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**Consuming Information More or Less: An Examination of Information  
Consumption Behavior as a Strategy for Substituting, or Supplementing the  
Consumption of Other Information Goods**

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It looks like it will be another year of flat CD sales, and I think to some degree that's got to be attributed to the fact that there's so much music available online --Tom Adams<sup>1</sup>

During the Napster era, music sales were up 4 percent. Since the death of Napster, music sales are down 40 percent. The music industry seems to be ignoring this obvious relationship. ... Napster was a promotional tool. Promotion sells music. No promotion, no sale. Hello! Blaming the downturn on piracy is ridiculous when the major conduits are shut off, underground, or scattered. -- John C. Dvorak<sup>2</sup>

When new media emerge, old media quaver. Telephone, movies, radio, television, videocassette recorders, cable, personal computers—each posed a challenge to the existing ecology of media. Some arrivals, such as television, became national uproars; while others—radio, VCRs, and cable—traumatized existing media by enabling new consumer behavior. Yet, in each case, commercial media interests took the shock and adjusted their markets; and, in each case, consumers expanded the media mix available to them.<sup>3</sup> However, for the most part, consumer uses of different media have been treated as isolated phenomena. No overall pattern nor interactions have been proposed to tie them together. Now comes the Internet; sometimes characterized as a "disruptive technology,"

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<sup>1</sup> Tom Adams, president of entertainment industry research and consulting firm Adams Media Research, as quoted in "Online Music's Gains May Deflate CD Prices," *Houston Chronicle* (28 Dec. 2001): 10.

<sup>2</sup> Dvorak, John C. "Muddy Thinking and the Music Biz," *PC Magazine* (21 May 2002): 57.

<sup>3</sup> For a broad overview, see, for example, Blum, J. M. (1976). V was for victory: Politics and American culture during world war II. New York, Harcourt Brace Jovanovich. Comstock, G. A. (1989). Evolution of american TV. Newbury Park, CA, Sage. Dayan, D. and E. Katz (1992). Media events: The live broadcasting of history. Cambridge, MA, Harvard University Press. Fischer, C. S. (1992). America calling: A social history of the telephone to 1940. Berkeley, CA, University of California. Marvin, C. (1988). When old technologies were new: Thinking about electric communication in the late nineteenth century. New York, Oxford. Mueller, M. L. (1993). "Universal service in telephone history: A reconstruction." Telecommunications Policy 12(July): 352-369. Pool, I. d. S. (1983). Forecasting the telephone: A retrospective technology assessment. Norwood, NJ, Ablex. Spigel, L. (1992). Make room for tv: Television and the family ideal in postwar america. Chicago, IL, University of Chicago.

sometimes as part of a wave of "creative destruction" for businesses.<sup>4</sup> Most recently, this argument has been put forth by the music industry against Napster-like services, and by Sony against PC software that emulates Sony PlayStation. Yet, it may be that the Internet gives individuals a chance to fundamentally reshape how they obtain information, whether it is news or entertainment.

In this paper, by drawing primarily upon data from the Pew Internet and American Life Project, we examine the role of the Internet in people's information-gathering patterns and raise the following questions.

- ◆ Do some individuals substitute the Internet for traditional media?
- ◆ By providing another means to retrieve information, does the Internet supplement traditional media?
- ◆ Do some Internet users navigate Internet content in order to download relevant information goods (news, music, movies); and, in so doing, develop interrelated strategies for the consumption -- and purchase -- of information?

More specifically, we examine the extent to which Internet information gathering leads to substitution versus supplementarity of consumption, specifically addressing two competing hypotheses about information consumption in the Internet age:

- 1) The potential for digital content to be easily copied and distributed over the Internet will further encourage consumers to exploit the "information wants to be free" character of the Internet; and, thereby, hamper the growth of the market for information goods and services.
- 2) Some information consumers practice a sophisticated arbitrage process across different media, by weighing the value of online & offline information; consumers pursuing this strategy reinforce active participation in the electronic marketplace.

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<sup>4</sup> The origins of the Internet elicit multiple interpretations. Abbate, Janet (1999) *Inventing the Internet*, Cambridge, Mass : MIT Press. Christos J.P. Moschovitis ... [et al.] (1999) *History of the Internet : A chronology, 1843 to the present*, Santa Barbara, Calif. : ABC-CLIO. Friedheim, William (1999) *A web of connections : A guide to history on the Internet*, Boston : McGraw-Hill College. Gillies, James and Robert Cailliau (2000) *How the Web was born : the story of the World Wide Web*, Oxford : Oxford University Press. Randall, Neil (1997) *The soul of the Internet : net gods, netizens and the wiring of the world*, London ; Boston : International Thomson Computer Press. Wolinsky, A. (1999) *The history of the Internet and the World Wide Web*, Berkeley Heights, N.J. : Enslow Publishers.

In the abstract, these are fundamental questions; yet the advent of the Internet reframes their implications for policy. As a case in point, the conflict between Napster and the Music industry illustrates the issues.

### **Poles of the Debate: Napster Versus the Music Industry**

Did Napster threaten CD sales or did Napster abet CD sales? The intensity of this debate stems from the erosion of a business model. Since the 1920s, the music industry model demonstrated great profitability through a simple relationship: the industry makes money by selling CDs containing music recorded by artists under contract. Consumers who want to hear music by these artists do so by purchasing CDs.<sup>5</sup> Consumers may hear the same music on radio; but, to have it available on demand, they must purchase a recording.<sup>6</sup> Over the last four years, however, consumers have had an alternative available: via the Internet or directly from CDs, they can download music files (MP3s) to their computer hard drives. The debate emerging out of this challenge to the music industry business model is unusual in that the poles of the debate stand out so clearly.

In November 1999, *Wired News* outlines the issue from the perspective of the industry, “New music software that aims to make finding MP3 files easier may work a little too well. Some insiders say Napster promotes music piracy, while others say it raises security concerns.” Not surprisingly, copyright formed the legal and policy prism through which the industry interpreted this new development. Still, industry betray some uncertainty, “‘If you download a file, and weren’t licensed [to do so], then there’s going to be an infringement issue,’ said Mike Sobel, attorney at Grant and James, an intellectual-

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<sup>5</sup> See for example, Chanan, Michael (1995) *Repeated takes: A short history of recording and its effects on music*, New York : Verso. Douglas, Susan J. (1987) *Inventing American broadcasting, 1899-1922*, Baltimore : Johns Hopkins. Howland, Kenney, William (1999) *Recorded music in American life : the phonograph and popular memory, 1890-1945*, New York : Oxford. Kennedy, Rick and McNutt, Randy (1999) *Little labels--big sound: Small record companies and the rise of American music*, Bloomington: Indiana University Press. Negus, Keith (1999) *Music genres and corporate cultures*, New York : Routledge.

<sup>6</sup> Throughout this article, we refer to recorded music media as CDs, though this is not strictly accurate. Americans have been purchasing recorded music since the 1890s, when Edison cylinders (made from Bakelite) went on the market. Since then, recorded music has been available on 16, 78, 45, and 33.33 rpm records, as well as 2 and 8 track cassettes, while Compact Disks (CDs) have retailed since the early 1980s. Magnetic tapes for recording had been developed in the 1930s and available for home use since the late 1950s. Thus, copying took place with industry toleration for several decades. The potential conflict only came to a head with the proliferation of personal computers and digitizing/downloading software in the 1990s.

property law firm in Palo Alto. ‘Napster probably won’t get sued for making the program,’ he said, but individuals who use it to trade pirated copies could possibly be sued for copyright infringement.” The article ends with the hint of an alternative view, “Napster says it wants to help people sell more CDs.”<sup>7</sup> Soon thereafter, the Recording Industry Association of America (RIAA) sues Napster.

By February 2000, the Los Angeles Times embraces the interpretation of Napster as a menace, “The latest technological threat to the music industry is a program called Napster ... Napster has overwhelmed almost everything in its path, demonstrating how swiftly a relatively simple piece of software can move from the desktop of a teenage programmer into an internet phenomenon capable of threatening an entire industry.”<sup>8</sup>

March, and the Recording Industry Association of America has been in court suing Napster since late 1999; however, Napster’s theory of information and human behavior is only just emerging in the press, “‘We see ourselves as the MTV of the Internet,’ says Napster CEO Eileen Richardson, a 38-year-old former venture capitalist.” Richardson begins to make the case that downloading MP3s supplements CD purchases rather than substitutes for them, though the rest of the article exhibits no appreciation of her hypothesis.<sup>9</sup> At about the same time, Nicholas Petreley, writing in *InfoWorld*, offers an alternative view, suggesting the music industry see Napster as the glass half full, “Nevertheless, the music business understandably hates Napster because it encourages piracy. The knee-jerk reaction is to make it more difficult to copy and distribute recorded music in order to crack down on the piracy. But I wonder if the music industry ought to see a new opportunity when it tooks [sic] at Napster instead.”<sup>10</sup>

By mid year 2000, the mainstream press is still announcing the threat to the industry, but dissident voices from within the industry begin to emerge. Chuck D., hip-hop and rap musician, makes the business case for supporting Napster, indicating an understanding of consumers’ use of information to supplement rather than substitute, “I believe that artists

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<sup>7</sup> Sullivan, Jennifer “Napster: Music is for Sharing,” *Wired News* (1 Nov. 1999): <http://www.wired.com/news/print/0,1294,32151,00.html>

<sup>8</sup> Miller, Greg and Huffstutter, P.J. “File-Sharing PC Software Shakes Up Music World,” *The Los Angeles Times* (24 Feb. 2000): A1.

<sup>9</sup> Warren Cohen, “Napster is Rocking the Music Industry: The Popular Website Has Powerful Enemies,” *U.S. News & World Report* (6 March 2000): 41.

<sup>10</sup> Petreley, Nicholas “Napster Doesn’t Have to Undermine the Way the Music Industry Makes Its Money,” *InfoWorld* (13 Mar. 2000): 62.

should welcome Napster. We should think of it as a new kind of radio -- a promotional tool that can help artists who don't have the opportunity to get their music played on mainstream radio or on MTV.”<sup>11</sup> The argument against the music industry's business model also gains articulation from rap to computing, as in this critique from *InfoWorld*, “There's no rationalization for piracy; it is what it is. However, rampant music piracy online indicates that the music industry's distribution and pricing model is out of whack with what people want. The problem isn't the piracy; the problem is unhappy customers.”<sup>12</sup> And, beyond the business model, comes recognition of a new guiding concept from David E. Weekly in *Wired News*, “‘Regardless of the future of Napster, file-trading applications will continue to exist on the Web ... The amazing thing about Napster isn't the program, it's the idea,’ Weekly said. ‘You can't litigate the idea. You can't tell people that they need to stop thinking about the idea. Already we've seen commercial alternatives pop up with the Scour Exchange (a commercial file-trading exchange), so even if Napster is sued out of existence, there are alternatives popping up everywhere.’”<sup>13</sup>

In the spring of 2001, the debate takes on urgency beyond the arena of competing ideas and business models when music sales figures come in for 2000 showing a decline. The International Federation of the Phonographic Industry places the global market at 36.9 billion US dollars in 2000, an overall decline of 1.3% from 1999. The biggest drop comes in the US where sales of CD singles plunge 39%, continuing a decline begun in 1998 before Napster.<sup>14</sup> Throughout 2001 and into 2002, press reports of surveys commissioned by all interested parties reveal no clear-cut pattern of consumer behavior.<sup>15</sup>

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<sup>11</sup> Chuck D., “‘Free’ Music Can Free the Artist,” *New York Times* (29 April 2000): A13.

<sup>12</sup> Dugan, Sean M. “Napster Sends a Message to Music Industry: ‘Your Customers Aren't Happy,’” *InfoWorld* (1 May 2000): 102.

<sup>13</sup> Brad King, “Napster May Not Matter Anymore,” *Wired News* (15 May 2000): <http://www.wired.com/news/print/0,1294,36315,00.html>

<sup>14</sup> David Teather, “Music Pirates Sink Industry: Global Record Sales Drop for First Time as US Consumers Succumb to Napster Effect,” *The Guardian* (20 April 2001): 1.23.

<sup>15</sup> Dugan, Sean M. “Napster Sends a Message to Music Industry: ‘Your Customers Aren't Happy,’” *InfoWorld* (1 May 2000): 102. Brad King, “Napster: Music's Friend or Foe?” *Wired News* (14 June 2000): <http://www.wired.com/news/print/0,1294,36961,00.html>. Stuart Millar, “Music Firms Losing Digital Piracy Fight: New Internet Services Feed Demand for Free Downloads,” *The Guardian* (8 Feb. 2002): 1.11. “Business: The Long

The industry's woes continue as album sales sink 8% in the first half of 2001, winding up at 3% for the year.<sup>16</sup>

In October 2001, Napster negotiates an agreement with the music industry that blocks Napster from free file sharing, and a subsequent injunction is upheld.<sup>17</sup> The music industry, however, continues to sue other similar services, amidst an artists' insurrection.<sup>18</sup> Moreover, intense lobbying by the industry pays off in proposed legislation, The Music Online Competition Act of 2001, to guarantee royalties to publishers from online music downloads.<sup>19</sup> In the meantime, similar free sharing services proliferate throughout the Internet.<sup>20</sup> By contrast, the industry launches online services,

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Goodbye; Napster," *The Economist* (18 May 2002): 64. Gary Andrew Poole, "Music World Can Mine Internet," *USA Today* (5 June 2002): A13.

<sup>16</sup> Martin Peers, "Sales of Recently Released Albums Fell 8% in 1st Half, Hurting Profits," *The Wall Street Journal* (16 July 2001): B7. "Music Industry Blue as Sales Off 3%," *Houston Chronicle* (4 Jan. 2002): 2. Brad King, "Slagging Over Sagging CD Sales," *Wired News* (17 April 2002): <http://www.wired.com/news/print/0,1294,51880,00.html>.

<sup>17</sup> Jon Healey, "Music Publishers, Labels Near Deal on Subscription Services; Internet: Record Companies Would Pay \$1 Million in Advance Royalties to Run Song Distribution Services," *The Los Angeles Times* (6 Oct. 2001): C3. David Kushner, "The Digital Beat: Napster's on the Other Side of the Online Music Smackdown," *RollingStone.com* (16 Oct. 2001): <http://www.rollingstone.com/news/newsarticle.asp?nid=14769>. Napster sought Chapter 11 protection in June 2002. "Napster Says Bankruptcy Represents New Beginning," *Houston Chronicle* (4 June 2002): 4.

<sup>18</sup> Brenda Sandburg, "Questions Linger After Napster's Defeat: New Litigation Involving Music and Movies Raises the Next Generation of Copyright Infringement Questions," *Legal Times* (3 Dec. 2001): 6. Phil Kloer, "Music Revolt Big-Name Singers Unite, Demand Rights," *The Atlanta Journal-Constitution* (21 Dec. 2001): F1.

<sup>19</sup> Ruth Yodaiken, "Dollars for Downloads," *ABA Journal* 87, (Dec. 2001): 70.

<sup>20</sup> Julian Bright, "Right to Replay," *Communications International* (Jan. 2002): 46-48. Stuart Millar, "Music Firms Losing Digital Piracy Fight: New Internet Services Feed

such as MusicNet, that seek to preserve as much of the traditional profit structure as possible by blocking transfers to portable appliances, exchanges with friends, and permanent possession of downloaded songs; they fail.<sup>21</sup>

Still, influential voices within the industry hold fast to its traditional view of profitability; as Patrick Goldstein writes in *The Los Angeles Times*, “Things have gotten so bad that Michael Greene, the head of the industry group that puts on the Grammy Awards, devoted most of his recent Grammy telecast speech to lambasting music fans for ‘stealing artists’ livelihood,’ calling file sharing ‘the most insidious virus in our midst.’”<sup>22</sup> In late 2002, the story is far from over. The industry continues to challenge sharing services aggressively and shows no sign of shifting its paradigm nor its model.<sup>23</sup>

Ironically, there’s really only one side in this dispute, as sides go. The music industry is an institution over one hundred years old, a mature industry completely integrated into the mainstream economy. In opposition, if that’s the correct term, lies Napster, not really an opponent but rather the expression of information supplementing behavior by tens of millions of anonymous individuals. The industry has decided to concede no ground, accept no responsibility for misinterpretations, nor entertain the necessity of reinvention. This “take-no-prisoners” strategy might offer the best option were the music industry locked in a bitter struggle with a weaker opponent bent on destroying it; after all, when one opponent refuses to give ground, the other—if weaker—will eventually collapse.<sup>24</sup>

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Demand for Free Downloads,” *The Guardian* (8 Feb. 2002): 1.11. Jon Healey, “File-Sharing Sites Find Perfect Pitch; Music: Despite Legal Battles, Successors to Napster are a Hit with Consumers, Advertisers,” *The Los Angeles Times* (16 May 2002): A1.

<sup>21</sup> Anna Wilde Mathews, Martin Peers and Nick Wingfield, “Off-Key: The Music Industry Is Finally Online, But Few Listen—Big Labels Counter Napster With MusicNet—Offering Little and Charging for It—Now, a Focus on a 2.0 Version,” *The Wall Street Journal* (7 May 2002): A1. “Business: The Long Goodbye; Napster,” *The Economist* (18 May 2002): 64.

<sup>22</sup> Patrick Goldstein, “A Music Lesson on Piracy for Hollywood,” *The Los Angeles Times* (12 March 2002): F1. David Lieberman, “How Dangerous are Pirates? Music Industry Blames Dying Sales on Copying,” *USA Today* (5 April 2002): B01.

<sup>23</sup> “Austin’s Audiogalaxy Faces Napster-Like Fight,” *Houston Chronicle* (26 May 2002): 42. John C. Dvorak, “Muddy Thinking and the Music Biz,” *PC Magazine* (21 May 2002): 57. Har, Amy, “Record Labels Want 4 Internet Providers to Block Music Site,” *The New York Times* (17 August 2002).

<sup>24</sup> For similar interpretations, see both, Clausewitz, Carl von (1989) *On war*, Princeton, N.J.: Princeton University Press. and Sun-tzu (1963) *The art of war*, New York: Oxford University Press.

So, it would appear that the industry positioned Napster within that frame; and, in that frame, the industry has bested Napster.

In the intensity of the debate, the consumer has loomed as violator of conventions, as pirate, and as criminal. The consumer as information seeker, however, has been overlooked. What of going on line to seek and to purchase?

### **Online Information Gathering and Consumption: General Data**

In this portion of the paper, we review some of the general Pew survey findings pertaining to information gathering and online music. The Pew Internet Project conducts random digit dial telephone surveys of all Americans with a focus on Internet users and their online surfing and search patterns. We then present econometric analysis of the relationships between online purchasing, information gathering, and online music listening and downloading.

As a multifaceted tool for information gathering, it is no surprise that Internet users do a range of things online, whether that means listening to music, buying goods and services online, or scratching various information itches. In a number of studies, the Pew Internet & American Life Project has shown how Internet users embrace the Net as an information utility and to connect to family and friends.<sup>25</sup> Indeed, notwithstanding the focus on online commerce during and after the dot-com speculative bubble, the Internet has been and remains primarily an information utility for people. Internet users go online to find out information that matters to them. Email remains the most popular online activity for online Americans; 93% of Internet users are emailers with half checking email on the average day. Other information gathering activities are popular for Internet users, with two-thirds (66%) of Internet users getting news online, three in five getting health care information online and government information, and half having done some online research for their jobs.

Transactions, even with the demise of many commercial online sites, are a popular and growing activity for Internet users. More than half (55%) of all Internet users as of August 2001 have bought a product online at some point, up from 48% having done this in March 2000. Half of all Internet users as of July 2002 have purchased a travel service online, up from 36% of Internet users in March 2000. Online banking is also popular with 32% of Internet users in July 2002 having at one time done banking online, up from 17% in March 2000. With overall Internet penetration in the United States growing from 49% in mid-2000 to 61% by mid-2002, the absolute numbers of Internet users engaging in online transactions has grown significantly in the past two years.

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<sup>25</sup> The Pew Internet & American Life Web site summarizes the project's numbers on the online users' Internet activities at: [http://www.pewinternet.org/reports/chart.asp?img=Internet\\_Activities.jpg](http://www.pewinternet.org/reports/chart.asp?img=Internet_Activities.jpg)

## **Online Music Consumption**

Internet users' online music habits might be seen as a hybrid of information gathering and transacting online. The Pew Internet Project's surveys ask both whether people download music from the Internet and whether people listen to music over the Internet (i.e., stream it to their desktops). When Pew first asked people whether they download music online in July 2000, 22% of Internet users said they had. This number rose to 26% in August 2001; again, with Internet penetration growing over that time period, the number of Americans who had ever downloaded music grew substantially, from about 20 million people to 30 million. With respect to streaming, 35% of Internet users said they listened to music online in July 2000, a number that increased to 38% in August 2001. In probing people's music-buying habits, Pew's September 2000 report "Downloading Free Music" found that 15% of online music downloaders have paid for the music they retrieve from the Internet. Roughly half of online music consumers said they wind up buying "most" or "some" of the time music they first sample online.<sup>26</sup>

## **Online Confidence Building**

The preceding numbers represent snapshots at different points in time when it comes to online transactions and information gathering. The Pew Internet Project's longitudinal study of the same set of user's online experience over a year's time (March 2000 and March 2001) shows that Internet users are more likely to do online transactions and search for information online as they gain Internet experience. The longitudinal study, called "Getting Serious Online" shows that Internet users, with a year of additional online experience, are more likely to engage in online transactions, such as buying a product online or participating in online auctions. They are also more likely to turn the Internet for information, whether that is news or health care, and more likely to listen to or download music or do other "new media" activities such as stream an audio or video clip. Online transactions showed the sharpest increase, especially among new users. As new Internet users gain more comfort with the online world, they are more likely to do trusting things, such as send a credit card number over the Internet to buy something. Some information gathering activities, such as surfing for online health care information or going to government Web sites, experience strong growth among both new Internet users and the most veteran surfers.<sup>27</sup>

In sum, even with the demise of many dot-com companies and the litigation surrounding online music, people continue to turn to the Internet as a source for music, information about music, information of all kinds, and transactions of all kinds. In fact, there has

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<sup>26</sup> Amanda Lenhart and Susannah Fox, "Downloading Free Music: Internet Music Lovers Don't Think It's Stealing," September 2000. Pew Internet & American Life Project.  
<http://www.pewinternet.org/reports/toc.asp?Report=23>.

<sup>27</sup> John B. Horrigan, "Getting Serious Online: As Americans Gain Experience, They Use the Web More at Work, Write Emails with More Significant Content, Perform More Online Transactions, and Pursue More Serious Activities." March 2002. Pew Internet & American Life Project.  
<http://www.pewinternet.org/reports/toc.asp?Report=55>

been steady growth in using the Internet for transactions and information gathering in the past two years. The precise relationship between information consumption and online consumption of goods and services is difficult to disentangle. Both are increasing, however, and the next section will try to establish how the two may be related.

### **The Relationship between Information Gathering and Online Consumption: Analysis of Data from the Pew Internet Surveys**

To sort out the relationships between online purchasing, online music listening and downloading, and information gathering, we analyze data from Pew's August 2001 survey. In that survey, individuals were asked whether they download music from the Internet, buy goods and services online, and about a host of other Internet activities, such as looking for religious information online, health care information, hobby information, maps and directions, news, and whether they share files with others online. That survey had Pew's routine questions about whether respondents watched television or television news yesterday. The survey also had a series of questions about whether and how often people use search engines to find online information. With respondents queried on a wide range of Internet activities, with music listening being just one among them, the survey structure allows online music listening to be situated within a range of online activities, in addition to other media use (i.e., watching TV, TV news, or reading the newspaper).

To explore this data further, factor analysis is used to determine what kinds of commonalities exist within Internet users' surfing habits. The factor analysis is then used to build an econometric model that examines the drivers behind online purchasing. For Internet activities, the August 2001 Pew survey asked whether Internet users have ever done the following things online:

1. Send or receive email,
2. get news,
3. get health care information,
4. use instant messaging,
5. download music,
6. listen to music online,
7. share files over the Internet,
8. download files other than music online,
9. go to government Web sites,
10. do online research for their jobs,
11. do Internet searches,
12. use search engines,
13. look up phone numbers online,
14. get religious information online,
15. buy products online such as books, music or toys,
16. get hobby information,
17. and go online just for fun.

Other Internet-related questions include type of access (dial-up versus broadband), number of years of online experience, and how frequently they go online.

In addition to Internet activities, survey respondents were asked about media use (i.e., whether they watched TV or TV news yesterday, whether they read the paper yesterday) and standard demographic questions, such as race, income, marital status and educational attainment.

Factor analysis yielded meaningful commonalities among fervent Internet users, online music listeners and downloaders, and ‘Net information searchers (i.e., frequent users of online search engines). Fervent Internet users are defined as those online for three or more years, users with college degrees, those who do online research for work, and those who typically log on daily; high factor loading scores (in excess of .500) were recorded for these variables. Online music listeners and downloaders are defined as Internet users who download music, listen to it online, share files of any sort, and download other files; factor loading scores exceeded .600 for these variables. ‘Net information searchers are defined as Internet users who say they have searched for information online, used an online search engine, and sought hobby information online.

A logit model is then used to explore the drivers behind purchasing products on the Internet. The Pew Internet Project surveys ask respondents if they have ever bought a product online, such as books, music, clothing, or toys. Respondents who have ever bought something online – 55% of Internet users answered “yes” to this question in August 2001 – are coded as 1, the remainders 0. Independent variables in the model are fervent users, online music listeners, ‘Net information searchers (variable definitions above), as well as various social and demographic characteristics, such as race, sex, income, employment status, and whether the user is a student or not. There are also measures of people’s offline media use, such as whether they read the newspaper daily and whether they watch TV news.

## **Model Results**

The table below summarizes results of the logit model, which does a reasonably good job of explaining the causal factors behind Internet users’ decision to purchase something online. The concordance rate for the model is 74%; a concordance rate of 50% would mean the model has no explanatory power (i.e., flipping a coin would do as good a job at predicting whether people buy online as the model). The model, in other words, improves on randomly flipping a fair coin by 24 percentage points.

As for the coefficient estimates, the nonlinear functional form in which logit models express the relationship between a linear combination of explanatory variables and the dependent variable makes it difficult to interpret the estimated coefficients directly. Consequently, we express the marginal relationship between each explanatory variable on online buying in terms of an “odds ratio”. The odds ratio represents the odds in favor of

having bought something online over not having bought attributable to a given

### Drivers of Online Purchasing

	Coefficients	Odds Ratios
Fervent Internet Users	.899	2.46***
Internet Information Searchers	.933	2.54***
Music Listeners	.239	1.27**
Home Broadband User	.495	1.64**
Read Newspaper (yesterday)	-.098	.907
Watch TV News (yesterday)	-.674	.510***
<b>Demographic/Social Variables</b>		
White	.571	1.77***
Sex (male=1)	-.314	.723***
Age	-.086	.917
Parent with child online	-.209	.811**
Student	-.246	.782*
Income (household inc > \$50K)	.258	1.30*
Married	.495	1.64***
Employment Status	-.324	.723*
Intercept	.549	1.73**
<b>Percent Concordant</b>	74%	N=899

\* statistically significant at 10% confidence level.

\*\* statistically significant at 5% confidence level

\*\*\* statistically significant at 1% confidence level

*Note: All variables are dichotomous (dummy) variables with the exception of AGE, which is continuous*

online. Other positive predictors of online purchasing are income, whether one has a home broadband connection, marital status (married people are more likely to buy online), and race (whites are more likely to buy online than non-whites). Measures of offline media use had a negative and (in the case of watching TV news only) significant impact on whether a person had bought a product online.

It is not surprising, given the body of work by the Pew Internet Project, that fervency of Internet use – that is, number of years online, frequency of use, accompanied with high

explanatory variable holding all other explanatory variables constant at their mean value.<sup>28</sup> An odds ratio above 1 for a variable means a user having the behavioral characteristic associated with that variable has a greater chance, in the model at issue here, of having bought something online. That is, an odds ratio greater than 1 for income means that a person living in a household whose income exceeds \$50,000 annually is more likely to have bought something online. If the odds ratio on the variable “Sex” (coded for 1 if the respondent is male) is less than 1, then being a male lowers the odds of making an online purchase. The use of odds ratios also allows comparison of magnitude of predictive impact across variables.

### Interpreting the Data

The data’s fervency and ‘Net information searching indexes are the strongest predictors of people’s online purchasing. If people listen to music online or download, they are more likely to have bought a product

<sup>28</sup> “Odds” are calculated as  $p/(1-p)$ , where  $p$ =the probability of buying a product online. The odds ratio is the probability of buying online divided by the probability of not doing so. When the explanatory variable is a binary indicator, as most of the variables here are,  $p$ =the probability of buying a product online given  $x_j=1$  and given that all other explanatory variables not equal to  $j$  are set at their mean values, all divided by the probability of not buying conditioned in an identical fashion.

levels of educational attainment – is a strong causal factor behind people’s decision whether to buy things online. Nearly all of the Pew Internet Project’s studies show that online experience is a strong predictor of the frequency and scope of online activities. The fact that income is a significant predictor of online buying is hardly surprising, nor is the presence of a home broadband connection, as that increases the convenience of conducting an online transaction.

The positive effect on Internet buying of online information searching suggests that the wealth of information available on the Worldwide Web empowers users to make not only better informed purchases, but also encourages them to make those purchases online. The effect identified here is strongly positive and independent of factors such as income, gender, and Internet experience. It may not necessarily be the case that information searching fosters purchases of music, but it seems clear that the information available on the Web is broadly beneficial to the electronic marketplace.

The connection between listening to and downloading music online (combined with other factors such as file sharing and general data downloading) is not as obvious. Several possibilities present themselves. First, the process of listening to and downloading music online requires a degree of technical sophistication. Buying something online requires a modest amount of technical sophistication and a substantial dose of trust in technology. Usually, however, such technical sophistication and online trust are associated with Internet experience and education – attributes already captured in the “fervent Internet users” variable. A second possibility, then, is that online music listening is a signal of qualities of Internet users not captured in the data, but that drive online buying.

A third possibility, of course, is that downloading and listening to music online, as well as sharing and downloading other types of files, prompts people to buy online because what they buy online is, at least sometimes, music. The survey question about online buying prompts people with such goods as books, music, and toys. This may place music purchasing prominently in their minds when responding to the question. If that is the case, this supports a “sampling leads to buying” hypothesis for online music.

Whatever the precise relationship between online buying, information searching online, and online music listening (and associated file sharing and downloading), it seems clear that Internet users who are rich in information are more likely to buy things over the Internet. Efforts to restrict the flow of information – whether that means “walled gardens” imposed by Internet service providers or shutting down file sharing services – may harm electronic commerce by taking valuable information away from ardent consumers.

### **Beyond Napster: Substitution Versus Complementarity of Information**

The twists and turns in the Napster story illustrate the upheaval that ensues when a new paradigm arises; however, the music industry is not unique.<sup>29</sup> During this same period, publishing has undergone a less dramatic but nevertheless heated debate over the lending role of libraries, as abettors of book sales or as detractors; and, though following a different course, the debate between publishers and librarians bears on the same fundamental issues as Napster.<sup>30</sup> As well, other examples of substitution/supplementarity exist, though none as dramatic as that in the music industry (see Table 1). In other words, manipulating media in the Internet Age has set off debates across the information landscape. Our purpose here is to suggest some fundamental reasons why individuals participate in the electronic marketplace by manipulating information across media.

### **Information Supplementing Behavior as Innate**

What motivates individuals to acquire, so many media, and then to pursue a supplemental strategy requiring a multimedia mix? We suggest that the fundamental answer is in our genes.

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<sup>29</sup> The metaphor of a paradigm shift comes to mind because of the parallels between the responses of music industry executives, and scientists who cling to an old paradigm upon the arrival of a new one. A vast literature focuses on paradigm shifts; for the main entry point see, Kuhn, T. (1962). *The structure of scientific revolutions*. Chicago, IL, University of Chicago. Kuhn, T. (1977). "Second thoughts on paradigms," *The structure of scientific theories*. F. Suppe. Urbana, IL, University of Illinois Press.

<sup>30</sup> See, Caroline Jenkins, "New Protection Against Online Pirates," *Folio: The Magazine for Magazine Management* (2002): 157-159. Linton Weeks, "Pat Schroeder's New Chapter; The Former Congresswoman is Battling for America's Publishers," *The Washington Post* (7 Feb. 2001): C1. John N. Berry III, "Editorial-With Enemies Like These....," *Library Journal* (15 March 2001): <http://libraryjournal.reviewsnews.com/index.asp?layout=articlePrint&articleID=CA158884>. "AAP's Schroeder Ripped as She Defends Need for Digital Rights Management," *Library Journal Academic Newswire* (31 May 2001). Seth Shulman, "Owning the Future: Looting the Library," *Technology Review* (June 2001): <http://www.technologyreview.com/magazine/jun01/shulman.asp>. Clifford Lynch, "The Battle to Define the Future of the Book in the Digital World," *First Monday* 6, no. 6 (June 2001): [http://www.firstmonday.org/issues/issue6\\_6/lynch/index.html](http://www.firstmonday.org/issues/issue6_6/lynch/index.html). Lisa Bowman, "Library 'Radicals' Targeted in Latest Copyright Battles," *CNET News* (12 July 2001): <http://news.com.com/2102-1023-269775.html>. Katherine Bonamici, "Are Libraries the Next Napster? Maybe. Which has Both Publishers and Libraries Worried—and Trying to Adapt Copyright Law to the Electronic Age," *Time.com* (24 July 2001): <http://www.time.com/time/nation/printout/0,8816,168798,00.html>. "Without the Hype, Report Says E-Books are Growing," *Library Journal Academic Newswire* (23 July 2002).

Over the past several decades, evidence has accumulated from many diverse areas that the infant, from birth, will seek out stimulation and even work for it. In fact, the seeking of stimulation has by now achieved the status of a drive or motivational tendency not unlike that of hunger, an analogy that is not farfetched. Just as food is needed for the body to grow, stimulation is needed to provide the brain with the "raw materials" required for the maturation of perceptual, cognitive, and sensori-motor processes. The infant is provided with the tendencies to look for and get this needed 'brain food.' --Daniel Stern.<sup>31</sup>

Granted the stimulation of infants seems a long way from downloading the latest Bruce Springsteen album; but, given the human compulsion for information, it may well be that downloading satisfies an innate need, along with all other information seeking behaviors.<sup>32</sup> If so, the music industry has no hope of controlling what is an inherent human behavior.

### **Information Supplementing Behavior and the Idea of information**

The fundamental condition that gives meaning to the information age is the ease with which people think of information as a thing. We take it for granted that libraries, clocks, spying, and plagiarism, all have to do with information. We think in terms of information as an influence on our behavior, and we weigh the advantages of specific information before making a decision. As a result, economic innovations—e.g., new markets for information, and the accompanying social perspectives—e.g., downloading MP3s in

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<sup>31</sup>Stern, D. (1977). The first relationship: Mother and infant. Cambridge, MA: Harvard, pp. 52-53.

<sup>32</sup>Basch, M. F. (1988). Understanding psychotherapy: The science behind the art. New York: Basic Books. Bruner, J. (1975). The ontogenesis of speech acts. Journal of Child Language(2), 1-19. Bruner, J. (1990). Acts of meaning. Cambridge, MA: Harvard. Bruner, J. S. (1973). Beyond the information given: Studies in the psychology of knowing. New York: Norton. Stern, D. (1977). The first relationship: Mother and infant. Cambridge, MA: Harvard. At what point does stimulation become information? A tough question. One might hypothesize, for example, that the stimulation an infant receives from being held tightly by the mother contributes to its bonding, and is essentially non informational; while the stimulation an infant experiences by hearing language leads to the formation of symbols, the basis for information. Consequently, it would appear that not all forms of stimulation elicit the changes in the brain that develop to process information and form thoughts; yet, at some point, the processing engages and takes off. So, though it seems obvious that infants don't have fully formed thoughts, the transition from stimulation to information is anything but clear.

order to decide whether to buy the album, have become so common that we do not recognize them as a social construction. But thinking about information in this way *is* a social construction; the social attitude that considers information as an abstract essence and treats it as a thing encourages disregard for medium in the quest for information. In this sense, the vulnerability of the music industry business model results from its failure to accept the idea of information. The music industry is in the business of selling containers and using information as the bait; whereas, music consumers seek information without commitment to any particular type of container. That Internet users adopted sharing services in such astounding numbers indicates that they understood, however imperfectly, the distinction between information and its container; that the industry persists in attempting to thwart this separation and continue to fuse the information with package indicates that they do not understand. To generalize, the idea of information is the fundamental social construction of the information age; individuals will increase behaviors that access information from one source in order to access information from another, because it makes sense to them.

### **Information Supplementing Behavior as Social Construction**

The more one goes online, the more one purchases online; the easier it is to go online, the more one purchases online; and, the more one understands going online, the more one purchases online. On the surface, these findings fall into the category of discovering the obvious, yet there's more going on here than purchasing. Information seeking on the Internet serves to create an impression of possibilities. The act of downloading provides experience that translates into expectations and expertise. If the Internet is to develop as a major marketplace, consumers will have to learn what to expect from it and how to behave in it. In this case, facility comes from experience. Consequently those teenagers who download MP3s are learning to use the Internet, something we all suspected.

### **Suggestions for Policy**

Policy makers should:

1. Rethink policy responses, away from a simple tendency to support existing interests by accepting their point of view. Instead, policy makers should explore the consequences of competing interpretations. In the case of the music industry, this would mean evaluating the claim that those who download do not reduce their purchases of CDs. Considerable research has been conducted on this very question; therefore, a meta analysis is in order.
2. Be wary of a business model that turns its customer base into its enemy. When businesses, like the music industry, rail against their customers as pirates and describe downloading as a virus, those they seek help from should think twice before offering wholehearted support.

3. Think strategically. If it can be demonstrated that those who download are also learning to act as purchasers on the Internet, then the stakes go beyond the supposition that piracy is taking place. The future of the Internet as a marketplace depends on capabilities of would be consumers. Consequently, downloading should be understood as an advance organizer of Internet consumer behavior, and therefore supported.