital subscriber line or cable-modem line running at a few hundred kbps (see Table 2) would require the better part of an hour to download a feature-length film. Real-time streaming is faster, but such technologies were new and untested in 2001. Hollywood was likely to wait until they were ready. In the meantime, there would be a place in the window, probably after films are shown on free broadcast TV, because then they have been fully exploited.

Program Guides. *TV Guide* and other companies have online guides to broadcast, but by 2001 only two companies (Yack and Channelseek) offered comprehensive internet program guides. Yack.com acquired Channelseek in a multimillion dollar stock deal in June 2000. Channelseek had published the first printed guide to streaming media, which was stuffed into mailers sent by broadband and DSL providers.

Interactive television lends itself to better methods of searching for content, especially if the viewer is cruising along the web. Some observers predict that "smart TV" receivers will use artificial intelligence to anticipate audience desires, based on past viewing habits. In "The Future of Broadcast Television," this author predicted back in 1997 the need for a "something else" button on remote controls that would allow viewers to change broadcast and web channels without ever going back to a previous choice (during a single sitting).[21] A few years later, such a forecast should be revised to a "give me what I like" button that would be the viewer's last resort after giving up on finding anything good without the set-top box's help.

Audio

Radio. Streaming audio content is commonplace on the web nowadays. Survey research by Cyber Dialogue Inc. shows that 42 percent of all Internet users have made use of some music-related content, with 37 percent visiting sites operated by radio stations and 28 percent downloading music.[22]

Several web sites offered their visitors an opportunity to be their own disk jockey by modifying music playlists for themselves and

like-minded web surfers. These included Launchcast.com, TuneTo.com, and Live365.com, to name a few.

MSN offers an assortment of simulcast and internet-only radio stations (Table 10). Kerbango.com is another source for connecting to online radio. While the simulcasts extend the reach of stations to interested listeners in other markets, the local stations in those markets get some unwanted competition for listeners. Arbitron does not yet measure such listening, however.

Table 10 MSN Online Radio

allDANZradio Swing (Internet Only)
AndHow Web Radio -- Jazz & Blues (Internet Only)
Areaguides.net -- Jazz X/ theDial (Internet Only)
Areaguides.net -- Soul Kitchen/ theDial (Internet Only)
audiohighway.com Jazz (Internet Only)
BluesBoyMusic.com (Internet Only)
BluesBoyMusic.com (Internet Only)
cablemusic.com Smooth Jazz (Internet Only)
ChoiceRadio.com Jazz (Internet Only)
ChoiceRadio.com Jazz (64k stream) (Internet Only)
ChoiceRadio.com Smooth Jazz (Internet Only)
CrossOver 105.1 FM (Philippines)
cyberradio2000.com Ratpack Plus (Internet Only)
cyberradio2000.com Blues Trip (Internet Only)
cyberradio2000.com Night Grooves 1 (Internet Only)
cyberradio2000.com Night Grooves 2 (32k stream) (Internet Only)
Cyberradio2000.com Soul Patrol (Internet Only)
cyberradio2000.com Swing Dream (Internet Only)
cyberradio2000.com Zydeco Ave (Internet Only)
DiscJockey.com -- BluesLine (Internet Only)
DiscJockey.com -- Guitar Wars (Internet Only)
DiscJockey.com -- Modern Swing (Internet Only)
DiscJockey.com -- Progressive Jazz (Internet Only)
DiscJockey.com -- Smooth Jazz (Internet Only)
GMN.com (32k stream) (United Kingdom)
Homestead.com -- Jazz X/ theDial (Internet Only)
Homestead.com -- Soul Kitchen/ theDial (Internet Only)
Jazz FM 102.2 FM (United Kingdom)
JAZZ Radio 106,8 FM (Poland)
JazzManMusic.com (Internet Only)
JazzManMusic.com (Internet Only)
J-WAVE 81,3 FM (Japan)
KBON 101.1 FM (Eunice, LA)
KHIH 95.7 FM K High (Denver, CO)
KOAZ 97.5 FM The Oasis (Tucson, AZ)
KPLU 88.5 FM Pacific Lutheran University (Tacoma, WA)

KSDS 88.3 FM Jazz88 (San Diego, CA)
KUNR 88.7 FM (Reno, NV)
KWSJ 105.3 FM The Oasis (Wichita, KS)
KZSP 95.3 FM Love 95.3 (South Padre Island, TX)
mediAmazing.com -- Blues (Internet Only)
mediAmazing.com -- Jazz (Internet Only)
NetRadio.com -- Café Jazz (Internet Only)
NetRadio.com Divas (Internet Only)
NetRadio.com Jazz Rock (Internet Only)
NetRadio.com Lounge (Internet Only)
NetRadio.com Quiet Storm (Internet Only)
NetRadio.com Smooth Jazz (Internet Only)
NetRadio.com Acid Jazz (Internet Only)
One.net -- Jazz X/ theDial (Internet Only)
One.net -- Soul Kitchen/ theDial (Internet Only)
Phoenix Radio Network -- Phx Jazz (Internet Only)
Radio Free Virgin Absolutely Live (Internet Only)
Radio Free Virgin Absolutely Live (56k) (Internet Only)
Radio Free Virgin Absolutely Live (96k) (Internet Only)
Radio Free Virgin Jazz (Internet Only)
Radio Free Virgin Jazz (56k) (Internet Only)
Radio Free Virgin Jazz (96k) (Internet Only)
Red FM 88.1 FM (Mexico)
Relax 92.4 FM (Germany)
RhythmRadio Blues (Internet Only)
Salon.com -- Jazz X/ theDial (Internet Only)
Salon.com -- Soul Kitchen/ theDial (Internet Only)
Shibuya FM (Japan)
Softwave (Russia)
Softwave (64k stream) (Russia)
Sporting News -- Jazz X/ theDial (Internet Only)
Sporting News -- Soul Kitchen/ theDial (Internet Only)
The Basement (Australia)
Tubemusic Jazz & Blues (36k stream) (Korea)
TuneInNow Jazz (Internet Only)
WCLK 91.9 FM Clark University (Atlanta, GA)
WDRR 98.5 FM Dream 98.5 (San Carlos Park, FL)
WFSJ 97.9 FM Smooth Jazz 97.9 (Jacksonville, FL)
WiredKingdom Radio (32k stream) (Canada)
WLVE 93.9 FM Love 94 (Miami, FL)
WNYC 93.9 FM (New York, NY)
Women.com -- Jazz X/ theDial (Internet Only)
Women.com -- Soul Kitchen/ theDial (Internet Only)
WOV Radio 990 AM (Otisville, NY)
WWBZ 98.9 FM (Charleston, SC)
www.com -- Avant-Garde (Internet Only)
www.com -- Blues (Internet Only)
www.com -- Blues Rock (Internet Only)
www.com -- Bop (Internet Only)
www.com -- British Blues (Internet Only)
www.com -- Classic Blues (Internet Only)
www.com -- Classic Jazz (Internet Only)
www.com -- Crossover Jazz (Internet Only)
www.com -- Fusion (Internet Only)

www.com -- Hard Bop (Internet Only)
www.com -- Jazz (Internet Only)
www.com -- Modern Blues (Internet Only)
www.com -- Modern Jazz (Internet Only)
www.com -- Post Bop (Internet Only)
www.com -- Smooth Jazz (Internet Only)
www.com Instru Pop (Internet Only)
www.com Jazz Cafe (Internet Only)
www.com Lounge Lizard (Internet Only)
www.com Pop Jazz (Internet Only)

Aside from music, sports radio got some competition from NFL audiocasts in the 2000-2001 season. NFL teams agreed to create a NFL Internet Network to provide free audio for every game not covered by a local radio contract. Major League Baseball also announced a similar plan to audiocast its games.

Music Recording Industry. Their names are Gnutella, Scour.com, and Napster, but Napster got all the attention in 2000, when a controversy arose of a program (written by a 19-year-old) enabled owners of digital-quality CD music to "share" their music with like-minded youth (or old people). Unlike neighbor-to-neighbor sharing, however, these copyrighted files were being traded across international borders instead of picket fences. Some universities blocked access to Napster because so many undergrads (and grads) were tying up the campus digital backbone with pirated music files, typically 5 megabytes per song.

Steven Levy said it best: "Napster allows you to search for almost any song you can think of, finds the song on a fellow enthusiast's hard drive and then permits you to get the song for yourself, right now. For the unbeatable cost of free, nada, gratis, bupkes, zero."[23] He also noted that this controversy follows a long history of similar concerns: VCR and audio cassettes that were supposed to kill intellectual property, but did not. Maybe this time the difference will be the ease with which illicit copying can be done online.

Lawsuits threatened to shut down Napster eventually.[24] But with some newer systems, the searching is done in a distributed manner, so it cannot be stopped. Unlike Napster, Gnutella was used to exchange not just music files but any files. Freenet is another, more radical

approach because it randomly distributes encrypted, copyrighted material.

Film

Each of the major Hollywood studios has its own dot-com, exploring the streaming video world, not sure where it is leading them. They fear, with some justification from the Napster imbroglio, that a little application program written by a 19-year-old in a dorm room will steal their intellectual property and eliminate copyright royalties. Even encryption schemes may fail, if someone is clever enough to remove the digital fingerprint from a purchased copy.

Undaunted, no less than Steven Spielberg (Dreamworks SKG) and Ron Howard (Imagine Entertainment) have teamed with their respective partners to create a pop.com site that will feature short pieces of filmmaking. Initial capitalization was set at $50 million. Other start-ups are shown in Table 11, but a coherent list of major players has not yet merged.

Table 11 Hollywood dot-coms

Site	Company	Content
Entertainment destinations		
Pop	Dreamworks/Imagine	short films/videos/games
Distantcorners	ex-Disney film chief	horror/science fiction
Thethreshold	Threshold Entertainment	games/comedy
Wirebreak		
Z	Basic Entertainment	
Entertaindom	Warner Brothers	
Station	Sony	
Movies-Online	Leo Films	
Go	Disney	
Portals		
Atomfilms		short films/animations
Ifilm	CNET/E! Online/Fox	site for budding
filmmakers		
Sightsound		music/film
Dfilm		
Bijoucafe		
Medium4		
The bitscreen		

Pseudo

Business-to-Business

Filmbazaar	forum for filmmakers
Reelplay	forum for filmmakers
Mediatrip	
Alwaysif	

It's not just short films, either. In January 2000, MGM became the first Hollywood studio to get serious about online pay-per-view when it made a multiyear deal with Blockbuster Video. The arrangement included streaming of movie trailers, old MGM television series like *Flipper* and *Green Acres*, and feature-length films on a trial basis. By April of the same year, Miramax set a similar deal with SightSound.com to present 12 feature-length PPV movies online. Viewers would pay about $2.95 per title.

Blockbuster sees new technologies as a threat to its video rental business. Another strategic alliance in January 2000 (to position itself against possible change in the future) was to develop a VOD service for TiVo subscribers. Also, TiVo would allow Blockbuster customers to reserve movies through their special remote control. In return, Blockbuster would promote the TiVo PVR (personal video recorder) it its 4000 stores nationwide.

In many ways, the online video inroads affect the studios and the networks equally. As distribution of materials moves online and to subscription services, the penetration of homes may grow to the point that over-the-air broadcasting becomes a novelty.

A good strategy for the film studios, and the other impacted "old" media, is to adapt to the new environment. The adaptive strategy is viewed from the standpoint of the established media and their "old" business models. For example, how does local television adapt to increased online competition? How do the program distributors (networks) adapt to new forms of delivery? By gradually changing over to the new methods.

When TV replaced prime-time radio, radio didn't die. It changed. If personal viewing technologies wrest the control away from programmers, they too will have to change. Even so, the old way of

packaging shows in arranged schedules won't vanish completely, right away. Most revolutions tend to be hyped evolutions.

Many businesses adapt by changing their business model or product. When the telephone industry saturated its growth potential by the 1980s, it looked to other information entities, like cable. When Kodak saw the impending doom of their film business in the 1990s, it got into the digital photography business.

The Future

An article in *Electronic Media* tried to answer some important questions about streaming video, following the early demise of a few companies in that business.[25] The important question was: Do consumers really want to watch streaming video? If so, when will full-motion, full-screen video streaming be a reality? The answer was yes, with an asterisk. As of 2001, it is only truly accessible and watchable in closed, controlled, corporate environments. It will be at least until 2005 before enough people have fast connections to online materials.

In answer to the question, Can entertainment streaming video sites actually make money?—the answer was "not in the near future." Even then, revenue will need to flow in many streams: advertising, sponsorships, transactions and commerce. Obviously, the pay-per-view model works well, but it's hard to get people to pay for things that others are giving away. As for advertising, it may work best when it is personalized—something called one-to-one marketing, where share of customer is more important than share of market. Privacy is an issue, and a sufficient base of potential consumers must exist to make the extra marketing effort worthwhile.

Bandwidth considerations make streaming video look different than regular video. To accommodate the computer, programs limit movement to a minimum and motion effects are discouraged. The audience for online programming is somewhat willing to be patient with the glitches of a new medium, not unlike the situation with early film audio and early television color, but eventually streaming video and audio will have to at least match VHS quality of home video.

Faced with the announcement of big changes in store for old media in a new media world, some people wonder aloud "Do people really want to interact with their TVs?" One should consider that the same question was asked about the computer, which was originally designed for doing work: spreadsheets, word-processing, databases. The answer was YES. Will people be just as enamored with interactivity from their TV as from their computer? It's likely, given the right tools and applications.

Do people want to watch video over the web on their computers? No, not if it duplicates entertainment video already available on broadcast or cable, and certainly not if it looks worse than the picture on the TV set out in the garage. But people will want to watch informational videos, like a virtual tour at a real estate site, conveniences that make their live more simple.

Gary Lieberman, analyst for Morgan Stanley Dean Witter, had observations about the future of online.[26] Among his predictions are the following:

- Once the tools and applications are in place, the revenue potential is huge
- Watching QVC if you have a "buy" button on your remote is hard to resist
- Set-top boxes will not succeed unless they cost $300 or less
- Obsolescence will be a the same problem for set-top boxes that it is for computers
- Thin applications will be more successful than fat ones
- PVRs are like power windows on your car: Once you have them, you can never go back
- The first step will be video-on-demand
- The "killer application" will be a surprise, likely dreamed up in a dorm room
- Interactive TV will land in the middle of the PC and TV experience: You won't lean back as much as you once did, but you won't lean forward as much as you do with your computer
- Brand names will continue to be important

- Compatibility is a must

According to Paul Kagan Associates, internet PPV will be a $5 billion a year business in 2005, up from $460 million in 2000.

Here's one final forecast, this time from Strategy Analytics: By 2005, 91 percent of U.S. homes will be online. About 90 percent of them will use a PC, but 73 percent will also have interactive TV or other Net device. Sales of interactive TV appliances, such as online digital TV set-top boxes and advanced games consoles, will reach $2.4 billion in 2000, an increase of 107%. Sales will peak at $4.8 billion in 2003 but will decline to $4.2 billion in 2005. Shipments, however, will reach 7.4 million units in 2000, and rise at an average growth rate of 44 per cent a year, reaching 26.4 million units a year by 2005.

If 91 percent of America is online by 2005, then the ubiquity of the broadcast world will no longer be so wonderful. It's hard to imagine that we might download our favorite shows while we channel surf through thousands of channels, or let a PVR robot download programs for us while we're away, but such change seems likely in the coming years.

Whoever designs the kind of remote control we use will have a tough job. Will a trackball replace the mouse? Will voice-recognition do away with the lap keyboard no one will want to use? These questions will demand careful thought and planning.

Can the public afford to pay individually for each show? Will product placement within sitcoms and dramas be enough to pay the stars' salaries? If the economics are wrong, we may have to cling to the old mass audience ways. But if the new media demassify the audience, there may be no turning back. You will live in interesting times.

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[1] Ken Kerschbaumer, "Interactive Television: Fulfilling the Promise," *Broadcasting & Cable*, 10 July 2000, pp. 22-30.

[2] *USA Today*, March 28, 2000, p. 1B.

[3] The RealChannels site at realguide.real.com/channels shows a wide assortment of streaming channels for one the dominant multimedia players.

[4] The first regularly scheduled, TV-quality Internet newscast was streamed on September 27, 1999. The show (SamDonaldson@ABCNEWS.com)

airs daily at 12:30 ET and viewers can participate. Programs are archived in case you miss one.

[5] Online programming is readily available to anyone to produce. Anyone can start a radio station online for under $5,000, compared to the usual $100,000 startup cost for the smallest station. ScreenGenie is a portable television device that allows a programmer to create streamed content with all the video production capabilities of a TV studio. In the summer of 2000 it retailed for $16,999, compared to the multimillion start-up cost of an over-the-air television station (the streaming software and hardware was just a small part of that cost).

[6] The first regular live comedy webcast debuted on June 25, 1997, on the Microsoft Network. The show, *This Is Not a Test*, was the brainchild of the producers of *Saturday Night Live*. The first original episodic comedy webcast came along in 1999 with a fall debut of 26 ten-minute episodes of *Scottland* on the ComedyNet.com website.

[7] At times, *literally* "out the window": TiVo, maker of PVRs that allow viewers to control their own viewing schedules, featured a television commercial in the summer of 2000 that showed a television program executive being through out of a window.

[8] Paul Sweeting, "Don't Fight the Wrong Battles," *Revolution: Business and Marketing in the Digital Economy*, July 2000, p. 44.

[9] Kathy Haley, "Finding Your way to Interactivity: Two-Way TV," *Broadcasting & Cable*, 6 September 1999, p. 18.

[10] A group of designers at Agilent Technologies have developed a palm sized device capable of speeds of 10 gigabits or 10 billion bits a second. Called a transceiver, it uses new souped-up version of the old Ethernet format, delivering transfer rates at 10 times those available on high-speed connections in 2001. The cost of one-gigabit transceivers is expected to fall below $5 by 2004, following the same declining cost curve that drove the semiconductor industry.

[11] John Gaffney, "Will the Web Grow Up to Be Like TV?" *Revolution: Business and Marketing in the Digital Economy*, July 2000, p. 52-53.

[12] Arbitron, 1999

[13] Gunzerath, 2000)

[14] Pew Research Center, 2000

[15] Nielsen's Home Technology Report. 2000

[16] Douglas A. Ferguson and Elizabeth Perse, "The World Wide Web as a Functional Alternative to Television," *Journal of Broadcasting & Electronic Media*, *44*(2), Summer 2000, pp. 155-174.

[17] Richard Tedesco, "Back to the Future: Internet TV," *Broadcasting & Cable*, 31 January 2000.

[18] David Lieberman, "Less TV in On-line Homes," *USA Today*, 20 July 1997, p. B1.

[19] The first simultaneous complementary TV broadcast and online webcast of a prime-time taped sitcom aired on November 17, 1999. Of the 17.6 million viewers watching *The Drew Carey Show*, nearly 2 million visited the show's Web site and 650,000 live media streams were sent out.

[20] Steve Sullivan, "Media Matchmaker," *Broadcasting & Cable*, 10 July 2000, p. 44-46.

[21] Douglas Ferguson, "The Future of Broadcast Television," in *The Broadcast Television Industry* by James Walker and Douglas Ferguson, Allyn & Bacon, 1998, p. 196.

[22] Don Clark, "With Web Radio, Anyone Can be a DJ, But Special Software Confuses Users," *Wall Street Journal*, 15 November 1999, p. B8.

[23] Steven Levy, "The Noisy War Over Napster," Newsweek, 5 June 2000.

[24] In August 2000, two people who had an early involvement with Napster created Applesoup, a new service that allowed payments to content providers.

[25] Daisy Whitney, "Six Burning Questions," *Electronic Media Online*, www.emonline.com/resourceGuide/, July 2000.

[26] Ken Kerschbaumer, "For Lieberman, It's All About Perspective," *Broadcasting & Cable*, 10 July 2000, p. 52-56.