READING BETWEEN THE LINES: HIGH DEFINITION TELEVISION, ANTITRUST REFORM AND AMERICA'S CHANCE TO GET BACK INTO THE TELEVISION BUSINESS

I. INTRODUCTION

If one were to conduct a survey asking the public how many American-owned companies produce televisions, the variety of answers would probably range from "A couple, like GE and RCA" to "None, the Japanese make everything now." A well informed person, however, would answer "Zenith," which is the last American-owned television company.[1] In 1986, General Electric Corporation ("GE") purchased Radio Corporation of America's ("RCA") television division and sold the combined GE-RCA business to the French electronics company, Thompson CSF, in 1987.[2] This decline in American television manufacturing is a sad reflection on a country that played an integral part in the creation of television.

The list of triumphs for the American television industry is impressive. In 1932, RCA introduced the first all-electronic television system.[3] American research then pioneered the development of color television.[4] In 1954, the color system recommended by the National Television Systems Committee ("NTSC") was adopted in the United States.[5] In 1966, Motorola Corporation ("Motorola"), another American company, devel-

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[1] CLYDE V. PRESTOWITZ, JR., TRADING PLACES: HOW WE ALLOWED JAPAN TO TAKE THE LEAD 201-02 (1988) [hereinafter PRESTOWITZ].

[2] *Id.*

[3] ORRIN E. DUNLAP, JR., RADIO AND TELEVISION ALMANAC, 101 (1951).

[4] LES BROWN, THE NEW YORK TIMES ENCYCLOPEDIA OF TELEVISION 90 (1977). Bell Laboratories sent color television images between New York and Washington, D.C. and applied for a patent for a system that allowed two or more signals to be sent over the same channel. ALBERT ABRAMSON, THE HISTORY OF TELEVISION 99 (1987). This would be an essential factor when the Federal Communications Commission ("FCC") mandated that any color system adopted by the United States would have to be compatible with existing monochrome sets, since it would allow a monochrome receiver to use a color signal to show a picture. *See* BROWN, *supra*, at 90, 310; UNDERSTANDING TELEVISION: AN INTRODUCTION TO BROADCASTING 20 (Robert L. Hilliard ed., 1964).

[5] BROWN, *supra* note 4, at 310. Japan has also adopted the NTSC system. GIRAUD CHESTER ET AL., TELEVISION AND RADIO 187 (5th ed. 1978). Germany and England chose the phase alteration line ("PAL") system, BROWN, *supra* note 4, at 320, which is an offshoot of the American NTSC system. *Id.* France and the Soviet Union utilized the *système électronique couleur avec mémoire* ("SECAM") system. *Id.* at 386.

oped the first solid state color television.[6]

By 1960, twenty-seven American television manufacturers, including RCA, Motorola, GE and Zenith,[7] enjoyed a technological lead and cost advantage over their foreign competitors.[8] For the fifteen years following World War II, the American television industry was second-to-none.[9]

This period of preeminence, however, also signaled the beginning of the end. During this same fifteen-year period, the Japanese television industry made substantial inroads in manufacturing televisions and distributing them in the American market. While tight import restrictions protected Japanese companies from U.S. competition, their industry began to grow and benefitted from technology licensed from American companies, and from their ability to aggressively price their products.[10] The Japanese thus began to dominate both the monochrome and color industries. By 1976, imports accounted for about ninety-eight percent of the United States market for monochrome televisions, and the Japanese share of the American market for color televisions had reached forty-five percent.[11] In 1980, the number of American-owned television manufacturing companies was reduced to three—RCA, GE and Zenith—and by 1987, Zenith was the sole survivor of a once-thriving American industry.[12] When the Japanese acquired the technology for the video cassette recorder ("VCR"), which was also developed by an American company,[13] their dominance of the video consumer electronic product ("CEP") field was complete.

A new technology now presents the United States with an opportunity to reclaim its former success in the television business. High-definition television ("HDTV") is being touted as the next billion-dollar revolution in the fast-paced CEP industry.[14] American companies and the United States government are

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6 PRESTOWITZ, *supra* note 1, at 200.

7 *Id.* at 200-01.

8 *Id.*

9 *Id.*

10 Japan's closed market, the licensing of American technology, and the pricing of Japanese products for the American market are discussed in greater detail in Section IV, THE JAPANESE ADVANTAGE, *infra* notes 84-123 and accompanying text.

11 PRESTOWITZ, *supra* note 1, at 201.

12 *Id.* at 201-02.

13 Michael J. Hirrel, *T.V.'s Next Generation*, CHRISTIAN SCI. MONITOR, Feb. 7, 1989, at 19. The first VCR system, called "Instavideo," was developed by Ampex, an American company. *Id.* Unable to get financing to develop the product further, the company sold the technology to Sony. *See infra* note 177 and accompanying text.

14 *See* Section III, THE POTENTIAL PAYOFF: HOW MUCH IS AT STAKE, *infra* notes 65-83; *infra* notes 66-69 and accompanying text.

slowly beginning to mobilize their resources to develop a viable HDTV system. Two obstacles, however, confront them, in the race to dominate the large American market. The first obstacle is Japan, which has a significant headstart[15] and a huge investment in research and development.[16] The second obstacle is the American antitrust system, which hinders American companies from generating the large amount of capital needed to fund the research, development and commercialization of HDTV.

This Note examines the HDTV issue and analyzes the options available to the United States for redeveloping and protecting its home television industry. Section II defines HDTV, discusses the latest developments in the industry and identifies the major industry participants. Section III details the possible applications of HDTV technology and the potential payoff from its introduction. Section IV analyzes the advantages Japanese competitors have over their American counterparts, while Section V examines the disadvantages that the American industry faces because federal antitrust laws inhibit American efforts to develop a viable HDTV system. Section VI investigates the types of legislative measures that are under consideration and are aimed at helping American HDTV developers to reestablish America's position in the television industry.

II. HDTV: WHAT IS IT?

A. *A Technological Improvement*

Technologically, HDTV is simply better television. The screens will be much larger than current ones, the picture many times clearer, and the sound will be digitally produced, having the same quality as audio compact discs ("CD").[17] Currently, television is still based on the NTSC standard[18] developed in 1941, and has existed essentially unchanged since the introduction of color television in 1953.[19] For the average consumer, these technological intricacies hold little interest or meaning, but they do

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15 Debbie Solomon, *HDTV: Television's Next Generation*, MARKET & MEDIA DECISIONS, Mar. 1989, at 110 (Japan has been developing HDTV since 1970).

16 Peggy Brown, *Battling Over Your T.V.*, NEWSDAY, June 24, 1990, (Magazine), at 10, 12 (The estimated total of the Japanese investment in HDTV is between $500 million and $1 billion).

17 John Burgess, *The Global Race is On For Next-Generation T.V.: Technical Questions Abound on 'High Definition,'* THE WASHINGTON POST, Sept. 11, 1988, at H4.

18 The NTSC standard is based on 525 lines of resolution with a width-to-height ratio of 4:3, with each channel travelling in different bandwidths of six megahertz each.

19 James L. Gattuso, *High Definition Television: What the Federal Government Can Do*, Heritage Foundation Reports, No. 150, Aug. 11, 1989, at 2.

serve as a reference by which HDTV can be compared to existing television.

The sharpness and clarity of a television picture are determined by the number of lines of resolution on the screen—the more lines, the better the picture. HDTV picture, by definition, will be composed of anywhere between 787 and 1125 lines of resolution,[20] as compared to the current 525 line NTSC standard.[21] Since the majority of the proposed HDTV systems will have 1000 or more lines, the picture detail will be approximately twice as defined as a standard NTSC television. As a result, colors will appear more vivid and pictures will be as clear as 35mm movie film images.[22]

In addition, HDTV screens will be immune from the shimmers, dots, jitters and fuzziness that plague even the best NTSC sets.[23] This clarity will allow the sets to be bigger and wider. At the normal viewing distance for a 27-inch NTSC television,[24] one could watch a 63-inch HDTV set just as comfortably.[25] Furthermore, since the screen will closely approximate the proportional dimensions of a movie screen,[26] viewers will experience some of the same sensation of "feeling the action" that they get in the cinema.

B. *The Japanese Challenge*

As of today, only the Japanese have an HDTV system that is ready for introduction into the CEP market. Since 1968,[27] Japanese electronics companies have spent at least half a billion dollars[28] on their HDTV system, called the Multiple Sub-nyquist Encoding transmission ("MUSE") system.[29] Developed by Nip-

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20 William J. Cook, *Spoils Of A Good Air War*, U.S. NEWS & WORLD REP., Sept. 10, 1990, at 75.

21 *See supra* note 18.

22 Cook, *supra* note 20, at 75.

23 *Id.* at 76.

24 Studies have shown this distance to be about seven times the picture height. At a closer distance, the picture quality begins to degrade and appear coarse. By this standard, one could sit as close as three times the picture height to an HDTV set before noticing any loss of clarity. *Id.*

25 *Id.*

26 The screen dimensions will be based on a frame aspect ratio of 5.33:3. Thus, the HDTV screen will be more like a panoramic movie screen, which uses a ratio of 7:3, than a NTSC television which uses a ratio of 4:3. The more rectangular shape of the HDTV screen allows the viewer to scan back and forth across a greater angle, like one does at the movies, thereby increasing the illusion of reality. *Id.* at 75-76.

27 *Id.* at 76.

28 *See supra* note 16.

29 *See* Hirrel, *supra* note 13, at 19 ("The Japanese are reputed to have spent $700 million developing HDTV."); Brown, *supra* note 16, at 12.

pon Hoso Kuyokai ("NHK"), the Japanese broadcasting corporation, in a joint effort between the government[30] and a consortium of Japanese electronics companies,[31] MUSE represents the first complete HDTV system. It uses 1125 lines of horizontal resolution per frame[32] and is broadcast by satellite instead of by ground-based signals.[33]

C. *The Federal Communication Commission's Position*

Despite the fact that NHK is planning to start broadcasting programs in MUSE format in 1991,[34] Japan is not in a position to dominate the American HDTV market. The FCC has taken action which, perhaps unwittingly, gives American companies some assistance. Although not scheduled to announce a national standard for an HDTV system until 1993,[35] the FCC prescribed in 1988 that any system it would consider had to be compatible with the 160 million NTSC sets currently used in the United States.[36] In addition, the selected HDTV standard will have to utilize a terrestrial, or land based, system of transmission to protect part of the large investment that broadcasters have made in this technology.[37] As a result of this decision, Japan's MUSE, the oldest and most advanced HDTV system, will not be considered as a potential American system by the FCC. While some believe this was an attempt to block Japanese HDTV preeminence, the FCC maintains that it did not choose a standard that would specifically

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30 The scope of the Japanese government's involvement in the production of HDTV is discussed in Section IV, THE JAPANESE ADVANTAGE, *infra* notes 84-123 and accompanying text.

31 Burgess, *supra* note 17, at H4.

32 *All Eyes Are On HDTV*, BROADCASTING, Apr. 18, 1988, at 47.

33 Due to the increased amount of information needed to carry the HDTV signal, the MUSE channel bandwidth is nine mhz, as compared to the NTSC signal of six mhz. *Id.* To avoid the interference problems that transmitting the bigger signal would inflict on standard NTSC signals, the Japanese chose to use satellites to broadcast the HDTV transmission. Burgess, *supra* note 17, at H4. This means that the MUSE system requires a special antenna to pick up the signal and that the MUSE monitors are unable to assimilate NTSC signals, the way a black and white television can utilize a color signal to produce a picture.

34 Burgess, *supra* note 17, at H4.

35 Cook, *supra* note 20, at 79.

36 Brown, *supra* note 16, at 12. NTSC television sets would have to be able to pick up the HDTV signal and convert it into a picture, the same way that a black and white television can pick up and utilize a color signal. *See also FCC Writes a First Draft for HDTV*, BROADCASTING, Sept. 5, 1988, at 32.

37 Cook, *supra* note 20, at 79. Aside from the cameras, video tape recorders and other studio equipment, the bulk of the broadcasters' investment is in the transmission equipment needed to beam their signals throughout the country. While the adoption of HDTV means that broadcasters will have to buy new studio equipment, the FCC's mandate ensures that they will not have to invest in satellites and new support equipment.

exclude Japanese companies from the American market.[38] Regardless of the FCC's actual motivation, its decision has the effect of putting American and Japanese companies on a more or less equal footing in developing HDTV technology for the U.S. market.[39]

Despite the setback, NHK has adapted MUSE technology to conform with the FCC compatibility and transmission requirements.[40] All of these adaptations are still at the computer simulation stage, though NHK believes that a working model of each will be ready by the time the FCC decides on a standard.[41]

D. *America's Response*

Despite its late entry into the competition, the American television industry has made significant advances in HDTV technology. In 1988, the David Sarnoff Research Center ("Sarnoff Labs") of Princeton, N.J.[42] demonstrated the world's first NTSC compatible HDTV system.[43] The broadcast was made from National Broadcasting Company's ("NBC") facilities at the World Trade Center in New York, and was received at the Sarnoff facilities in New Jersey. Using 1050 lines of resolution, with a scan

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[38] William Hassinger, Assistant Bureau Chief of the FCC's Mass Media Bureau, stated that he did not " 'recall any pressure from anybody' to make a standard shutting out the Japanese." Brown, *supra* note 16, at 19. *See also FCC Writes a First Draft for HDTV*, BROADCASTING, Sept. 5, 1988, at 33 (Alex Felker, Bureau Chief of the FCC's Mass Media Bureau, stated that "[t]hese results [,favoring a compatible, terrestrial-based HDTV system,] fell out of the technical analysis. Nobody is particularly interested in eliminating any of the systems under consideration.").

[39] Cook, *supra* note 20, at 79. As Dimitris Anastassiou, Professor of Electrical Engineering at Columbia University and head of its Image and Advanced Television Laboratory, said in a recent interview, "[W]e don't allow the experience of the Japanese to count—they have to start from scratch." Brown, *supra* note 16, at 19.

[40] *FCC Writes a First Draft for HDTV*, *supra* note 36, at 33. Japanese compatibility research has developed variations of their MUSE format. MUSE-9 occupies a nine mhz range which does not fit into existing channel spectrums, but is compatible with NTSC; MUSE-6 operates in the approved bandwidth and is compatible with existing televisions, but suffers from a significant degradation of resolution as compared with MUSE-9 and full MUSE format. *Id.* Another system, called Narrow MUSE, occupies a six mhz spectrum and is compatible. This format, however, requires a down converter to broadcast the signal on a NTSC set. *Id.*

[41] *Id.* For the proposed standards under consideration, see *infra* note 62 and accompanying text.

[42] The Sarnoff Labs, when affiliated with RCA, were responsible for creating both monochrome and color television. Calvin Sims, *Striving To Keep Its Cutting Edge*, N.Y. TIMES, Apr. 30, 1989, § 3 (Business), at 4. The Sarnoff Labs were set up by RCA in 1942 and made major breakthroughs in military electronics. *Id.* Throughout the 1950s and 1960s, Sarnoff made advances in television and semiconductors, while during the 1970s and 1980s, it explored solar power and new camera technologies. *Id.* Separated from RCA after GE's purchase of RCA in the early eighties, the lab now "contracts" itself out to other companies and conducts its own research and development. *Id.*

[43] Calvin Sims, *U.S. Researchers Show Gains in the Television of the Future*, N.Y. TIMES, Apr. 21, 1989, at A1.

rate of thirty times-per-second, the Sarnoff system is less sharp than the MUSE system; it is, however, fully compatible with NTSC sets and is ground-based.[44] The researchers at Sarnoff Labs believe that sharper pictures, as well as a reduction in the size of the monitor,[45] will be available in the near future.[46]

One of the early difficulties developers faced in creating a compatible, ground-based system was in fitting the larger HDTV signal into the six megahertz band-width that is used for NTSC televisions. American companies were the first to develop viable solutions to "compressing" the HDTV signal. The most advanced signal compression technology is being developed by William and Karen Glenn of the New York Institute of Technology ("NYIT"). They have created a band-width compression system that mimics the human eye.[47] The Glenn method transmits the bulk of the signal on a standard NTSC channel, while the extra information is sent over the existing, but unused spectrum.[48] The Glenn system is also compatible with NTSC sets.

Another American innovation is the development of analog/digital transmission. This dual system sends its analog and digital signal over both standard NTSC channels and unused VHF and UHF channels without impeding the transmission of non-HDTV signals.[49] Zenith, the Massachusetts Institute of Technol-

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44 *Id.* Existing NTSC televisions would produce a similar or slightly sharper picture than standard transmissions. *Id.*

45 The experimental monitor was the size of several refrigerators. *Id.*

46 *Id.*

47 Earl Lane, *The Next Word In TV*, NEWSDAY, Apr. 5, 1988, (Discovery Section), at 6-7. The NYIT system divides an image into two sections, one showing stationary images and the other depicting movement. This corresponds to their theory of how the human eye perceives images and movement. *Id.* at 6. The Glenn method updates the portion of the picture that shows movement more frequently than the more detailed stationary part. The signal has to carry less information than a standard HDTV transmission, which carries the full signal, but maintains the picture quality. *Id.*

48 *Id.*

49 Most of the HDTV signal is sent through an existing NTSC channel in analog form. The rest of the HDTV signal is sent over the unused portion of the spectrum in digital format. *FCC Writes a First Draft for HDTV*, *supra* note 36, at 33. Digitalized signals require a fraction of the transmission power that analog signals need. Instead of transforming the information into an electronic signal made up of pulses corresponding in strength to the voltage that each pixel or point on the screen is meant to receive, they convert the information into binary code. Andrew Kupfer, *The U.S. Wins One In High-Tech TV*, FORTUNE, Apr. 8, 1991, at 60, 63. When an analog signal is recombined to form a picture, the most that can be hoped for is a reasonable copy of the original picture. *Id.* To ensure that the all of the picture will reach the receiver, the transmission power can be increased. However, this increase in power can also interfere with other signals and degrade the the quality of the picture. *FCC Writes a First Draft for HDTV*, *supra* note 36, at 33. Digital signals, on the other hand, are exact representations of the original picture since each picture is given a precise value in binary code which can be transmitted with less power. *Id.* So long as the signal reaches the receiver without any interference, the picture will be error free and thus exactly the same. *Id.*

ogy and Columbia University have all worked on analog/digital systems.[50]

American firms have also created, and currently lead the industry in, the next generation of HDTV technology. In June 1990, General Instruments Corporation ("GIC") made a major breakthrough and proposed an all-digital system.[51] In addition to removing many of the negative aspects of analog technology,[52] the GIC system may lead to the introduction of televisions that "function like computer work stations, capable of storing, retrieving and manipulating video material."[53]

GIC has moved from the computer simulation phase and created the world's first all-digital HDTV prototype.[54] The system, called Digicipher, can encode the digital signal, compress it and decode it to receive a picture. The system has not been used to transmit a picture through the air, however, since this requires an FCC license.[55] Nonetheless, GIC's achievement is indeed a watershed event in HDTV development. While there are still problems,[56] the technology is impressive enough to force the Philips, Thomson, Sarnoff, NBC consortium and MIT to reevaluate their systems.[57] Digital HDTV technology appears to be developing so rapidly that there is little to prevent a fully digital method from being introduced by the FCC deadline.[58]

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50 The Zenith system, called Spectrum Compatible HDTV, produces 787.5 lines of resolution which are updated at a rate of sixty times per second. Zenith claims it is comparable to a 1000 plus line system. While not compatible with NTSC sets, the Zenith HDTV signal fits into the established six mhz. The MIT version works on a similar theory. *Id.*

51 Edmund L. Andrews, *Advanced TV Testing Set Amid Tumult on Technology*, N.Y. TIMES, Nov. 15, 1990, at D1.

52 These negative aspects include higher energy output requirements and greater susceptibility to signal interference. *See supra* note 47.

53 Andrews, *supra* note 51, at D1.

54 Andrew Pollack, *A Milestone in High Defintion TV*, N.Y. TIMES, Dec. 3, 1991, at D1.

55 *Id.*

56 The major obstacle is that the system is designed to have a broadcast radius of 56 miles. *Id.* at D11. Current television signals require a broadcast distance of 80 to 100 miles. Andrews, *supra* note 51, at D7. Another problem is that signals reflect off objects, particularly buildings and moving objects, affecting digital transmission. While reflections of analog signals can create image "ghosts" on the screen, there is no real problem if the ghosts are close to the real image. If a digital signal is subject to reflections, however, the resulting distortion to the discreet binary code could totally destroy the picture. Kupfer, *supra* note 49, at 63. Other potential problems might affect movement on the screen. *Id.* General Instruments has been able to overcome these problems, at least in computer simulations, using a periodic test pulse. The receiver recognizes this pulse and can then correct the inaccuracies caused by reflections. *Id.* Jim Gaspar, a manager at Panasonic Company's advanced-television labs, who saw GIC's computer simulations, stated that his team was "absolutely amazed at how good it was." *Id.*

57 *Id.* at 63-64.

58 As of 1989, "the conventional wisdom . . . was that fully digital television could not be developed soon enough to compete in the global race to develop high-definition

Recently, Zenith followed GIC's lead and abandoned its analog/digital system. On December 17, 1990, AT&T and Zenith joined forces to develop an all digital HDTV format.[59] According to one analyst, this system produces a higher quality image than the majority of the HDTV systems.[60] Interestingly, Japan, which developed the digital CD system, is not revamping their MUSE system to meet the challenge from America.[61]

The FCC is considering five different HDTV systems in order to choose a nationwide HDTV standard.[62] It is also enforc-

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television." Andrews, *supra* note 51, at D1. Two years later, an all digital system was created, and currently, all but one of the participants being considered by the FCC have submitted an all digital proposal. Pollack, *supra* note 54, at D11 (Only NHK has chosen to remain with its analog MUSE system).

[59] Lawrence M. Fisher, *A.T.&T. and Zenith In Venture*, N.Y. TIMES, Dec. 18, 1990, at D1.

[60] *Id.* at D13. According to James I. Magid, an analyst with Needham & Co. in New York, the AT&T/Zenith system "is better than most of the other proposals in terms of image quality." Magid further suggests that the all-digital system will be much less expensive than the Japanese version, "about a tenth of the [MUSE] system." *Id.* Japanese HDTV sets went on sale in Japan in December of 1990 and cost $34,000 a piece. David E. Sanger, *Advanced TV Makes Debut In Japan*, N.Y. TIMES, Dec. 6, 1990, at D1. Japanese manufacturers feel that within five years, the price will fall to $7,500. *Id.*

[61] *Id.* This decision may cut the Japanese out of the HDTV contest in America, as well as create problems at home, despite the fact that Japan ushered in the high defintion era by increasing the number of hours of HDTV programming broadcasted in Japan from one to eight a day. David E. Sanger, *Few See Japan Make TV History*, N.Y. TIMES, Nov. 26, 1991, at D1. If a viable digital system, especially one developed in America, is ready for the FCC's consideration by 1993, NHK's older analog system will almost certainly not be selected. *Id.* at D11. The Japanese also face the problem of not creating enough demand in their own country for their own system. The $30,000 price range and the lack of better programming have stalled HDTV sales; only 2000 sets have been sold so far. *Id.* This creates the classic CEP dilemma: without mass production, prices cannot drop, but without lower prices, demand is low. *Id.* Additionally, the longer Japanese HDTV producers are forced to wait to swing into full production, the more likely their MUSE system will become out of date. *Id.* These problems are acknowledged by Japanese analysts as well. *See NHK Starts 8-Hour Daily HDTV Test Broadcasts*, KYODO NEWS SERVICE, Nov. 25, 1991, *available in* LEXIS, Nexis Library, Kyodo News Service File.

The Japanese manufacturers, however, maintain that they will make the televisions regardless of what standard is used. *Id.* Despite the fact that American companies, like LSI Logic Corp., Texas Instruments, Inc. and Motorola, Inc., have all pledged to make digital components for an American system, the fact remains that Japan is well positioned to take advantage of the manufacturing opportunities. *Id.* The issue of who will actually manufacture the new sets is discussed in Section VI, WHAT CAN BE DONE?, *infra* notes 188-238 and accompanying text.

[62] Currently, the FCC is considering proposals from:

	Entrant	Lines of Resolution/Signal Update
1.	General Instruments/MIT (digital)	1050 lines/30 times per second
2.	General Instrument/MIT (digital)	787.5 lines/60 times per second
3.	NHK (analog)	1125 lines/30 times per second
4.	Philips/Thomson/Sarnoff/NBC (digital)	1050 lines/30 times per second
5.	Zenith/AT&T (digital)	787.5 lines/60 times per second

The Philips, Thomson, Sarnoff, NBC consortium is also proffering a system called En-

ing tight deadlines on the participants to ensure that the United States is not "eclipsed by programs in Japan and Europe."[63]

American firms, due to their work with digital systems and NTSC compatibility, are now on par with their Japanese competitors.[64] Although technologically capable of challenging the Japanese, American companies must decide whether the effort to produce a viable system is worth the trouble and the enormous expense.

III. The Potential Payoff: How Much Is At Stake?

Like CD's in the 1980s,[65] HDTV may represent the next major revolution in the consumer electronics industry. The Department of Commerce estimates that the revenue from HDTV monitors and VCR's could reach $1 billion per year by 1997, and as much as $16 billion by 2008.[66] Other estimates, formulated by the Department of Commerce, total $140 billion within the twenty-year period after HDTV products are introduced.[67] Japanese figures lend credence to the potentially large profits; they estimate HDTV sales reaching "40 billion dollars a year worldwide in the next decade."[68] In addition to the sales of home HDTV equipment, HDTV manufacturers will also profit from the refitting of television studios at an estimated cost between $2 million and $40 million.[69]

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hanced Definition Television ("EDTV"), which is an improved NTSC system. Kupfer, *supra* note 49, at 62-63.

63 Andrews, *supra* note 51, at D7. With Europe trying to develop its own system, it appears at this time that the world is headed for three different HDTV standards, just as there are three NTSC systems. *See supra* note 5. If American technology is not sufficiently advanced to meet the deadline, foreign companies will be manufacturing televisions for the American market, as well as for their own. Andrews, *supra* note 51, at D7.

64 *Id.* at D1.

65 In the early 1980s, CD players were introduced into the American market. At first, CD technology did not seem to offer much. The discs were much more expensive than tapes or albums, the players and the discs were not available in a recordable format, and players were expensive. However, the high sound quality that they offered created an electronic revolution by the end of the decade. As mass production increased, the price of a CD player plummeted and technology provided CD "walkmans," car stereos and "boom boxes," thus giving CD's the same mobility as cassettes. The digital technology of CD's, which offers unparalleled clarity, has become the new standard in the recording industry.

66 Gattuso, *supra* note 19, at 3.

67 *Federal Role in High Definition TV Industry: Hearings on H. 701-58 Before the House Subcomm. on Science, Space and Technology*, 101st Cong., 1st Sess. (1989) (Statement of Alfred Sikes, Assistant Secrtary for Communications and Information, National Telecommunications and Information Administration, U.S. Dept. of Commerce), *reprinted in* FEDERAL NEWS SERVICE, Mar. 22, 1989, *available in* LEXIS, Nexis Library, Federal News Service File [hereinafter *Hearings*].

68 Hidesuke Nagashima, *Japan Pushing HDTV Technologies for Global Use*, KYODO NEWS SERVICE, Oct. 28, 1988, *available in* LEXIS, Nexis Library, Kyodo News Service File.

69 Brown, *supra* note 16, at 14. Some companies have already begun investing in

The United States and Japan also believe that HDTV technology will have an enormous ripple effect into other industries as well. Since HDTV sets are extremely semiconductor microchip intensive,[70] many believe they could be the key to revitalizing the sagging United States microchip industry by providing a new market of microchip users.[71] The technology could also have an impact on military imaging equipment, medical diagnostic equipment and computer generated imaging technology.[72]

Critics suggest several factors that they believe will stop the American public from clamoring for HDTV when it is introduced into the market. First, the initial sets will be very expensive. Estimates put the initial cost of an HDTV monitor between $3500

HDTV technology. Armstrong, *Music Is Already Getting Into The Swing of HDTV*, BUSINESS WEEK, Oct. 1, 1990, at 41. Rebo High Definition Studio and 1125 Production Inc. of New York have purchased HDTV cameras, video tape recorders and editing monitors from Sony and are producing music videos and commercials. Andrea Cohen, *Look Sharp, Suppliers: HDTV Will Be a Great Show*, ELECTRONIC BUSINESS, Apr. 1, 1988, at 29. HDTV equipment provides film-quality capabilities for animation and special effects with convenience of video tape and without the higher costs of shooting in 35mm film. *Id.*

70 Because of the increase in signal material and the eventuality of digital technology, HDTV's will require more processing power to handle a larger amount of information more quickly. Therefore, HDTV's will use more microchips than standard televisions. Cohen, *supra* note 69, at 29 (Nippon Electric Co.'s ("NEC") HDTV receiver prototype uses 29 chips in total); *Hearings*, *supra* note 67, at 81 (Assistant Secretary Sikes of the FCC stated that "the typical home HDTV set, for example, may contain some 30 times the memory chip capacity of today's personal computers.").

71 During the 1970s, Japan began a concerted effort to dominate the semiconductor industry. By licensing existing American technology and infringing on U.S. patents, Japanese companies were able to close their technology gap. PRESTOWITZ, *supra* note 1, at 34-37. The Japanese government protected their fledgling industry from competition by controlling market access and providing funds to expand and improve their production. *Id.* By the 1980s, a combination of high quality, rapid development of new products, underpricing, dumping and government support allowed the Japanese to wreak havoc on the American semiconductor chip industry, which saw both its home and international market share diminish. *Id.* at 37-46.

Among the people who believe that an American HDTV industry will benefit the American semiconductor chip industry are Rep. Mel Levine (Dem.-Cal.), *American Interests*, FEDERAL NEWS SERVICE, Jan. 27, 1989, *available in* LEXIS, Nexis Library, Federal News Service File at *109-115; Rep. Don Ritter (Dem.-Cal.), 135 CONG. REC. H730 (daily ed. Mar. 21, 1989); Alfred Sikes, Assistant Secretary for Communications and Information, National Telecommunications and Information Administration, Department of Commerce and Dr. Craig Fields, Deputy Director for Research, Defense Advanced Research Projects Agency, *Hearings*, *supra* note 67.

72 *Hearings*, *supra* note 67; Brown, *supra* note 16, at 16; Nagashima, *supra* note 68.

Despite the fact that American HDTV technology appears to be outstripping Japan's older analog systems in terms of developing a consumer system, the Japanese have found that industry is very interested in HDTV's advantages. Currently, Japanese MUSE technology is being used to develop three-dimensional representations of silicon crystal growth, ozone depletion and, in concert with computer-aided design, to speed up the design cycle for developing new cars. Both Toyota Motor Corp. and Ford Motor Co. of Europe have invested in these systems. Neil Gross, *Japan's HDTV: What's Wrong With This Picture?*, BUS. WK., April 1, 1991, at 80, 81.

and $5000.[73] Mass production and technological improvements, however, will bring the cost down, as they did in the case of the CD player.[74] The price criticism also loses strength when the latest television technology is considered. Enhanced Definition Television ("EDTV") and Improved Definition Television ("IDTV") have been introduced to the market as a bridge between NTSC technology and HDTV. The sets, mostly from Japan,[75] have 31 to 35 inch screens, 700 to 800 lines of resolution, and various stereo improvements to boost the sound quality.[76] While not HDTV, IDTV represents an impressive advance and one which will not come cheaply.[77] The price criticism of HDTV is even less persuasive when one considers that the price of the first HDTVs will be approximately the same price that the purchasers of the first black and white and color sets paid, when adjusted for inflation.[78]

Another problem raised by critics is that HDTV will generate little excitement in the CEP market, as did many of the other technological "innovations" of the 1970s and 1980s. Among the most commonly cited failures are quadrophonic sound, eight track tapes, video discs and Sony's Beta system of VCR's.[79] While the failure of quadrophonic sound and eight track can be attributed to a variety of reasons,[80] the demise of Beta and video

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[73] Cook, *supra* note 20, at 76; Nagashima, *supra* note 68.

[74] Nagashima, *supra* note 68; Lane, *supra* note 47, at 7. (The Glenn system developed at NYIT could sell for as little as $1500).

[75] Sony, Mitsubishi, Proton, JVC, Sharp and Toshiba are the Japanese entrants. Philips of Holland is also marketing an IDTV set. Bob Young, *TV Hits Big League*, ROLLING STONE, Nov. 1 1990, at 102.

[76] *Id.*

[77] While Sharp's 32 inch model is priced at $1700, most of the IDTV's cost between $2700-3200, which is in the estimated price range of American HDTV, but without the corresponding quality. The trend in television is moving toward bigger screens and high quality pictures. *All Eyes Are On HDTV*, *supra* note 32, at 49. IDTV appears to represent Japan's initial attempt to dominate this new and potentially lucrative American television market.

[78] Cook, *supra* note 20, at 76. The Japanese industry thinks that once people see the improvement in quality and size of HDTV, they will want the new sets, despite the high price. According to Hisafuni Yamada, a manager in Sony's high definition business development division, "It is much like the first transistor radio, or the first Walkman, or the first home VCR's . . . . You have to do something at the first stage, to get people accustomed to the idea. We think the demand is out there." Sanger, *supra* note 60, at D1.

[79] Gattuso, *supra* note 19, at 4.

[80] The size, for example, or the lack of a real fidelity improvement over stereo and standard cassettes. Another of the concerns over HDTV is that no one will want a giant 60 inch screen in their living room and that the benefits of HDTV are lost on smaller screens. Gattuso, *supra* note 19, at 4. A similar comment might have been made about compact disc players and CD's. One of the original criticisms of CD's was that, in addition to being more expensive than cassettes, they were less versatile since they could not be used to record. This did not stop them from creating a revolution in the CEP market and permanently affecting the way people listen to music. Quality or novelty, or a com-

discs was due, primarily, to the lack of software or programming. When the movie studios realized the earning potential of the rental market, they chose JVC's VHS format over Sony's Beta and effectively cut the latter system out of the market.[81] These comparisons seem fatuous, however, especially since the direction of television technology is toward bigger screens, better pictures and better sound quality.

American criticism is that, even if the FCC selects an American standard, the introduction of HDTV to the United States will not revive the American electronics industry since the "big money will go to the companies that actually make the new TV sets and production equipment[, which] are mostly foreign owned."[82] Supporters of the system, however, feel that development of HDTV will spur the development of all the necessary support industries.[83]

IV. THE JAPANESE ADVANTAGE

Over the last twenty years, the United States has seen its dominance in many industries successfully challenged by the Jap-

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bination of both, attracted buyers. Additionally, technology has a way of catching up to the criticism. Sony has recently announced the minidisc or MD, which is the first compact disc able to store data, either musical or other digital information. David E. Sanger, *Advance in CD's Starts New Battle*, N.Y. TIMES, June 19, 1991, at D1. With televisions, the trend in the market seems to be heading toward bigger and better pictures, like IDTV. Even big screen projection televisions have sold well, in spite of the coarse, dim pictures. COMMS. DAILY, Oct. 17, 1989, at 2, *available in* LEXIS, Nexis Library (Rate of sale for projection televisions for the month of September, 1989 were at the seasonally adjusted annual rate of 322,866, a 37.3% increase from August. Rate for the third quarter was 286,824, which was a 54.1% increase from the second.). It seems logical to assume, then, that the combination of big screens and high definition pictures will succeed.

81 This might have been the movie industry's retribution for its losing litigation against Sony, which upheld the right of an individual to tape programs and movies off the air for non-commercial use. Universal City Studios Inc. v. Sony Corp. of America, 480 F. Supp. 429 (C.D. Cal. 1979), *modified*, 659 F.2d 963 (9th Cir. 1982), *aff'd*, 464 U.S. 417 (1984). This was one of the driving forces behind Sony's purchase of Columbia Pictures and Matsushita Electric Industry's ("MEI") purchase of MCA, Inc. Columbia's catalog of films provides an ample supply of movies for Sony's new 8mm system.

82 Kupfer, *supra* note 49, at 61. While nearly half of the foreign televisions sold in America are made in the United States, Zenith, the last surviving American television manufacturer, produces many of its sets in Mexico. *Id.*

Even some of the participants in HDTV development feel that high definition television alone will not revitalize the American electronics industry. James Carnes of the Sarnoff Research Center stated that HDTV "is not likely to be a vehicle to reinstate U.S. ownership of the consumer electronics industry. . . . U.S. companies sold their consumer electronics businesses to foreigners and it is going to take quite a bit more than a new TV standard to regain that ownership position." *Sarnoff's Carnes Calls HDTV Prime Example of U.S. R&D Crisis*, COMMUNICATIONS DAILY, July 2, 1991, at 2, *available in* LEXIS, Nexis Library [hereinafter *Prime Example*].

83 The hope that HDTV will respawn the necessary industry is discussed in Section VI, WHAT CAN BE DONE, *infra* notes 188-238.

anese.[84] The major reason for this, generally speaking, is that, unlike the United States and most Western economies, the Japanese have developed their own version of capitalism, in which the producer, rather than the consumer, is the keystone of their economy. It is the producer that receives the protection and benefits of the state.[85] Moreover, the goal of Japanese industry is market share, not profits. Japanese managers focus their goals on long term projects whereas their American counterparts, mindful of their stockholders, operate from a short-term perspective.[86] Though this approach directly contradicts modern Western economic thought, the Japanese are "less concerned with conceptualizations than with results."[87] The Japanese system, therefore, is designed to bring its economic, industrial and political power to bear on specifically targeted products and markets.[88]

A. *Government Intervention*

In Japan, the Ministry of International Trade and Industry ("MITI") governs the industrial system. There is no American agency which exactly parallels MITI, but Clyde Prestowitz[89] described a hypothetical American MITI as including "the departments of Commerce and Energy, the Office of the U.S. Trade Representative, the Export-Import Bank, the Small Business Administration, the National Science Foundation, the Overseas Private Investment Corporation, the Environmental Protection Agency, and parts of the departments of Defense and Justice."[90] In addition to implementing industrial policy, MITI also drafts industrial legislation which, if approved by its highest officials, receives tacit approval in the *Diet*, Japan's Legislature, without any significant debate.[91] The *Diet*'s legislative deference to one

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84 Among the most commonly perceived are the auto industry, the microchip industry and the television industry. These products were both perfected and introduced to the world by American companies and were considered, for many years, as distinctly American industries.

85 Alan S. Blinder, *There Are Capitalists, Then There Are The Japanese*, BUS. WK., Oct. 8, 1990, at 21. Western economic theory is consumer oriented; to be successful, companies must "do [the] consumers' bidding not by benevolence but by the search for profits in a competitive marketplace. To serve their stockholders, they must serve the public by innovating and holding down costs." *Id.*

86 *Id.*

87 *Id.*

88 *See infra* notes 92-97 and accompanying text.

89 Prestowitz was a Counselor for Japan Affairs to the Secretary of Commerce during the Reagan Administration, and author of the book, TRADING PLACES: HOW WE ALLOWED JAPAN TO TAKE THE LEAD, *supra* note 1.

90 *Id.*, *supra* note 1, at 115.

91 *Id.* at 118.

of its supposedly lower organs suggests that the actual power over the breadth and scope of industrial policy lies with MITI.[92]

MITI's first significant involvement with the electronics industry was in 1957 and charted the course for Japan's domination of television and other high technology markets, including the microchip. With the adoption of the Extraordinary Measures Law for Promotion of the Electronics Industry,[93] Japan's political, financial and industrial strength was focused on a "major national effort to catch up to the United States."[94] Under the auspices of the Japanese government, MITI selected

> products and projects in research and development for special promotion, . . . set production, quantity, and cost targets, and . . . ensure[d] adequate funding of the programs both by providing subsidies and by directing bank lending activities—everything, in short, that U.S. companies did on their own. The law also authorized the creation of cartels in cases deemed useful by MITI; and established, under the control of MITI, an Electronics Industry Deliberation Council consisting of representatives of industry, academia, and the press, to develop plans and provide coordination.[95]

This organization allowed the Japanese to successfully target the television industry and eventually dominate the American market.

In contrast with the heavy governmental involvement typified by MITI, the U.S. government has not been interested in protecting its industries. In fact, beginning with the Eisenhower Administration, the United States augmented its policy of containment against the Soviet Union by transferring technology and aiding infant foreign industries by affording them easy access to the vast American markets.[96] As the United States settled into its role as both a superpower and the *de facto* protector of democracy, every administration from Kennedy to Reagan subordinated its industrial/economic in-

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92 According to Prestowitz, the Diet members of Japan's government defer to MITI's decision because they do not have the staff resources to research the issues as thoroughly; they often attend less prestigious universities and are "in awe" of the MITI officials. *Id.* The school one attends in Japan can predetermine one's position in society. Attending Tokyo University, "the training ground of Japan's elite," is "practically a guarantee of success . . . ." *Id.* at 89, 92. The ministries, such as MITI, attract a huge number of these graduates and many former MITI officials occupy seats in the Diet. *Id.* at 118.

93 *Id.* at 33.

94 *Id.*

95 *Id.*

96 American industrial policy "encouraged imports and transfer[s] of U.S. technology and capital abroad" so as to keep Japan away from the influence of its Soviet neighbor. *Id.* at 200.

terests to its geopolitical policy.[97] The transfer of American television technology abroad was also believed to be necessary by domestic television companies because it was apparently the only way to gain access to the closed Japanese market.[98]

B. *Freedom From Antitrust Regulation*

Another advantage that Japanese companies have over their American counterparts is that MITI will organize cartels to protect industries that are unable to compete in the international market.[99] Unlike the United States, Japan has no ingrained antitrust tradition. Its first experience with such legislation came during the American occupation of Japan after World War II, when the provisional government established the Antimonopoly Act of 1947 and the Japanese Fair Trade Commission ("JFTC") to enforce it.[100] Like the Sherman Act[101] and the Clayton Act,[102] the Japanese Antimonopoly Act was designed to prohibit restraints on trade and to promote competition. Under the Japanese form of capitalism, however, where the producer and not the consumer is the key to the system,[103] competition is viewed

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97 For example, a massive amount of federal money has been used to finance the United States military. Concessions on trading issues, primarily with Japan, were made to ensure that United States military and political imperatives would be followed. PRESTOWITZ, *supra* note 1, at 243-44.

98 *Id.* Though there is no official policy of locking out foreign products, the Japanese practice of supporting home industries and allowing vertically integrated combines make entry into the Japanese market very difficult for foreign companies. *See id.* at 161-62 (Examples of this phenomenon are America's problem of selling its cheaper industrial soda ash in Japan and the Cray computer incident. Nissan was originally dissuaded from buying the superior Cray supercomputer in favor of a Japanese model, but agreed to the purchase in response to U.S. pressure.).

99 *Id.* at 33. Japan's aluminum industry is an example. Japan, already facing the highest energy costs of any industrial nation, was hit hard by the oil crises of the 1970s. This was especially so for the aluminum smelting industry, which is known for its high electricity needs. During this period, MITI, in addition to allowing aluminum producers to form cartels, provided them with, among other things, preferential electricity rates and special loans. Eventually, MITI set up a plan to relocate their facilities in other countries where costs were lower, and gave them a tariff-free import quota. *Id.* at 142.

100 Thomas M. Jorde & David J. Teece, *Innovation, Cooperation and Antitrust*, 4 HIGH TECH. L.J. 1, 51 (1989). The Japanese Antimonopoly Act and the Fair Trade Commission were designed to accomplish the same purposes as their American analogs, the Sherman Antitrust Act, 15 U.S.C. §§ 1-7 (1988), and the Federal Trade Commission, respectively. Prior to the Second World War, the *zaibatsu*, large family-controlled conglomerates, dominated Japanese industry. This concentration made it easier for the Japanese military government to convert the economy for war. The post-war American provisional government viewed the *zaibatsu* system as an undemocratic system that helped to create the Japanese war machine, making possible the attack on Pearl Harbor in 1941. *See infra* notes 143-44 and accompanying text.

101 15 U.S.C. §§ 1-7 (1988).

102 Ch. 323, 38 Stat. 730 (1914) (codified as amended at scattered sections of 15 U.S.C. and 29 U.S.C. (1988)).

103 *See supra* notes 92-94 and accompanying text.

very differently than in America. In the United States, competition generally causes prices to fall, provides variety and thus benefits the consumer. American antitrust laws are therefore designed to ensure the vitality of the competetive market. In Japan, however, rampant competition is discouraged because "if left unrestrained, it can damage organizations that may be critical for long-term efficiency."[104] Consequently, the Japanese have allowed companies to work together, whether to develop new technologies or to protect troubled industries. Although there are no exemptions for joint research and development arrangements under the Antimonopoly Act of 1947, the JFTC, as the Act's primary enforcer, can protect cooperative efforts.[105] The JFTC policy is to balance the competitive advantages of joint ventures against their potential anticompetetive effects.[106] Working closely with MITI, the JFTC recognizes the needs of innovative firms and has created guidelines that justify the creation of *de facto* exemptions for cooperative efforts.[107] Therefore, Japanese firms working on HDTV development have very little to fear from antitrust laws as compared to their American competitors, given the bias towards cooperation that is built into their system. Additionally, once the JFTC has approved a particular venture, antitrust suits are extremely difficult to win. Furthermore, because treble damages are not available,[108] there is very little impetus for a prospective plaintiff to bring suit.[109]

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104 PRESTOWITZ, *supra* note 1, at 140.

105 Jorde & Teece, *supra* note 100, at 55.

106 *Id.*

107 These justifications include: "1) the difficulty of single-firm innovation, 2) the abbreviation of the time needed for innovation by cooperation and specialization between joint participants, 3) the pursuit of innovation in new fields by utilizing shared technology and know-how, and 4) enhancement of the technological level of each participant through the interchange of technology." *Id.* at 56 (footnote omitted).

108 Under American antitrust law, violators are required to pay damages triple, or treble, the amount of the actual damages suffered by the plaintiff. *See infra* note 130.

109 Jorde & Teece, *supra* note 100, at 56. Recently, Nomura Securities, Nikko Securities, Daiwa Securities and Yamaichi Securities were all found to have compensated their largest clients for losses suffered in the stock market. The Japanese government, in response to pressure from the United States, has published new, stricter business rules. David E. Sanger, *Four Firms Penalized By Japan*, N.Y. TIMES, July 9, 1991, at D1. These rules prohibit companies from "fixing prices, driving competitors out of the market and blocking certain types of imports." David E. Sanger, *Japan Sets Tough Rules On Business*, N.Y. TIMES, July 15, 1991, at D1. The rules effect the *keiretsu*, or vertically integrated conglomerate, system by preventing member companies from using their stockholdings to block other members from doing business with foreign competitors. *Id.* For a discussion of the *keiretsu* system, see *infra* notes 113-23 and accompanying text. The issue facing both Japanese companies and their foreign competitors "is how strictly the rules will be enforced by Japan's Fair Trade Commission, which is not known for its political clout or its eagerness to enforce the country's antitrust laws." Sanger, *Japan Sets Tough Rules on Business, supra*, at D1. *Keiretsu* members have already made strong protests about

American industries, however, are not given the same flexibility or attention by the U.S. government, which maintains its policy of not assisting private industry.[110] Moreover, American companies would be subject to antitrust litigation if they formed a cartel, or even a group to discuss strategies to regain their lost advantage.[111] During the recession of the 1970s, the economic environment had become so bad for American industry that even successful television companies did not feel secure in their ability to compete with the Japanese.[112]

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the new rules through the *Keidanran*, the organization of the largest businesses. *Id.* at D3. Any effort to upset the *keiretsu* will be extremely difficult since they are "considered by the Japanese to be a key to the country's economic success, and Japanese negotiators have resisted any efforts to break up those relationships." *Id.*

An example of why the new rules are needed, and why they may not have the effect they are designed to have, can be seen in the official punishment meted out to the securities violators. The penalties did not result from an official legal proceeding, the way they would have in the United States, but were instead "an informal 'guidance' issued by the Ministry of Finance, which is the principal means that regulators here use to control the market." Sanger, *Four Firms Penalized by Japan*, *supra*, at D5. This unofficial system of checks and balances allows the Japanese to maintain a market system that "benefit[s] insiders who ha[ve] the most influence in the brokerage houses." *Id.* at D1. The Ministry of Finance mandated a series of sanctions against the four companies, the worst of which was that they were barred from trading for four days. *Id.* This punishment is modest considering the magnitude and long range effect of the companies' violations. None of the Finance Ministry's officials were punished, even though some of them were aware of the scandal. *Id.*

When Hideo Sakamaki, Nomura's new president, was asked to explain how such violations occured, he responded that "there might have been a gap between the common sense of Nomura and the common sense in society." *Id.* at D5. This gap in common sense also allowed the firm to knowingly lend $100 million to a criminal syndicate leader. *Id.*

110 For example, when the machine tool industry organized and went to Congress for help against the Japanese companies, which were following their practice of dumping, the government decided to do nothing and continued to subordinate industry to its national security. PRESTOWITZ, *supra* note 1, at 242-43. For a definition of dumping, see *infra* note 112.

111 *See infra* notes 129-32 and accompanying text.

112 Motorola, a world leader in the electronics and television industries, created the Quasar brand for its television operation and "structured the television division so that it could be sold or operated independently. It was sold in 1974 to Matsushita." PRESTOWITZ, *supra* note 1, at 202.

American efforts to deal with the other side of the problem, Japanese "dumping," have been ineffective. Dumping is a practice in which one country exports a product at below market price for the purpose of undermining another country's industry. According to Prestowitz, "[b]etween 1962 and 1981, twenty unfair trade cases were filed with the U.S. government, which conducted thirty-seven investigations of the television industry." *Id.* at 204 (footnote omitted). The Treasury Department assessed dumping penalties in 1971, but these were discontinued within a year, and no other action was taken until 1976. *Id.* In that year, the Treasury Department assessed $400 million in duties, but in 1980 the commerce Department settled the issue for $76 million in an effort to avoid further trade friction with its strategically important trade partner. *Id.* at 204-05.

In 1970, several major antitrust suits, consolidated on appeal, were filed against the Japanese CEP producers. In *re* Japanese Elec. Prods. Antitrust Litig., 723 F.2d 319 (3d Cir. 1983). The Third Circuit rejected the Japanese defendants' summary judgment motion (with the exceptions of Sony Corp., Motorola, Inc., and Sears, Roebuck and Co.)

C. *Financing*

The second tier of the Japanese system is the *keiretsu* or economic group.[113] The *keirestu* can be described as the "ultimate vertically integrated megacompany."[114] The typical *keiretsu*[115] "has companies in each major sector of Japan's economy, such as steel, petrochemicals, banking, and high technology."[116] Members of the *keiretsu* own large blocks of their member companies' stock, and supply each other with long and short term loans.[117] The most important element of these loans is that they are made by the shareholders.[118]

Japanese HDTV manufacturers, therefore, have two main advantages. First, there is no danger that their creditors will demand payment or that the project will be discontinued, regardless of performance. The confidence in these loans is due to the fact that "the group implicitly stands behind them. A few

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and held that there were sufficient issues of material fact to proceed to trial on the plaintiff's allegations of conspiracy and dumping. The defendants appealed and the Supreme Court garnted certiorari. Matsushita Elec. Industrial Co. v. Zenith Radio Corp., 475 U.S. 574 (1986). A narrow majority reversed and remanded the case. In a strongly worded dissent, Justice White stated that "[i]t is indeed remarkable that the Court, in the face of the long and careful opinion of the Court of Appeals, reaches the result it does." *Id.* at 598. Despite the Third Circuit's finding that there was sufficient evidence to show there were barriers to entering the Japanese market, that Japanese over-production created an incentive to sell off this excess capacity outside of Japan, *In re Japanese*, 723 F.2d at 238, that there was evidence of a collusive pricing agreement to stabilize high prices in Japan to support low prices in America, *id.* at 309, and that there was evidence to show Japanese export prices created losses as high as twenty-five percent, *id.* at 311, the Supreme Court held that the defendants had "no motive to enter into the alleged [dumping] conspiracy." *Masushita*, 475 U.S. at 595. The majority found that the evidence upon which the Court of Appeals relied did not relate to the allegations of a pricing conspiracy in the United States. *Id.* 595-96. In conclusion, the Court stated that "in light of the absence of any rational motive to conspire, neither petitioners' pricing practices, nor their conduct in the Japanese market, nor their agreements respecting prices and distribution in the American market, suffice to create a 'genuine issue for trial.'" *Id.* at 597 (citation omitted). In an odd, but telling, turn of events the United States Department of Justice filed an *amicus curiae* brief with the court *on behalf* of the Japanese. PRESTOWITZ, *supra* note 1, at 205. Faced with the Supreme Court's rejection of its analysis, the Third Circuit, on remand, had no choice but to dismiss the cases against the remaining Japanese defendants. In re Japanese Elec. Products Antitrust Lit., 807 F.2d 44 (3d Cir. 1986).

In the span of about twenty-five years, the American television industry appealed to two different branches of the United States government to help protect the industry, but received no satisfaction. By the time the investigations and litigation were over the American television industry had been lost to the Japanese.

113 PRESTOWITZ, *supra* note 1, at 157.

114 Blinder, *supra* note 85, at 21.

115 There are six major *keiretsu*: Sumitomo, Mitsui, Mitsubishi, Sanwa, Fuyo and Dai Ichi Kangyo. The Dai Ichi Kangyo group is Japan's biggest with annual sales of almost $400 billion in 1987. In comparison, General Motors, the largest American conglomerate, had annual sales of only $103 billion. PRESTOWITZ, *supra* note 1, at 159.

116 *Id.* at 157.

117 *Id.* at 159.

118 *Id.* at 169.

months, or even years, of poor results will not cause reconsideration, because the investments are not primarily for the purpose of making money but are to ensure the group's position and survival in strategic industries in the future."[119] Therefore, once a Japanese company commits to the development of HDTV, the pressure to show immediate, or even intermediate success, is removed.

The second advantage is that, because of this debt security, Japanese HDTV producers can reduce the cost of their capital and borrow more money.[120] This combination allows the Japanese to spend almost twice as much on research and development as a similar American company.[121] Ultimately, the risks of expansion and of research and development are lowered. "To [further] reduce the risk [of a new venture], the government [and the *keiretsu*] ha[ve] always demonstrated that [they] will help in some way when major companies get into trouble."[122]

Evidence exists to show that, aside from the vertical relationships of the *keiretsu*, the Japanese television companies are connected horizontally, though more tenuously. From at least 1955 to 1974, Japanese electronics companies engaged in collusive price setting and dumping activity, without any significant interference from MITI, through a program of rebates and kickbacks to U.S. distributors.[123] The result, which supported the Japanese companies while they sold televisions at below market price in the United States, left them firmly in control of the American television market.

V. AMERICA'S DOUBLE-EDGED DILEMMA: ANTITRUST & FINANCING

Japan, however, was not the sole cause of the demise of the American television industry. American companies did not respond very quickly to market demand.[124] Their product development was sluggish.[125] Furthermore, the American practice of licensing technology to Japanese companies was a major competitive mistake, since it allowed Japanese television manufacturers

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119 *Id.* at 169-70.
120 *Id.* at 168.
121 *Id.* at 167-68.
122 *Id.* at 170.
123 *Id.* at 203.
124 *Id.* at 202.
125 *Id.* Although Motorola developed the first prototype solid state color television in 1966, Hitachi first brought it to the market in 1969. RCA and Zenith did not have their solid state lines ready until 1973. *Id.* at 201.

to avoid very large research and development costs. These reasons alone, however, do not adequately explain the downfall of the American television industry. American companies did not, and still do not, enjoy the advantages that benefit their Japanese counterparts. First, the American government does not have the same integral involvement with industry that the Japanese *Diet* does through MITI.[126] In addition, since the end of the Second World War, the American government has repeatedly sacrificed private industry to its national security policy.[127] Finally, American HDTV manufacturers are prevented by antitrust law from working together to the extent that their Japanese competitors can, and do not have access to the same low-risk capital.[128] These factors could prevent American companies from taking full advantage of their own breakthroughs in digital HDTV.

A. *The Antitrust Barrier*

As far as the development of HDTV is concerned, American players are prevented from developing anything like a *keiretsu*, or even a less structured organization, because they fear violating section 18 of the Clayton Antitrust Act, known as the Merger Clause.

The Merger Clause makes it illegal for companies to acquire the stock or the assets of another corporation engaged in the same "line of commerce" if the effect of the acquisition tends to lower competition in the industry or create monopoly power.[129] A violation of section 18 subjects a corporation to treble damages[130] and possible federal dissolution in a criminal proceed-

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126 *See supra* notes 90-95 and accompanying text.

127 *See supra* notes 96 and 109 and accompanying text.

128 *See supra* notes 108-17 and accompanying text.

129 Section 18 states that

> [n]o person engaged in commerce or in any activity affecting commerce shall acquire, directly or indirectly, the whole or any part of the stock or other share capital and no person subject to the jurisdiction of the Federal Trade Commission shall acquire the whole or any part of the assets of another person engaged also in commerce or in any activity affecting commerce, where in any line of commerce or in any activity affecting commerce in any section of the country, the effect of such acquisition may be substantially to lessen competition, or to tend to create a monopoly.

15 U.S.C. § 18 (1988).

130 The antitrust law states that

> any person who shall be injured in his business or property by reason of anything forbidden in the antitrust laws may sue therefor in any district court of the United States in the district in which the defendant resides or is found or has an agent, without respect to the amount in controversy, and shall recover *threefold* the damages by him sustained, and the cost of suit, including a reasonable attorney's fee.

15 U.S.C. § 15 (1988) (emphasis added).

ing.[131] Until very recently, even more tenuous connections between companies, like joint ventures, fell under the broad scope of section 18.[132]

Because it is a violation of U.S. law, the pooling of technology and research that helped the Japanese HDTV industry produce the first working system is denied to the American developers. Additionally, American companies cannot look to the government for support the way their Japanese counterparts do.[133] Indeed, since the government sided with consumers by supporting and enacting the Sherman and Clayton Acts, the antitrust regulations create an adversarial relationship between the two.

1. The Genesis of the American Antitrust Ideology

Before analyzing the antitrust issue further, it is important to consider it in the proper political and historical perspectives, and to discuss its economic goals and impacts. The industrial behavior that led to passage of the American antitrust laws was borne out of the rapid industrial growth which followed the Civil War.[134] Companies, expanding horizontally or vertically, found that unchecked production and continuous entry into the market by new producers resulted in unrestrained competition and rampant over-production.[135] The result was "declining prices, unprofitability, and, for many, insolvency."[136]

In an attempt to prevent financial ruin, managers implemented plans that protected profit levels and controlled competition, particularly the pool and the trust.[137] Trusts were

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131 For an example, see *infra* note 137 and accompanying text.

132 *See* United States v. Penn-Olin Chemical Co., 378 U.S. 158 (1964), *aff'd*, 389 U.S. 308 (1967) (joint ventures were to be covered by section 18 where the effect was held to lessen competition or create a monopoly). American HDTV developers would most likely engage in joint ventures, since they would allow developers to work together without having to give up their corporate identities or to share other areas of research in which the companies do not wish to cooperate.

133 For a discussion of the Japanese government's intervention, see *supra* notes 89-108 and accompanying text.

134 Eleanor M. Fox & Lawrence A. Sullivan, *Antitrust—Retrospective and Prospective: Where Are We Coming From? Where Are We Going?*, 62 N.Y.U. L. REV. 936, 937 (1987) (This article traces the genesis of American antitrust policy, examines the criticisms levied against it, and whether they validly identify its limitations.). This activity included mass production, standardization and extensive railway construction. *Id.*

135 *Id.* at 938.

136 *Id.* at 938-39. Many industries, such as the steel and railroad industries, ran at a loss because fixed costs were large and temporary shutdowns were difficult. *Id.*

137 Under the pool agreement, members would parcel out shares of their particular market, which would roughly guarantee each member an equal or proportional share of the profits. *Id.* at 939. The pool arrangement was improved by dividing up public contracts and using the collective strength of the pool to force retailers to buy goods and

devastatingly effective in their ability to maintain price levels and forestall competition. By the 1880s, consumer discontent had been galvanized into a bipartisan political movement. This outpouring of consumer and political disfavor led to the enactment of both the Sherman Act[138] in 1890 and the Clayton Act[139] in 1914. In doing so, Congress adopted the mindset that "bigness" and corporate cooperation lead to the abuse of the "little man"—both the entrepreneur who was frozen out of the market and the consumer, who was faced with higher prices because competition was artificially suspended by corporate fiat.[140] Therefore, the ultimate goal of the antitrust laws was to maintain a "competitive dynamic [which] would lead to lower prices, higher quality, a variety of price/quality options and technological progress, all of which would serve the interests of consumers."[141] The Sherman and Clayton Acts thus codified the concept of the consumer as the keystone of the American economy.[142]

The animosity toward cartels and government involvement in the economy became even more ingrained on both the Ameri-

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services at set prices. The pool's unstructured design, however, led to its downfall. Members were able to get around their quotas by selling in markets not covered by the arrangement. *Id.* In addition, a new entrant into the covered market would undoubtedly charge a lower price, which would spur the pool members to engage in the disastrous price-cutting competition that fostered the creation of the pool in the first place. *Id.*

The second development was the trust. Under this arrangement, members would exchange company stock for trust certificates which then gave the trust legal control over its members through voting rights. *Id.* at 939-40. The trusts resembled cartels, as opposed to merged entities, since the members' primary concern was setting production and price levels, and not issues of day-to-day management and corporate policy. However, when a non-member threatened the trust's market, it could act in concert to eliminate the independent actor. *Id.* Created and popularized by John Rockefeller, the trust "established a legally enforceable way for member corporations to unify control." *Id.* at 939. Rockefeller's company, Standard Oil, one of the largest and most powerful trusts, fell victim to the antitrust laws in the famous antitrust case, Standard Oil Co. v. United States, 221 U.S. 1 (1911) (The Supreme Court ruled that Standard Oil's pricing and acquisition practices reduced competition and thus violated the Antitrust laws.).

138 15 U.S.C. §§ 1-7 (1988).

139 15 U.S.C. §§ 12-27 (1988).

140 Fox & Sullivan, *supra* note 134, at 940-41.

141 *Id.* at 941. The consumer orientation of the antitrust laws is consistent with Adam Smith's "invisible hand" theory which dominates Western economic thought. In this capitalist system, market forces will set prices and unfettered competition will drive innovation and quality improvements. *See supra* notes 85-87 and accompanying text.

142 There have been periods, however, when the government has not enforced the antitrust provisions. During the Depression of 1929, the government not only allowed industries to create cartels, but also helped coordinate economic efforts. Fox & Sullivan, *supra* note 134, at 941-42. "[B]usiness [was given] an almost free rein in the *interest of economic 'recovery'*." *Id.* at 941 (emphasis added). The prohibition on prosecution, however, was solely a transitory necessity to rescue the nation. As soon as the economy recovered, the government and the courts returned to their familiar hardline position: cartels and government involvement were only exceptions in the face of an economic emergency and not the rule. *Id.*

can political and economic psyche after World War II, despite the successful results of New Deal legislation.[143]

> The United States viewed the "giant combines" in Germany as playing a vital role in directing the German economy and "in the evolution of the totalitarian state," and the *zaibatsu* [the precursor of the *keiretsu*] in Japan, with their favored status and importance in Japan's economy, as directly contributing to Japan's desire for territorial expansion.[144]

Not only were cartels seen as perverting healthy market competition and injuring the consumer, but they were also seen as anti-democratic and contributing to imperialist tendencies. Thus American antitrust law, for most of its existence, had two main foci.

> The first was political—distrust of bigness and of fewness of competitors as well as a policy preference for diversity and opportunity for the unestablished. The second was socioeconomic, especially as seen from the vantage point of the small businessperson and the consumer. . . . What mattered was getting a fair shot as an entrepreneur, and having choice and receiving a fair deal as a consumer.[145]

The problem with the antitrust laws is that they were created and implemented during a period when the United States was the dominant industrial power in the world, and international trade was not a major concern. Consequently, the laws are oriented toward internal concerns of fairness. "Antitrust was not a tool for increasing aggregate national wealth . . . . [or achieving] a more efficient allocation of resources . . . [,which were] never a norm for antitrust, nor a condition precedent to antitrust enforcement."[146] Therefore, American antitrust law prevents American HDTV developers from taking advantage of the same cooperative behavior and financial support that the Japanese companies have used, with the full support of their government, to successfully dominate the CEP industry and leap to an initial advantage in HDTV technology.

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143 *See supra* note 135.

144 Harry First, *Structural Antitrust Rules and International Competition: The Case of Distressed Industries*, 62 N.Y.U. L. REV. 1054, 1077 (1987) (footnote omitted) (analying American antitrust law's place in the modern economy and whether it should be relaxed to allow certain types of ventures to exist).

145 Fox & Sullivan, *supra* note 134, at 944.

146 *Id.* Consider the aftermath of the forced break-up and restructuring of AT&T. The American market for telecommunications was opened to foreign competitors, without a reciprocal right in their markets. "The prohibition of manufacturing by the Baby Bells meant that if they did not want to buy equipment from AT&T, in lieu of any other U.S. producers, they had to import foreign equipment and that led to a massive overnight deficit in U.S. telecommunications trade." PRESTOWITZ, *supra* note 1, at 316.

2. The Change In Attitude

When the American economy began to enter the recession of the 1970s, and other nations were making industrial strides, the shortcomings of the existing antitrust scheme became apparent. Especially in "high-technology industries, trading partners [, and Japan in particular,] had come into their own and were vying for United States markets."[147] Critics of the antitrust laws were able to show that certain provisions actually hindered efficiency by preventing the consumer from receiving the utmost benefits from the system.[148] Just as the government responded to the cries of the "little man" by adopting the antitrust acts following the industrial revolution, so the Supreme Court and the government responded to the concerns of business and to those who believed that the antitrust laws needed to be modified during the 1970s and 1980s. The pro-reformers advocated that "antitrust policy [needed] to come to grips with the complex legal and economic environment in which many important United States industries operate[d and that]. . . . [g]overnment polic[ies] should be able to offer some help."[149]

The first major reform came from the Supreme Court when it overruled the *per se* standard developed in *Northern Pacific Railway Company v. United States*[150] and adopted the rule of reason test utilized in *Continental T.V., Inc. v. GTE Sylvania Inc.*[151] From the 1940s to the 1970s, the courts expanded plaintiffs' rights under the antitrust laws by adopting a *per se* standard by which defendants were measured. Under the *per se* standard, a defendant was barred from presenting evidence to show either the rationale behind the violative behavior or an actual benefit to the consumer.[152] By simply falling into an ambiguous court determined

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147 Fox & Sullivan, *supra* note 134, at 944. This was during the same period in which the American television industry was taking its first battering from Japanese imports. *See supra* notes 10-12 and accompanying text.

148 Fox & Sullivan, supra note 134, at 944. *See also* Eleanor M. Fox, *The Modernization of Antitrust: A New Equilibrium*, 66 CORNELL L. REV. 1140, 1143 (1981) (proposing a new formulation of the antitrust issue, balancing efficiency goals with protecting the consumer).

149 First, *supra* note 144, at 1054.

150 356 U.S. 1 (1958) (government sued defendant railroad for engaging in preferential routing arrangements which were held to be unreasonable restraints on trade).

151 433 U.S. 36, 47-59 (1977), *aff'd*, 694 F.2d 1132 (1980). The court held that "departure from the rule-of-reason standard must be based upon demonstrable economic effect rather than . . . upon formalistic line drawing." *Id.* at 58-59. For a general overview of the Court's new attitude toward antitrust, see Fox, *supra* note 148, at 1152.

152 *Northern Pacific*, 356 U.S. at 5. This reflected both the Court's desire for judicial economy as well as it predisposition against industry. Justice Black stated that the *per se* standard allowed the Court to dispense with "the necessity for an incredibly complicated and prolonged economic investigation into the entire history of the industry involved, as

pattern of activity, a corporate defendant would automatically be held liable, making the "type of restraints which are proscribed by the Sherman Act more certain to the benefit of everyone concerned."[153] Under the rule of reason standard, however, the Court began to look for "reasonableness . . . and respect for the facts . . . [and] ha[d] come to grips with elements of the law that had moved it too far in an enforcement direction."[154]

The Reagan administration made a considerable effort to reevaluate the antitrust system.[155] With the United States facing an ever growing trade deficit with Japan and its export/market dominated industries, the government adopted a more strategic view of trade and industry designed to improve America's global competitiveness.[156]

In 1984, Congress took its boldest step to date in antitrust

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well as related industries, in an effort to determine at large whether a particular restraint has been unreasonable—an inquiry so often wholly fruitless when undertaken." *Id.*

153 *Id.* The Court held that there are "certain . . . practices which because of their pernicious effect on competition and lack of any redeeming virtue are conclusively presumed to be unreasonable and therefore illegal without elaborate inquiry as to the precise harm they have caused or the business excuse for their use." *Id.*

Among the practices that fell within this category were price fixing, United States v. Socony-Vacuum Oil Co., 310 U.S. 150, 218 (1940) ("[P]rice fixing agreements are unlawful *per se* under the Sherman Act and that no showing of so-called competitive abuses or evils which those agreements were designed to eliminate or alleviate may be interposed as a defense."); division of markets, United States v. Addyston Pipe & Steel Co., 85 F. 271, 272 (6th Cir. 1898), *aff'd*, 175 U.S. 211 (1899) ("A number of companies manufacturing iron pipe in different states formed a combination whereby the territory in which they operated . . . was divided [amongst them] . . . [The court held] that this was an unlawful combination, both at common law and under the [Sherman A]ct of 1890, against trusts and monopolies."); group boycotts, Fashion Originators' Guild v. Fed. Trade Comm'n., 312 U.S. 457, 466 (1941) (In response to a combination of garment manufacturers who used its collective power to prevent retailers who copied patterns from gaining the combination's designs, the Court held that a group did not have to specifically engage in price fixing or production control to deprive the consumer and trigger the Sherman and Clayton Acts.); and tying arrangements, International Salt Co. v. United States, 332 U.S. 392, 396-99 (1947) (The use of tying agreements or contracts which obligate the buyer to buy from the seller, tend to amount to price fixing and foreclosure of the market to competitors, both of which are monopolistic and are unreasonable *per se*.).

154 Fox & Sullivan, *supra* note 134, at 955 (footnote omitted).

155 William Baxter was appointed first Assistant Attorney General in Charge of the Antitrust Division and he implemented the Administration's changes. *Id.* at 945. It was Baxter's goal to achieve "(1) trivialization of the dominant antitrust thinking, which he pictured as wrongheaded, fuzzy, unworkable, protectionist, and perverse; and (2) a simple economic model to answer all antitrust questions by deductive reasoning." *Id.* For more expansive detail on these changes, see *id.* at 945-7 (footnote omitted).

156 First, *supra* note 144, at 1067-68. The desire to improve both industry's efficiency and America's international competitiveness was reflected in the new strategic approach that was being taken toward trade and antitrust. For example, in the 1984 Merger Guidelines, U.S. Dep't. of Justice 1984 Merger Guidelines, 49 Fed. Reg. 26,823 (June 29, 1984), there is an obvious effort to take into consideration both the interest in exempting beneficial mergers from the rules and the effect that foreign competition has on the American economy. The purpose section of the guidelines states that "[w]hile challenging competitively harmful mergers, the Department seeks to avoid unnecessary in-

reform and enacted the National Cooperative Research Act ("NCRA")[157] "to increase the predictability of the antitrust laws regarding cooperative ventures."[158] It codifies the rule of reason standard[159] and provides that, if joint ventures are registered with the Department of Justice or the Federal Trade Commission, they will be exempt from treble damages.[160]

While the guaranteed application of the rule of reason standard and the protection from the threat of treble damages have eased some of the pressure on potential joint ventures, the NCRA does not truly address the problems still facing American HDTV innovators because it does not remove enough of the barriers that inhibit their success. As the first legislative attempt to modernize antitrust law, "the NCRA is a significant piece of legislation [that] . . . demonstrates that Congress has recognized the importance of innovation to the American economy and to America's competitiveness in a world marketplace."[161] It is still, however, only a first step.

There are several problems with the Act which consign the NCRA to be only a legislative acknowledgement of the need for reform, rather than a true reform. First, the Act does not give guidance concerning the application of the rule of reason. Instead of listing criteria that suggest a reasonable cooperative effort, the NCRA only states that a court should examine "all relevant factors affecting competition, including, but not limited to, effects on competition in properly defined, relevant research and development markets."[162] This very ambiguous standard is ill-equipped to incorporate the "special characteristics of the innovation process in a quickly changing industry."[163]

A second problem with the Act is that members of a qualifying joint venture are not automatically exempt from litigation. The Act merely guarantees that the rule of reason standard will be used in reviewing a joint venture and that a plaintiff is limited to actual rather than treble damages. The participants in an HDTV venture could still face a huge judgment against them

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terference with that larger universe of mergers that are either competitively beneficial or neutral." *Id.* at 26,827.

157 15 U.S.C. § 4301 (1988).

158 Gattuso, *supra* note 19, at 8.

159 15 U.S.C. § 4302.

160 *Id.* § 4303 (a) (violators only face actual damages).

161 Jorde & Teece, *supra* note 100, at 51.

162 15 U.S.C. § 4302 (1988).

163 Jorde & Teece, *supra* note 100, at 52. It also reflects the same type of analysis that the Supreme Court, in *Northern Pacific*, called "fruitless." Northern Pacific Ry. Co. v. U.S., 356 U.S. 1, 5 (1958).

stemming from an amorphous legal standard and unfavorable rules.[164]

Finally, the NCRA does not address the importance of capitalizing on the research and development created through commercialization. The Act only authorizes research and experimental development,[165] while it specifically excludes commercialization.[166] Therefore, the incentive to form a cooperative effort and invest heavily in new technologies is undermined since the participants would still face full antitrust liability if they tried to manufacture and sell a new product. With no way to recoup their initial investment through commercialization, companies have little incentive to make use of the limited protection of the Act.[167] The NCRA has failed to remove the anti-industry bias inherent in the existing antitrust laws, leaving corporations and the government as adversaries.[168]

B. *Financing*

In addition to the antitrust dilemma, American developers also face the problem of raising the large amounts of capital necessary to fund the development and commercialization of HDTV. American public companies are pressed by their investors to show short term profits. Furthermore, they do not have access to the large amount of capital to which their Japanese counterparts

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164 In addition to the damage award, the members of a joint venture would also have to pay the plaintiff's legal fees. The defendants, on the other hand, can only recover their legal expenses after successfully fending off the plaintiff's allegations by proving that the suit was "frivolous, unreasonable, without foundation, or in bad faith." 15 U.S.C. § 4304(a)(2) (1988).

165 *See id.* § 4301(a)(6)(A-E).

166 The NCRA precludes

> entering into any agreement or engaging in any other conduct restricting, requiring, or otherwise involving the *production or marketing* by any person who is a party to such venture of any *product, process, or service*, other than the production or marketing of proprietary information developed through such venture, such as patents and trade secrets. . . .

Id. § 4301(b)(2) (emphasis added). In Japanese, the term *kenkyu kaihatsu*, the literal translation of research and development, includes commercialization by definition. The concepts of research and development and commercialization are synonymous to the Japanese. Jorde & Teece, *supra* note 100, at 55 n.148.

167 Between 1985 and 1988, only 111 joint ventures had filed for NCRA protection. According to Jorde and Teece, most of these endeavors are small to modest in size, and many "are not of great competitive momento." Jorde & Teece, *supra* note 100, at 54.

168 Seven years after the implementation of the NCRA, many companies still feel that the government is "against them." George Hatsopoulos, CEO of Thermo Electron Corp., a leading manufacturer of environmental instruments, heart-assist devices and other high technology equipment, stated that, "[i]f anything, the U.S. government shows animosity toward industry." Edmund Faltermayer, *The Thaw In Washington*, FORTUNE, June 10, 1991, at 46.

have access.[169] Potential financial backers are largely uninterested in whether new discoveries might open up new avenues in research and development; they are primarily concerned with quick returns on their investments.[170] This attitude creates a financial environment where long term development atrophies. For example, Motorola has the technology to enter the HDTV contest, but is worried about the outlay of capital it would require. As Steve Tainsky, vice president for marketing and sales for consumer products pointed out: "[T]his is a very expensive investment for something that might show up in 10 to 15 years, but certainly isn't right around the corner. . . . There just doesn't seem to be any government support [for HDTV] here."[171]

American industry does not suffer from a lack of ideas or inadequate research and development.[172] It does, however, face the problem of using the results of its research and development to create commercially viable products.[173] Without the access to low cost capital that the Japanese enjoy,[174] American companies are finding it difficult to raise enough money to bring their technology to a commercial threshold. The VCR is a striking example of this problem. The first commercial VCR for home use was created in 1970 by Ampex, an American company.[175] Unable to

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169 For a discussion of Japanese companies' access to capital, see *supra* notes 117-22 and accompanying text.

170 Since the practical use of some discoveries might take years to develop, companies need the financial means to fund these projects over long periods of time. Unfortunately, "U.S. corporations, goaded by Wall Street to keep earnings on the rise, are often loath to stay the course. So are startup companies. As a rule, unless their venture capital backers foresee handsome returns in a few years, nothing is ventured." Faltermayer, *supra* note 168, at 47. For a discussion of an example of this problem, concerning the flat-panel display industry, see *infra* notes 178-84 and accompanying text.

171 Cohen, *supra* note 69, at 29 (modification in original).

172 Currently, the United States is still the technological leader in aircraft manufacturing, super-computers, advanced semiconductors, PRESTOWITZ, *supra* note 1, at 135-37, 247, and flat-panel displays, *see infra* notes 178-84 and accompanying text.

173 Many experts believe that the United States lacks the ability to capitalize on its own research by commercializing it. Lansing Felker, director of the Industrial Technology Partnerships program of the Office of Productivity, Technology & Innovation ("OPTI") in the U.S. Department of Commerce, stated, "The U.S. has no shortage of innovation. We've created vast amounts of technology, but the Japanese have applied it and commercialized it." Therese Welter, *Hurdling R&D's Gaps*, INDUSTRY WK., July 13, 1987, at 51. Richard Solomon of MIT's Media Laboratory believes that America is "where the action is, but we don't make the stuff. That's crazy . . . [I]f we keep getting out of manufacturing, we're going to be very poor." Brown, *supra* note 16, at 15. James Carnes of the Sarnoff Research Center stated that "Japan eats our lunch . . . [by taking American developments] to product quickly, and they are masters of fine-tuning production . . . Now Japan is trying to learn how to invent. They pay U.S. companies to set up labs and teach them — but all the while they do not shortchange their product engineering and manufacturing." *Prime Example*, *supra* note 82, at 2.

174 For a discussion of Japanese companies access to capital, see *supra* notes 117-22 and accompanying text.

175 Leonard Silk, *Can U.S. Recover In Electronics*, N.Y. TIMES, May 4, 1990, at D2.

come up with the money to refine and promote the system it called "Instavideo,"[176] the company sold it to Sony.[177]

The next victim of this commercialization problem is likely to be flat-panel displays.[178] This problem will have a strong impact on HDTV development. Industry observers believe that flat-panel displays will replace the bulky cathode ray tube, now used in most NTSC and HDTV sets, computer screens and all other types of displays.[179] "Japanese companies are collectively investing billions of dollars, hoping to dominate [this] technology. . . ."[180] In the 1980s, as in the case of the VCR, American companies were the first to develop the technology.[181] When, however, a market failed to materialize, many sold off their operations or shut them down.[182] America's flat-panel display industry now rests with a small group of start-up companies, who lack the funding to proceed toward commercialization.[183] Without the funding to accelerate development, American HDTV developers may have no opportunity to prevent a repetition of the Ampex scenario, thus setting a dangerous precedent for America's ability to compete in critical high technology industries.[184]

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176 *See supra* note 13.

177 Jerome Wiesner, *Technology Transcends The Borders of Nations*, N.Y. TIMES, Jan. 8, 1991, at A20 ("[T]he Ampex Company had to license its VCR to Sony because it did not have the funds to market it."); *see also* Silk, *supra* note 175, at D2 ("Ampex, lacking adequate financial resources . . . decided not to pursue the VCR market, which was picked up by the Japanese.").

178 Flat-panel display technology involves the etching of electronic transistors onto plates of glass. Andrew Pollack, *U.S. Project Humbled By Japan's Lead*, N.Y. TIMES, Dec. 18, 1990, at D1. Experts believe that this technology will lead to flat television screens, which could be hung on walls like pictures. Cook, *supra* note 20, at 76.

179 Pollack, *supra* note 178, at D1.

180 *Id.*

181 *Id.* at D13. These companies included I.B.M., AT&T, General Electric, and ITT. *Id.*

182 To date, 18 companies involved in the manufacture of flat-panel displays have either sold their operations or mothballed their facilities. *Id.*

183 These include Planar Systems of Beaverton, OR., MRS Technology Inc. of Chelmford, MA., Plasmaco Inc. of Highland, N.Y., Magnascreen of Pittsburg, PA., Optical Imaging Systems Inc. of Troy, MI., and Projectavision Inc. of N.Y. Estimates place the figure necessary to begin commercial production of the displays from the development stage at between $30 million and $200 million. *Id.* at D1. Many find that investors are unwilling to invest against the Japanese. *Id.* at D13. Xerox, the only large American company involved in flat-panel display production, currently produces prototype screens which provide higher resolution pictures than Japanese versions; it is seeking partners to create a spinoff company. *Id.*

184 The concern over America's technological superiority will continue to grow as the twentieth century comes to an end. According to the Council on Competitiveness, a non-profit research group comprised of CEO's, educators and labor leaders, which examined 94 critical technologies, the United States either leads the world or is on par with "world best" in 61 key industries, but trails in 33. COUNCIL ON COMPETITIVENESS, GAINING NEW GROUND: TECHNOLOGY PRIORITIES FOR AMERICA'S FUTURE (1991). While

To a certain extent, this is already happening. Japanese firms are trying to acquire William Glenn's wave band compression system,[185] while no American firm seems interested in his work. Glenn feels that "they're suffering from 'short-term investment syndrome.' "[186]

Glenn's comment, along with the examples of the VCR and the flat-panel display, suggest there is an endemic problem with our industrial system. American companies have developed cutting edge technology in electronics but have not been able to profit from their discoveries. The Japanese, however, have. American companies are hampered by the government from creating commercially viable products from their own research. Unless the American industrial climate changes, the possibility of a similar fate for America's HDTV technology is very real.[187]

A review of the obstacles that confront American HDTV competitors indicates that the two most important steps to be taken are making further adjustments to the antitrust laws and providing the capital to allow these companies to use their research to create a viable commercial system.

VI. What Can Be Done

In response to the need to reevaluate the purpose and enforcement of American antitrust laws, the federal government is preparing to further the trend started by the NCRA; a new attitude seems to be emerging which recognizes that the traditional antitrust approach needs to be reconsidered.[188] While the Bush

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America maintains its edge in biotechnology, artificial intelligence, and aerospace, it is faltering and losing ground in laser technology, computer chip technology and robotics. *Id.* The Council's study indicated that approximately two-thirds of the federal government's research and development funding goes to defense, while only 0.2% goes to commercially important high technology. This compares unfavorably to the 4.8% spent by Japan and 14.5% spent by Germany. *Id.*

185 Cohen, *supra* note 69, at 29. For a discussion of Glenn and his work, see *supra* notes 47-48 and accompanying text.

186 *Id.*

187 Currently, seven of the American flat-panel display manufacturers, calling themselves the Advance Display Manufacturers of America, have filed a dumping case against Japanese manufacturers, claiming that they were selling the displays at prices below market value to stunt the fledgling American industry. Andrew Pollack, *Duties Sought From Japan On Some Computer Screens*, N.Y. Times, July 9, 1991, at D1, D14. The duties that the Commerce Department proposes to assess still have to be approved by the International Trade Commission and would only affect the more advanced active matrix liquid crystal displays and not the passive versions that are commonly used in current computer screens. It still remains to be seen whether the American flat-panel display industry will fare better than the television industry did when the federal government dealt with Japanese dumping.

188 Both Congress and the Bush Administration, led by Secretary of Commerce Robert Mosbacher, support "changes in antitrust policy . . . because of a prevailing concern

Administration initially appeared to reject the idea of a federally sponsored industrial policy[189] and would only go as far as to suggest passive financing in the form of a reduction in capital gains tax for companies investing in HDTV,[190] its current position seems to be in favor of a more active form of intervention.[191] If

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that some of the nation's laws and regulations inhibit American industry's ability to compete with foreigners." Peter T. Kilborn, *Antitrust Easing Will Be Proposed To Aid TV Effort*, N.Y. TIMES, May 4, 1989, at A1, D7. An example of this new vision of antitrust is the recent action taken concerning the landmark breakup of AT&T. *See supra* note 146. On June 5, 1991, the Senate voted 71 to 24 to allow the seven independent regionals, which were created from AT&T, to manufacture telephone equipment. Edmund L. Andrews, *'Baby Bells' Bill Passed By Senate*, N.Y. TIMES, June 6, 1991, at D1. This vote reverses, in part, the 1984 ruling which barred the 'Baby Bells' from manufacturing their own equipment and created an almost $800 million deficit in the American telecommunications market. *Id.* Many legislators were concerned that this position was "damaging the competitive position of American companies in global communications markets," *id.*, rather than protecting the market from anticompetitive forces via traditional antitrust values. Critics of the decision, especially AT&T and other equipment suppliers, fear that the result of the reversal will be that the Bells will simply buy their own equipment and use their profits from other areas to subsidize their equipment prices. *Id.* at D1, D7. Whether the action taken on the AT&T breakup will help close the telecommunications deficit is unknown and hotly debated. What is clear is that the federal government is willing to involve itself with industries that have been hurt by global competition, even though it means going against and reforming existing antitrust thinking.

189 In 1989, the first year of President Bush's administration, Commerce Secretary Mosbacher identified HDTV as an industry that could be aided by the government as part of an effort to revive America's high technology fortunes. John S. McClenahen, *Now Do We Need A National Industry Policy?*, INDUSTRY WK., March 18, 1991, at 62. In that same year, however, Secretary Mosbacher announced that the government would not be involving itself with this industry. *Id.* Members of the Administration, including White House Chief of Staff John Sununu and Budget Director Richard Darman, instructed Secretary Mosbacher to stop promoting this connection, since it was too representative of a formal industrial policy, which went against the established government tenet of keeping "hands off" of business. *Id.*

190 Kilborn, *supra* note 188, at A1.

191 In fact the Bush Administration has crossed a Rubicon of sorts by involving itself in both supporting industry and planning how to develop it, particularly the HDTV industry. A special White House panel of experts has recently identified 22 industries, including HDTV, which are "essential to national defense as well as economic prosperity." Faltermayer, *supra* note 168, at 47. According to D. Allan Bromley, director of the Critical Technologies Institute, which was mandated in 1990 by Congress, and assistant to the President for science and technology, part of the goal of the Institute and the new policy of the Administration, is to "do long-range strategic planning, working very closely with the private sector to develop these technologies." *Id.*

To help fund these industries, the Commerce Department has set up the Advanced Technology Program ("ATP"). *Id.* at 51. The purpose of ATP is to provide "seed money to help U.S. businesses collaborate on precompetitve, generic technologies with high commercial potential." Rep. Don Ritter, *We Can't Let This One Slip Away: High-Definition Technology Is Crucial To Future of U.S. Manufacturing*, COMPUTERWORLD, May 6, 1991, at 25 (Rep. Don Ritter is also the sponsor of several pieces of pro-HDTV legislation. For a discussion of these proposals, see *infra* notes 193-205 and accompanying text). One of the ATP recipients is Photonics Imaging Inc. Faltermayer, *supra* note 168, at 51. Photonics, one of the flat-panel display developers discussed *supra* in notes 178-82 and accompanying text, might be one of the companies that develops the next generation of giant screen HDTV's. *Id.* The $1.35 million allocated to Photonics out of a total of $9 million is insignificant when compared to the amounts the Japanese are spending. *Id.* It represents, however, a major shift in the Administration's policy. The National Institute of Standards and Technology, which administers ATP, will have a budget of $36 million

an HDTV program could be launched successfully under new legislation, it could set an example for other high technology products.[192]

Equally important is that such an arrangement would not compromise the consumer's interest in having a competitive marketplace.[193]

Currently, Congress is taking two approaches to the antitrust problem; the first is HDTV-specific, while the second is more general and expands the provisions of the NCRA.[194]

A. *The HDTV Specific Approach*

The High Definition Television Research and Development Act of 1989[195] ("Research and Development Act") is designed to

> improve the competitive position of the United States domestic consumer electronics industry by supporting research and development into technologies which have substantial economic and national security potential; . . . and to assist in the

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to dole out in the next year. *Id.* Currently, Congress is considering the American Technology Preeminence Act, which would allow the Commerce Department to provide further support for joint ventures involved in new industries, especially HDTV, as well as to enact antitrust reform, investment tax credits, and create a commission to study ways to reduce capital costs for the high definition and other industries. Ritter, *supra*, at 25.

[192] According to Wayne Berman, an advisor to Secretary Mosbacher and chairman of an interagency HDTV study group, "HDTV is the kind of policy challenge that if you meet it successfully, then potentially [you can] apply it to other technologies[.]" Kilborn, *supra* note 188, at D7.

[193] The Bush Administration's plan would take the tact of supporting key high technology industries without "intervening in the market's selction of winners and losers." Faltermayer, *supra* note 168, at 49. Once companies have developed their technologies to the point where they can compete with products, customers would still be able to pick the brands that they like best. Government intervention would only affect the ability of these companies to *get* to the competition stage. *Id.* This parallels the views of the Council on Competitiveness, *supra* note 184, which maintains that government support could still allow companies that are normally rivals for customers to collaborate until the point that " 'technical uncertainties are sufficiently reduced to permit preliminary assessment of commercial potential.' " *Id.* at 49. Afterwards, these companies could develop their own versions of the product and let the consumer choose.

Whatever form the government's final plan takes, it will not be a copy of the Japanese system. The political and economic diversity of the United States would make such bureaucratic control over industrial development difficult, if not impossible. Alan S. Blinder, *What's Good For Japan Isn't Necessarily Good For the U.S.*, BUS. WK., Sept. 23, 1991 at 23. In fact, the Japanese system, so effective in the 1950s and 1960s, is retooling itself to deal with the changed climate of the 1990s. *Id.* Congress is exploring a series of smaller, less centralized efforts to help businesses expand and gain access to new technology. John Holusha, *An Industrial Policy, Piece by Piece*, N.Y. TIMES, July 30, 1991, at D1-D2. Heavily supported by private corporations, this program has set up several industrial centers, such as the Midwest Manufacturing Technology Center in Ann Arbor, Michigan, around the country. *Id.* at D2.

[194] The bills discussed in this Note are not the only proposals that have been or are being considered by Congress. They are, however, representative of the legislative options that are being considered.

[195] H.R. 1516, 101st Cong., 1st Sess. (1989).

> establishment and funding of one or more joint research and development ventures in high definition television through the Advanced Technology Program at the National Institute of Standards and Technology.[196]

In addition to exempting HDTV joint ventures from antitrust prosecution, the bill also contains "anti-Ampex" provisions which would protect against the "transfer of intellectual properties, trade secrets, or proprietary data overseas."[197] Section IV of the Act calls for joint venture participants to report annually to the Secretary of Commerce, Congress and the Comptroller General, and summarize the group's progress, goals, expenditures and accounting practices to ensure that the purposes of the Act are being fulfilled.[198] The sponsors of the proposed Research and Development Act[199] have also included provisions for government funds to be distributed to sanctioned joint ventures.[200]

Representatives Ritter and Levine have sponsored a second HDTV-specific bill entitled the High Definition Competitiveness Act of 1989[201] ("Competitiveness Act"). This proposal, like the proposed Research and Development Act, addresses both the antitrust issue and the need for outside financing. In Title II of the proposed Competitiveness Act, joint HDTV ventures engaged in research and development, as well as production, are not deemed to be illegal restraints on trade.[202] The bill also proposes to extend the protection of the NCRA to cover manufacturing and commercialization.[203]

The Competitiveness Act contains several advantages over the Research and Development Act. The first is in the structure of its funding. Like the Research and Development Act, the Competitiveness Act provides for appropriations of $100 million per year through 1994.[204] The bill also proposes special government programs to fund the general development and commercialization of HDTV technology,[205] as well as a separate program to finance pilot

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196 *Id.* § 2(b)(1)(2).

197 *Id.* § 3(a). This is especially important given the degree to which monochrome and color television technology was licensed to Japanese companies in the 1960s and 1970s. *See supra* notes 98-100 and accompanying text.

198 H.R. 1516, 101st Cong., 1st Sess. (1989) § 4.

199 These include Rep. Brown (R-Cal.), Rep. Walgren (R-Penn.), Rep. Ritter (R-Penn.), Rep. Mineta (R-Cal.) and Rep. Bochlert (R-N.Y.).

200 *Id.* § 6. The bill provides for allocations of $100 million to be allocated for each fiscal year, ending on Sept. 30, through 1994.

201 H.R. 1267, 101st Cong., 1st Sess. (1989).

202 *Id.* § 202.

203 *Id.* § 203.

204 *Id.* § 306.

205 *Id.* § 302(a).

manufacturing projects.[206] The Competitiveness Act requires the government to maintain close observation of a joint venture's progress to ensure that the money is spent correctly, and requires the joint venture participants to put up their own funds.[207]

Another advantage of the Competitiveness Act is the government's involvement beyond antitrust exemption and financial support. Title IV provides for a federal procurement mechanism designed to "secure lower unit costs by mass purchase offers, and . . . guarantee HDTV manufacturers substantial market potential to induce investment in research and development."[208] Additionally, the bill calls for studies to be made on the effects of HDTV ventures on foreign trade and relations[209] and on what measures could be taken to support domestic HDTV industries in the international market.[210] Ironically, these factors give the Competitiveness Act an almost "Japanese" orientation.[211]

Critics of the HDTV-specific approach fault the proposals on two grounds. Some argue that it is a mistake to emphasize one industry over others,[212] especially one that not only may fail to merit the attention, but that will also take efforts away from projects that are more worthwhile.[213] Other opponents feel that it would be wrong to spend hundreds of millions of taxpayer dollars on developing a product that could turn out to be a commercial failure.[214] The taxpayer would take a financial risk equal to that of the HDTV companies, but would not share in the profits if HDTV turns out to be a success.[215] These opponents claim that government money

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206 *Id.* § 302(b).

207 Under Title III of the bill, the Secretary of Commerce, after consulting with the FCC, the NTIA and other relevant federal agencies would award funds to the projects that are likely to lead to successful lines of research, development and commercialization. *Id.* § 303. Quarterly reports on progress would be required as well as a comprehensive report summing up the results of the financial assistance provided. *Id.* § 305. As part of the application process, joint ventures would be required to provide their own private financing, which would then be matched by the government. *Id.* § 303.

208 *Id.* Title IV.

209 *See id.* § 303.

210 *See id.* Title V.

211 Japanese industry has often used government procurement to help create economies of scale during initial manufacturing stages and have also had the government structure an international trade policy. PRESTOWITZ, *supra* note 1, at 33-35.

212 Cynthia A. Beltz, *How To Lose The Race: Industrial Policy And The Lessons Of HDTV*, THE AMERICAN ENTERPRISE, at 22-23. Ms. Beltz has just written a book entitled HIGH-TECH MANEUVERS: THE POLICY LESSONS OF HDTV (1991).

213 Gatusso, *supra* note 19, at 5.

214 *Id.* A counter argument to this position is that, like the space program, from which taxpayers did not *directly* profit, HDTV development will create new jobs and, in addition, provide the taxpayer with a new group of consumer goods.

215 Currently, federal allocations have been relatively modest; through March 1989, $30 million had been granted to certain HDTV developers through the Defense Advanced Research Projects Agency ("DARPA"). *At The Crossroads Of U.S. HDTV Policy*,

might artificially keep HDTV development alive, thus preventing the funds from being used for more viable projects. Federal subsidies may also prevent the HDTV industry from being responsive to new technology by favoring one system over another, thereby stilting the innovative process the legislation was designed to promote.[216] Because the government can not fund every proposal, some groups would not benefit from federal patronage. Federal agencies would be forced to speculate as to who would be the HDTV winners and losers.[217] Favored companies would have an artificial edge, and companies that develop even better technology, and do not benefit from federal largess, could fall by the wayside.[218] The concept of the federal government involving itself with the selection of "winners and losers," however, is neither new, nor is it always disasterous.[219]

Some criticism of the proposed government intervention also reflects a traditional antitrust perspective rather than an anti-HDTV stance. Cynthia Beltz suggests that government support of HDTV development is unnecessary.[220] Beltz points to the recent digital advances made by American companies as proof that the industry does not need assistance.[221] This view ignores the fact that gaining a leading edge in research is not the problem. American companies do not seem able to make the transition from the research stage to viable commercial production.[222] Beltz also contends that internationalization of the HDTV industry has reduced the need for a solely American effort and offers the Philips, Thomson, Sarnoff consortium as an example.[223] This cooperation, however, was not

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Annenberg Washington Program, FEDERAL NEWS SERVICE, Mar, 30, 1989, *available in* LEXIS, Nexis Library, Federal News Service File.

216 Gattuso, *supra* note 19, at 5.

217 Claude Barfield, *It's Still High-Definition Intervention*, WALL ST. J., May 8, 1989, at A16.

218 Gatusso, *supra* note 19, at 5. Critics fear that financial favoritism would create an environment that would not only freeze out the smaller innovators, but would also isolate HDTV companies from consumer demands. Barfield, *supra* note 217, at A16.

219 The government's support of certain technologies has created whole industries and allowed others to thrive. Examples are the computer industry the satellite industry, the food production industry and the energy industry. Ritter, *supra* note 191, at 25.

220 Beltz, *How To Lose The Race*, *supra* note 212.

221 Beltz states that

> [a]lthough the United States chose not to heed the advice of activists to map out a national HDTV plan and underwrite it with a major investment program comparable to that of the Europeans and the Japanese, we may yet emerge the winner, with a superior HDTV system more adept at communicating with other digital electronic systems in twenty-first-century homes and businesses.

Id. at 26.

222 *See supra* notes 165 and 169 and accompanying text.

223 Beltz, *How To Lose The Race*, *supra* note 212, at 26.

borne out of a recognition of the benefits of sharing; it was a reaction to the Japanese advantage in the technology race.[224]

Beltz sees the efforts to create independent national industries as having "disrupted trade, incited disputes over issues like local content, and threatened to further fragment markets."[225] She believes that the United States government should not try to support the American HDTV effort, but instead "should discourage [these attempts] and work toward a stronger, viable multilateral system capable of releasing some of the steam now powering industrial-policy demands both at home and abroad."[226] This position, however, assumes that American HDTV developers will still be in the running.

Currently, Japan has its own HDTV system and the Europeans are intent on creating their own. Both have endorsed some form of industrial policy to support the creation of the technology. The United States has not. In light of the developments in other countries, Beltz's suggestion, that efforts to help American developers are futile and inappropriate because there is disagreement on how to approach the problem, is somewhat cavalier to say the least.[227]

B. *The General Approach*

The second, non-HDTV-specific approach expands the ideas promulgated under the National Cooperative Research Act of 1984 ("NCRA"). This approach is adopted in the proposed National Cooperative Innovation and Commercialization Act of

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224 The Japanese have also taken the battle for HDTV to Europe, and executives there are worried that they face the "question of whether their industry can retain a role in the cutting edge of high technology or will end up as merely a 'screwdriver' assembly operation for the Japanese." Geoffrey Murray, *Euro-Japan Rivalry Expected Over HDTV*, KYODO NEWS SERVICE, June 4, 1990, *available in* LEXIS, Nexis Library, Kyodo News Service File. "To try and forestall the Japanese, Philips and Thomson plan to market a new set . . . which will offer a fair approximation of high-definition pictures" and have "already joined up with National Broadcasting Co. (NBC) [and Sarnoff Labs] to devise an HDTV system for the American market." *Id.* The issue has become so acute that after a meeting on creating a world HDTV standard,

> one French official was quoted as saying the issue was a battle for world technological supremacy, and Japanese sources in London predict that trade wars over television imports and related technology between Japan and the European community could soon become more acute than the vexed question of Japanese car imports.

Id.

225 Beltz, *How To Lose The Race*, *supra* note 212, at 27.

226 *Id.*

227 Japan has used "cooperative industrial research with government support" to mount successful offensives in the semiconductor and computer industries, Faltermayer, *supra* note 168, at 48, as well as in the television industry. *See supra* notes 94-95 and accompanting text; PRESTOWITZ, *supra* note 1, at 200-04. Such a system helps develop industries and protects them from some of the more crippling effects of global competition. "Short of a world in which all governments agree to keep hands off civilian high-tech industries . . . the U.S. has little choice but to do likewise." *Id.*

1989 ("NCICA").[228] While the NCICA is not designed to replace the NCRA, it expands its coverage and authority to

> promote innovation and profitable product commercialization, facilitate trade, and strengthen the competitiveness of United States based firms in world markets by clarifying the legal standards applicable to cooperative innovation arrangements and by establishing a procedure by which firms may seek approval for their cooperative innovation arrangements from an authorizing agency [for example, the Federal Trade Commission], in consultation with the Secretary of Commerce, and thereby obtain exemption from criminal antitrust actions or civil antitrust damage actions.[229]

Under this proposal, cooperative arrangements could include programs which are designed to commercialize discoveries and share research.[230] Under the provisions of the Act, once a cooperative arrangement's application has been approved, it is exempted from both federal and state antitrust laws, and insulated from all damages.[231]

Like the NCRA, the NCICA espouses a rule of reason standard as the basis for FTC approval of a cooperative arrangement[232] and for judicial determination. To prevent the ambiguity inherent in the NCRA's rule of reason standard[233] over what constitutes reasonableness, the NCICA lists the factors that should be taken into consideration by a court.[234]

This proposal, unlike the HDTV-specific bills, does not contain any provisions for federal funding. Proponents of the anti-federal-subsidy position argue that the antitrust exemptions will be enough

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228 H.R. 1024, 101st Cong., 1st. Sess. (1989). The NCICA was introduced by Rep. Boucher (D-Vir.) and Rep. Campbell (R-Cal.).

229 *Id.* § 2(b).

230 Included in the definition of a "cooperative innovation arrangement" are "manufacturing, producing, marketing, distributing, or otherwise commercializing products, processes, or information developed jointly." *Id.* § 3(a)(7)(E).

231 Under Section 5(d),

> [N]o damages, interest on damages, costs, or attorney's fees may be recovered in any criminal or civil action based in whole or in part on conduct within the scope of a cooperative innovation arrangement approved by the authorizing agency . . . under the antitrust laws, or any State laws similar to the antitrust laws, if such approval was in effect at the time of the conduct. The remedy of *injunctive relief* available under section 16 of the Clayton Act (15 U.S.C. 26) shall be available in such criminal or civil action.

Id. § 5(d)(emphasis added). This expands the protection under the NCRA which limits awards to actual, instead of treble, damages.

232 The FTC will consider, along with duration and market share, whether "the [cooperative] arrangement is reasonable, because the procompetitive benefits outweigh any anticompetitive harms. . . ." *Id.* § 5(b)(2)(A).

233 *See supra* notes 151-53 and accompanying text.

234 H.R. 1024, at § 5(b)(5)(A-E) 101st Cong., 1st Sess. (1989).

to ensure that the proper funds are available. These exemptions encourage developers to invest collectively and share the risks, thus making entry into the HDTV field financially reasonable.[235] In addition, cooperative measures will likely reduce the number of redundant efforts. Time and money will not be wasted on dead ends or the creation of technology that already exists elsewhere.[236]

The companies involved in HDTV research and production, however, believe government financing is necessary if they are to compete with the Japanese.[237] Without government assistance, companies that want to compete in the HDTV race may be forced to sell off some of their divisions to raise capital, thus negatively effecting their future.[238] From the perspective of the companies participating in HDTV development, government should be enacting other measures, either in the form of low interest loans, subsidies, or tax incentives, in addition to modifying the antitrust laws, to bring all of America's potential to bear on HDTV development.

VII. CONCLUSION

In examining the HDTV development issue, the beginnings of a familiar pattern emerge. American firms have developed the cutting-edge technology in a field which has the potential to generate billions of dollars once it is commercially introduced. These firms, however, are competing with companies from Japan which, although they lag in technology, far outpace their American counterparts in funding and the ability to engage in joint ventures. The Japanese have been able to overcome previous

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235 *See* Gattuso, *supra* note 19, at 7. ("By pooling resources, the cost and risk associated with development efforts is spread, making such efforts more affordable."); Welter, *supra* note 173, at 52 ("By sharing resources, costs, and risks, companies can then transfer the results into their own later, lower-risk, and proprietary product or process applications in the innovation pipeline, for which the outcome is more predictable.").

236 Faltermayer, *supra* note 168, at 50.

237 *See* note 154 and accompanying text; *see also* Kilborn, *supra* note 188, at A1, D7 (John Taylor, a Zenith spokesman stated "We think the Federal Government should invest $100 million a year over the next four years in [HDTV]."); Faltermayer, *supra* note 168, at 48-49. George Hatsopoulos, CEO of Thermo Electron, believes that investments like "research, product development, marketing, and employee training — cannot be used as collateral for borrowing and must be financed from corporate equity." Michael Ciesinski of SEMI, the chipmaking equipment and materials trade association, stated that "companies with heavy R&D and expansion needs 'are in desperate need of capital.' " *Id.* at 48-49.

238 In order to raise capital for its HDTV research and development, Zenith sold its computer division to a French company. Laura Malt, *Zenith Deal Pumps Funds Into HDTV*, ELECTRONIC MEDIA, Oct. 9, 1989, *available in* LEXIS, Nexis Library, Crain Communications File. While it is not unreasonable for companies to reorganize to take advantage of new opportunities, it sets a dangerous precedent when companies are forced to canabolize themselves in order to get adequate funding, when their Japanese counterparts do not have the same financial pressure.

technological deficiencies through licensing, as with the first television revolution, or by buying the technology from underfunded innovators, as with the VCR. If the United States hopes to use HDTV to help redevelop its television industry, it must take steps to encourage cooperation and ensure an adequate supply of capital. The legislative options discussed in this Note, if adopted, will certainly improve the ability of American companies to commercialize their technology. The HDTV-specific bills offer the best chance for the creation of an American high definition television industry and the opportunity to take advantage of all of its ancillary benefits. While such legislation would be a milestone in the history of American antitrust law, it would also be shortsighted. To the extent that separate laws would have to passed to allow every other industry, both new and old, to work together in this fashion, criticism of governmental intervention is valid. American economic development would be slowed to the pace of the American Congress.[239] The NCICA, on the other hand, would allow the HDTV industry and others to gain many of the advantages that are enjoyed by their global competitors, particularly the Japanese. Instead of carving out an exception for one industry, this broader approach would create a new environment for the development of new technologies and the redefinition of established ones. This proposed legislation, however, does not go far enough to cure the financial anemia that the HDTV developers themselves have said will cause the demise of an American-made system. To ensure the success of HDTV, a combination of both HDTV-specific benefits and more general antitrust reformation is needed to provide both the capital and the legal foundation to compete with Japan. If the federal government does nothing, American HDTV developers will be at a serious disadvantage or will suffer the same fate as the American monochrome and color television industries.

The development of an American HDTV industry can be viewed as an end in itself, but it can also be seen as a microcosm of the entire American high technology industry and its ability to survive in the global market. As the twenty-first century approaches and the realization of the importance of high technology becomes clearer, the effort to develop a commercially viable system of HDTV represents a test of America's ability to change

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239 Jeffrey Hamilton of Westford Technology Ventures, a New Jersey venture capital firm, expressed fear of the effect that over-bureaucratization could have on a federal industrial policy: " 'They could micromanage and pork-barrel it to death.' " Faltermayer, *supra* note 168, at 48.

its laws and economic philosophy so that it can take advantage of its wealth of ideas. Success could lead to a resurgence of American technological preeminence. Failure could lead to technological and economic obsolescence.

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