

**15.561A: Information Systems:  
From Technology Infrastructure  
to the Networked Corporation**

**15.566: Information Technology as an  
Integrating Force in Manufacturing**

**Class #9:  
TRANSFORMING THE MARKETS:  
ELECTRONIC MARKETPLACES**

Spring 1998  
Sloan School of Management  
Massachusetts Institute of Technology

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## Electronic marketplaces

2

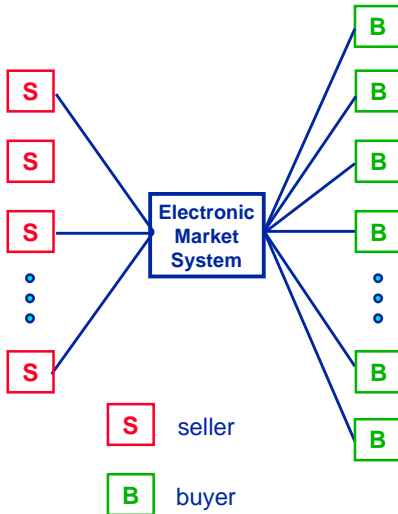
### Computerized markets with several buyers and sellers

- System matches a buyer and a seller
- example: computerized systems for securities trading
- example: airline reservation systems
- example: Web-based markets like onsale.com, pricewatch.com



## An Electronic Marketplace

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## Internet Present: An Emerging Electronic Marketplace

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- The Internet Is Becoming a Place Where People Meet to Exchange Information, Goods, Services, and Money—That Is, A Marketplace
- Companies Use It to Publish Catalogs, Price Lists, Sales Promotions—and to Take Orders



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## COMPONENTS OF AN (ELECTRONIC) TRANSACTION

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- Search
- Price discovery
- Logistics
- Settlement
- Trust



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## The Power of Electronic Marketplaces

- Good for economic efficiency
  - reduced transaction costs and better informed customers
- Bad for monopolists
  - better informed customers
  - reduced switching costs
  - more price competition
- Rapidly growing
  - on-line services will be a \$5billion market by 2000 (Microsoft estimate)
  - estimates for electronic commerce range from \$0.5 to \$3 trillion by 2000

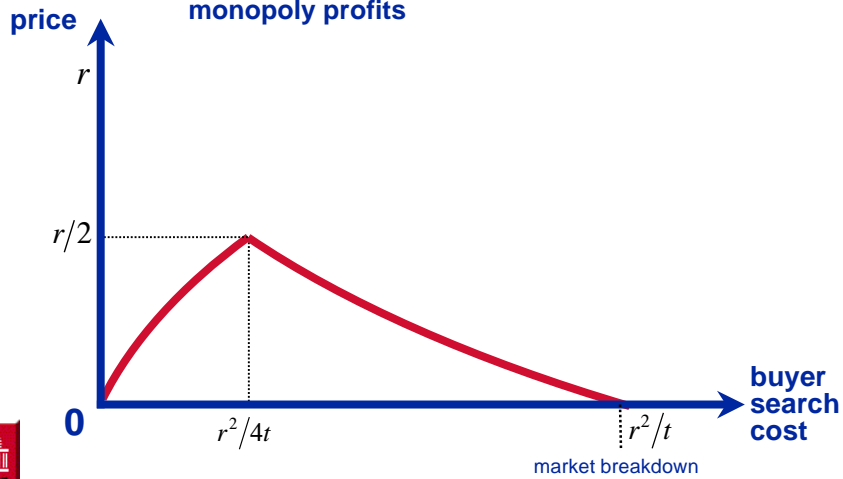


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## The impact of buyer search costs in a differentiated market

■ Buyer search costs allow sellers to enjoy monopoly profits



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## SEAQ SCREEN (London Stock Exchange)

SEAQ Level 2

Exchange

45300

|               |                     |             |                |
|---------------|---------------------|-------------|----------------|
| BrGas         | GAS                 | Currency    | GBX            |
| NMS 100.000   | SS 10.000           | PL 300.000  | Close 313 -315 |
| Last 311%     | at 12:27            |             |                |
| Prev 5 Trades | 311 311 311 311 311 |             |                |
| Volume 5.32m  |                     | Mid 312     |                |
| Trade Hi 316  |                     | Mid Hi 315% | +1%            |
| Trade Lo 311  |                     | Mid Lo 311% | -2%            |

| L1    | CSFB    | HOME  | SENO  | SGST | 311     | 313   | SBCE  | SALD | MOST | UBS | 8 |
|-------|---------|-------|-------|------|---------|-------|-------|------|------|-----|---|
| ATK   | 311-314 | 50+50 | 09:37 | NMRA | 310-313 | 2L+2L | 10:39 |      |      |     |   |
| BEST  | 311-314 | 1L+1L | 09:42 | NWSL | 310-313 | 2L+2L | 11:04 |      |      |     |   |
| BZWE  | 311-314 | 2L+2L | 10:39 | RAML | 311-314 | 50+50 | 11:34 |      |      |     |   |
| CSFB  | 311-314 | 2Lx2L | 10:31 | SALB | 310-313 | 2Lx2L | 10:35 |      |      |     |   |
| GSFO  | 310-313 | 2Lx2L | 11:03 | SBCE | 310-313 | 2Lx2L | 09:49 |      |      |     |   |
| MDAC  | 311-314 | 2Lx2L | 09:49 | SBRO | 311-314 | 2L+2L | 09:42 |      |      |     |   |
| JPMIS | 311-314 | 1Lx1L | 11:36 | SGST | 311-314 | 2Lx2L | 09:37 |      |      |     |   |
| KLWT  | 310-313 | 2L+2L | 11:25 | UBS  | 310-313 | 2L+2L | 10:39 |      |      |     |   |
| LEHM  | 311-314 | 2Lx2L | 11:37 | WARR | 311-314 | 2L+2L | 11:34 |      |      |     |   |
| MOST  | 310-313 | 2Lx2L | 10:39 |      |         |       |       |      |      |     |   |

|           |             |                         |
|-----------|-------------|-------------------------|
| 12:27 ONS | Repets 1st  | Notice of Final Results |
| 12:27 ONS | Buyers 1st  | 1st Up Price Change     |
| 12:21 ONS | Peasent PLC | Additional Listing      |

| PRFO | LRHO | EX97 | DEC | BR  | WTR | FOV | HAS | JVTS | BATS | FLI  | ESP  | LEX  |
|------|------|------|-----|-----|-----|-----|-----|------|------|------|------|------|
| 125  | 1040 | 1041 | 200 | 075 | 572 | 295 | 298 | 340  | 400  | 403% | 425% | 333% |

|     |  |  |  |  |  |  |  |  |  |  |  |  |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|
| ONS |  |  |  |  |  |  |  |  |  |  |  |  |
|-----|--|--|--|--|--|--|--|--|--|--|--|--|

BZWE

+68%

ICV

ss #9

Delta & Friends - Microsoft Internet Explorer

http://flights.fortlauderdale.com/booking.cfm

Delta & Friends

Select flight report Select flight Deduplicate trip schedule Check delivery method Add passenger info Add credit card info Add car rental Booking confirmation

Choose a flight by selecting the button next to it, and then click Select Flight. If you've requested more than one destination, we'll show you those flights next.

Availability for NEW YORK CITY, NY (NYC) to LOS ANGELES, CA (LAX)  
Friday, October 24

| Select                   | Airline | Flight | Departing |          | Arriving |          | Stops | Meal | Price |
|--------------------------|---------|--------|-----------|----------|----------|----------|-------|------|-------|
|                          |         |        | City      | Time     | City     | Time     |       |      |       |
| <input type="checkbox"/> | AA      | 1      | JFK       | 9:00 am  | LAX      | 11:59 am | 0     | B    | \$67  |
| <input type="checkbox"/> | UA      | 1      | JFK       | 9:00 am  | LAX      | 11:58 am | 0     | B5   | \$62  |
| <input type="checkbox"/> | EA      | 22     | EWB       | 9:15 am  | LAX      | 12:11 pm | 0     | B5   | \$97  |
| <input type="checkbox"/> | AA      | 41     | EWB       | 9:40 am  | LAX      | 11:46 am | 0     | B    | \$57  |
| <input type="checkbox"/> | UA      | 129    | JFK       | 9:15 am  | LAX      | 11:02 am | 0     | B5   | \$62  |
| <input type="checkbox"/> | TW      | 12     | JFK       | 9:00 am  | LAX      | 10:59 am | 0     | B    | \$67  |
| <input type="checkbox"/> | CO      | 91     | EWB       | 9:00 am  | LAX      | 10:43 am | 0     | B    | \$97  |
| <input type="checkbox"/> | FF      | 24     | JFK       | 9:00 am  | LAX      | 10:45 am | 0     | A    | \$47  |
| <input type="checkbox"/> | UA      | 11     | JFK       | 10:00 am | LAX      | 12:51 pm | 0     | L    | \$62  |
| <input type="checkbox"/> | CO      | 22     | EWB       | 10:00 am | LAX      | 12:42 pm | 0     | L    | \$97  |
| <input type="checkbox"/> | SF/AA   | 2052   | JFK       | 9:00 am  | LAX      | 10:59 am | 0     | M    | \$67  |
| <input type="checkbox"/> | AA      | 41     | JFK       | 9:00 am  | LAX      | 10:59 am | 0     | B    | \$62  |

## Friction Free Capitalism in Action

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Internet Shopping Network

Near #1 source for computer products.

Free Membership

Find

Product Name  
Manufacturer

Search

Product Selection

- Accessories
- Desktop Computers
- Drives
- Memory & Processors
- Modems
- Monitors & Video
- Multimedia Hardware
- Networking
- Notebook Computers

What's New?

DOOMSDAY IS HERE

Click Here for Details!

Shopping For FAQ Read all about it, and find out how to make it work.

The ISN logo takes you home.

Just click on the logo to jump to the Home Page at anytime

ISN is HERE!

Today's Hot Deals

See All Hot Deals

See All E-books

Digital P100 Minis V1P 6510MM

only \$1999<sup>00</sup>

See All E-books

33.6Kbit/sec 14.4 Fax

only \$159<sup>00</sup>

Diamond Stealth 3D 2200 XL PCI 2MB DRAM PnP \$199.99

Veratrac Internet Phone 4.0 (V1a25) \$44.99

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## Leading to a quick response...

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LSI - HiNote VP P100MHz 8/810MB 11.3 Dual Scan... - Microsoft Internet Explorer

File Edit View Go Favorites Help

Information Edit Account Order Status Power Search View Bag

**digital**

**HiNote VP P100MHz 8/810MB 11.3 Dual Scan w/Win95**  
Model Number: FR-PA4WE-AA

**\$1869.99** Add to Bag

HiNote VP -- expect nothing but the best when you pick up and go with a Digital HiNote VP notebook. Powered and network-ready, the Digital VP notebook offers all the performance of a desktop PC, plus a lot of features you won't find anywhere else for anywhere near the price -- including accelerated graphics and disk throughput over the PCI bus, a big SVGA screen, EDO RAM, a full-size keyboard and upgradeable hard drive. You get a lot. For a little.

**Accessories:**

[HiNote VP 12V DC Car Adapter](#)  
Price: \$99.99

[HiNote VP Port Expander](#)  
Price: \$104.99

[HiNote Travel Case For HiNote](#)  
Price: \$79.99

**Specifications:**

CPU Speed (MHz): 100

MIT Sloan

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Price Watch™

New To Site?

Hardware/Software Search

Find It

Hardware Categories

Manufacturers List

Enter 3 Numbers

Headlines from CNET's

Features

Price Watch™ Systems and Components

|   |  |   |  |
|---|--|---|--|
| <b>Systems</b> <ul style="list-style-type: none"> <li>PC</li> <li>Notebooks</li> <li>Hand Held</li> <li>Web Modules</li> <li>Servers</li> </ul>                   | <b>CPU</b> <ul style="list-style-type: none"> <li>Motherboards</li> <li>Processors</li> <li>Cases</li> <li>Fans</li> </ul>   | <b>Memory</b> <ul style="list-style-type: none"> <li>System</li> <li>Notebook</li> <li>Printer</li> <li>Camera</li> </ul>                   | <b>Storage</b> <ul style="list-style-type: none"> <li>Hard Drives</li> <li>CD/RW</li> <li>Tape Drives</li> <li>Removable</li> <li>Floppy Drives</li> </ul> |
| <b>Game</b> <ul style="list-style-type: none"> <li>Hardware</li> </ul>  | <b>Networking</b> <ul style="list-style-type: none"> <li>Modems</li> <li>Networking</li> </ul>   | <b>Output</b> <ul style="list-style-type: none"> <li>Monitors</li> <li>Printers</li> <li>Printer Accessories</li> <li>Projectors</li> </ul> | <b>Other</b> <ul style="list-style-type: none"> <li>Cable Accessories</li> <li>Media</li> <li>Power Supplies</li> </ul>                                    |
| <b>Input</b> <ul style="list-style-type: none"> <li>Scanners</li> <li>Cameras</li> <li>Devices</li> <li>Digitizers/Tablets</li> <li>Video Conferencing</li> </ul> | <b>Notebook Components</b> <ul style="list-style-type: none"> <li>Notebook Memory</li> <li>Notebook Drives</li> <li>Notebook Modems</li> <li>Notebook Accessories</li> </ul> | <b>IP</b> <ul style="list-style-type: none"> <li>Controllers</li> <li>Serial Cards</li> </ul>   |  |
| <b>Multimedia</b> <ul style="list-style-type: none"> <li>Multimedia</li> <li>Video Cards</li> <li>Sound Cards</li> <li>Media</li> </ul>                           |  |   |  |

Find A Great Price By 'Clicking thru' Categories Or Typing In Search Box

Document Name







Price Watcher - Shared Price Search Engine - Netscape

File Edit View Go Bookmarks Options Directory Window Help

Back Forward Home Reload Images Open Print Find Stop

Location: <http://www.pricewatcher.com/>

PRICE WATCHER, TM

New To Site?

Hardware/Software Search

Product

Hardware Categories

Manufacturer List

Contact Us/Help

Hardware from C&G's Services

|     |  |  |        |   |                       |    |   |                 |
|-----|--|--|--------|---|-----------------------|----|---|-----------------|
| Out | Postmark II 100MHz MMX                 | Retail Boxed   | \$ 661 | <a href="#">Micro, Inc.</a><br>(800) 400-0000<br>(800) 400-0000                         | 1/11/97<br>2:11:12 PM | FL | W | N/A             |
| Out | Board - Postmark II 100MHz 11.2K cache | Retail Box with Pwr. 3 yr warranty. In stock!                        | \$ 665 | <a href="#">E-View Computers</a><br>(772) 714-8879<br>(772) 714-8879                    | 1/11/97<br>3:01:18 AM | FL | W | W3309722F100712 |
| Out | 100MHz Postmark II - OEM               | 7112B L2 cache on package  | \$ 669 | <a href="#">Alphadigm</a><br>(800) 400-5545<br>(408) 400-5545                           | 1/11/97<br>3:11:47 AM | CA | W | N/A             |
| Out | Postmark II 100MHz with Pwr. & Sock.   | Retail Boxed, 3 years Warranty                                       | \$ 675 | <a href="#">Peragon Technology, Inc.</a><br>(800) 421-7747<br>Online Ordering Available | 1/11/97<br>3:10:55 AM | IL | W | N/A             |
| Out | Postmark II 100MHz                     |  | \$ 781 | <a href="#">Computerworld, Inc.</a><br>(800) 413-8000<br>(781) 560-4111                 | 1/11/97<br>2:11:32 PM | MA | W | N/A             |
| Out | postmark ii processor 100mhz model     | pro version * ipd only * post2                                       | \$ 726 | <a href="#">Computerworld, Inc.</a><br>(800) 413-8000<br>(781) 560-4111                 | 1/11/97<br>3:07:07 AM | IL | W | W3309722F100712 |
| Out | 100MHz Postmark II - retail boxed      | 7112B cache, 7112B cache, 7112B cache                                | \$ 729 | <a href="#">Alphadigm</a><br>(800) 400-5545<br>(408) 400-5545                           | 1/11/97<br>3:11:47 AM | CA | W | N/A             |
| Out | Postmark II 100MHz                     | 800 SALES TAX IN OR ETAIL, Systems Warr 30 Day Sock & Pwr CASH PRP E | \$ 736 | <a href="#">DellTech</a><br>(800) 400-5545<br>(800) 400-5545                            | 1/11/97<br>3:04:18 PM | TX | W | N/A             |
| Out | Board - Postmark II 100MHz 11.2K cache | Retail Box with Pwr. 3 yr warranty                                   | \$ 736 | <a href="#">VITALink Computer &amp; Software</a><br>(800) 728-0024<br>(411) 330-1100    | 1/11/97<br>7:58:12 AM | PA | W | W3309722F100712 |
| Out | postmark ii processor 100mhz model     | pro version * ipd only * post2                                       | \$ 821 | <a href="#">Computerworld, Inc.</a><br>(800) 413-8000<br>(781) 560-4111                 | 1/11/97<br>3:07:07 AM | IL | W | W3309722F100712 |

Previous 20

Netscape - [Bargain Finder agent prototype]

File Edit View Go Bookmarks Options Directory Window Help

Back Forward Home Reload Images Open Print Find Stop

Location: <http://bf.cstar.ac.com/bf/>

What's New! What's Cool! Handbook Net Search Net Directory Software

ANDERSEN CONSULTING

**BargainFinder Agent** **CSTAR**

**Your Intelligent Agent for Comparison Shopping**

How will agents affect on-line commerce? Try one and [tell us what you think](#), or fill out our [survey](#)! Just type in the artist and album name of a rock or pop CD. Then sit back as your agent gets prices from nine virtual retailers.

Don't know where to start? Check out the latest [Top 40 list](#) to see what's hot! Or pick from our [list of stores](#) and browse, and come back to BargainFinder to find the best price!

<http://www.ac.com>



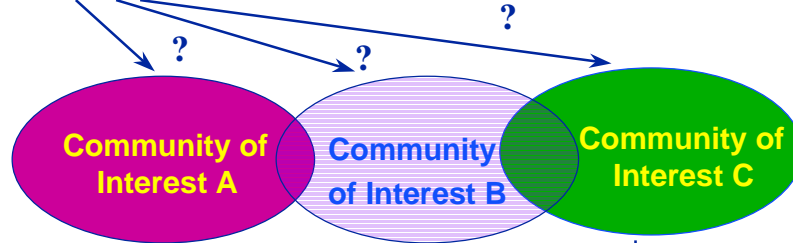
## The Internet Future: Collaborative Filtering and Communities of Interest

- Create a community of interest
- Each user specifies preferences
  - Active ratings
  - Passive ratings
- Correlate rating information across users
  - Create individualized, “virtual” shopping agent
- Find and Recommend products
  - Before you even ask!



## Firefly (Agents, Inc.)

New User



Recommendations

Agents, Inc. becomes a market intermediary and captures interorganizational marketing data



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## The Internet Future: Customization

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Class #9

# CUSTOMERIZE!!!

25

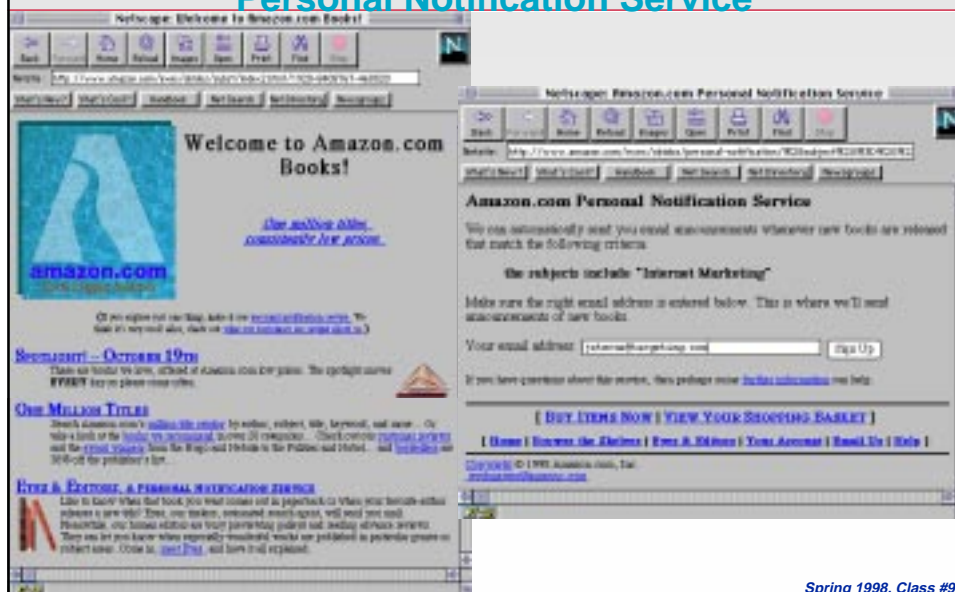


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# CUSTOMIZATION: Amazon.com Personal Notification Service



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## 2001: A CYBERSPACE ODYSSEY?

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Good to see you again Dave.  
Since you were here last:

- I have an update for your software
- It's time for some fashionable new shirts
- And some matching ties
- I've selected a humorous video for tonight
- And found a nice young lady to chat with
- We received your last payment

Thank you so much!

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## Data Collected by Bailey and Brynjolfsson (1997)

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- Data from three markets (Books, CD's, Software) and two channels (Internet and conventional)
  - total of 52 distinct retails observed
- Matched sample of products
  - total of 337 distinct products tracked
- Weekly data collection
  - total of 18 distinct periods
- 23,789 observations in all



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## Prices, Price Variance and Frequency of Price Changes: Internet vs. Conventional Channel

### No Lower Prices

| Market        | Online Retailers' Surcharge | Statistical Significance (t-test) |
|---------------|-----------------------------|-----------------------------------|
| Books         | 6.27%                       | $p < 0.01$                        |
| Compact Discs | 13.02%                      | $p < 0.01$                        |
| Software      | 2.96%                       | $p < 0.01$                        |

### Mostly Higher Price Variance

| Market        | Online Retailers | Physical Retailers | Statistical Significance (F-test) |
|---------------|------------------|--------------------|-----------------------------------|
| Books         | 1.74%            | 1.09%              | $p < 0.01$                        |
| Compact Discs | 3.10%            | 1.20%              | $p < 0.01$                        |
| Software      | 0.50%            | 0.66%              | $p < 0.01$                        |

### More Frequent Price Changes

| Market        | Medium   | Percent of Changes |
|---------------|----------|--------------------|
| Books         | Physical | 3.38%              |
|               | Online   | 7.81%              |
| Compact Discs | Physical | 2.98%              |
|               | Online   | 6.80%              |
| Software      | Physical | 3.28%              |
|               | Online   | 8.83%              |



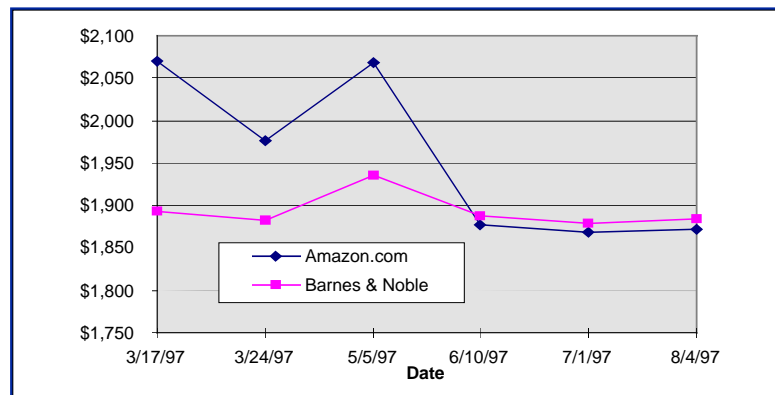
Data Collected by Bailey and Brynjolfsson, February/March 1997

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## Amazon.com vs. Barnes and Noble

Price for basket of books



Data Collected by Bailey and Brynjolfsson, February/March 1997

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## Hardware Prices and Price Variance: Pricewatch.com vs. Mail Order Channel

- Collected 4 weeks of prices for Pentium (200MHz with MMX) and Pentium II (233, 266 and 300MHz)
- Pricewatch.com is cheaper
  - Best price on Pricewatch.com 5% lower than best mail order price
  - Average price on Pricewatch.com 6% lower than average mail order price
- Variance in prices is comparable
- Data is too preliminary to say anything about significance



Data Collected by Bakos, September/October 1997

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## THE MYTH OF DISINTERMEDIATION

- The Internet will make intermediaries obsolete



- NOT!



**Expedia  
Travel Agent**

INDEX FREE TRIAL SUBSCRIPTION

**ESPN  
SPORTSZONE**  
A SERVICE OF STARWAY AND ESPN

**NBA  
LIVE AUDIO**  
ESPN  
SPORTS  
BASKET  
BALL  
radio and TV



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## FUNCTIONALITY OF ELECTRONIC INTERMEDIARIES (“CYBERMEDIARIES”)

- **Matching buyers and sellers**
  - Search
  - Price discovery
- **Facilitation**
  - Logistics
  - Settlement
- **Aggregation**
- **Trust**



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## THE TRADITIONAL BUSINESS VIEW

- **Purchasing a new home:**
  - Research city and neighborhood
  - Find a house
  - Inspections, title research, contracts
  - Get a mortgage
  - Moving services
  - Decorators, Furniture, etc
- **Planning a vacation**
  - Research destination
  - Arrange accommodations and travel
  - Purchase maps, books, information
  - Check out weather, items to take
- **Purchasing a car**
  - Research make and model
  - Get a loan or arrange a lease
  - Purchase insurance



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