

Unless otherwise noted, the content of this course material is licensed under a Creative Commons BY-SA 3.0 License.

<http://creativecommons.org/licenses/by-sa/3.0/>

Copyright © 2009, Robert Frost.

You assume all responsibility for use and potential liability associated with any use of the material. Material contains copyrighted content, used in accordance with U.S. law. Copyright holders of content included in this material should contact open.michigan@umich.edu with any questions, corrections, or clarifications regarding the use of content. The Regents of the University of Michigan do not license the use of third party content posted to this site unless such a license is specifically granted in connection with particular content. Users of content are responsible for their compliance with applicable law. Mention of specific products in this material solely represents the opinion of the speaker and does not represent an endorsement by the University of Michigan. For more information about how to cite these materials visit <http://michigan.educommons.net/about/terms-of-use>.

Any medical information in this material is intended to inform and educate and is not a tool for self-diagnosis or a replacement for medical evaluation, advice, diagnosis or treatment by a healthcare professional. You should speak to your physician or make an appointment to be seen if you have questions or concerns about this information or your medical condition. Viewer discretion is advised: Material may contain medical images that may be disturbing to some viewers.

The Business of Information and Information in Business

- Not really “information economics,” but how information content and services are bought and sold, as well as how businesses have been “informed”—and how (or not!) they pay for doing that.
- Two foci here: micro-level of the individual enterprise, macro-level on globalization, outsourcing, etc.

But first, a distinction...

- Two types of information product, or commodity:
 - Information that “is”: content, such as text, music, movies, etc.
 - Information that “does”: usually software, sometimes necessarily tied to knowledge, skill, and services for deployment
- Both follow the same general economic characteristics, and both require specific technological infrastructures

How is information *as a commodity* different from other goods, and what does that mean for business models?

- Supply side: minimal marginal costs
 - Cost of production for any copy after #1 is next to zero
 - Severe issues of covering costs and with pricing strategies
 - Once deployed, modifications are often inexpensive, enabling adaptation to small markets or niches
- Demand side: non-rival demand satisfaction
 - Use by one party does not preclude use by another
 - Often, after adoption, users are “locked-in,” as the cost of change often requires new infrastructure
 - Sharing an info commodity costs the donor next to nothing

As info goods are often expensive initially to produce, there are usually problems covering costs & making a profit.

Various Approaches:

- Advertising-supported, as with TV
 - Verification by counting clicks, as with Google—and note how Google successfully “narrow-casts”: **A Google revolution with AdWords and “local search”?**
 - Problems in accurate counting
 - Cross-marketing can be easy: each pays the other for traffic directed to them
 - “Incrementalism” allows ad-hoc adjustments in price
- Value-added, commission models: travel sites
 - Often used in cross-marketing arrangements

More Pricing Strategies

- Subscription models: ProQuest, Nexus/Lexis, etc.
 - Problems of leakage and piracy
 - Difficult to determine a correct price: who pays for the initial development costs?
 - This was widely tried (and failed) after 2001
- Pay-per-use for information content or services
 - For software, maybe? Suggestion that it be done for films
 - Problems in monitoring and with overhead expenses on micropayments

Dilemmas and What Doesn't Always Work in E-Commerce

- Selling attention vs. selling goods
 - Problems in developing “mind share”—often costs as much as the product!
- E-commerce—using the Net to sell old-style goods—is still commerce
 - This is “informatizing:” using IT to transform business processes
 - Manufacturing shift in supply chain management: JIT
 - Retail & “800-number” revolution in fulfillment
- Genuine innovation: brokering and auction networks
 - eBay as iconic, but problems of trust & description
- [invisible info markets—aggregators and resellers: ChoicePoint, market research, and data-mining work]

● The Approach We All Dis: “Inverse [demand] Elasticity” Pricing

- Price according to consumer need, not demand or costs
 - Not unique to the info business (note pharmaceuticals)
 - Easily done in natural-monopoly, infrastructural settings, such as broadband service, software with large “lock-in,” such as Windows
 - Often a sign that regulation or anti-trust action is needed
 - Also a problem in areas where buyers are not the origin of demand: college textbooks

Challenges in All Pricing Strategies

- The choice: high-volume/low-markup vs. low-volume/high-markup; boutiques vs. Wal-Mart
 - “Front-load” cost-recovery or take a risk—a tragic problem with high-cost infrastructure or goods
 - Faster, more accurate feedback loops *do* now allow for better market-slicing & niches
 - [The death of “Sears” and the new bimodal market]
 - Risk-aversion can destroy an industry: satellite phones
- Larger issue of how demand gets signaled back to supply side
 - The old “launch and hope” vs. market research and price adjustments
- Different implications in info content vs. services & software

More Pricing Strategy Challenges

- How do consumers reveal preferences?
 - Markets are poor information-generating systems
 - Consumer preferences can only be signaled through the market
- Shortcomings of usual marketing models: time lags and income differences
- Market research often poses problems
 - Fixation on the “ideal demographic” precludes considering other markets (*cf: Cluetrain*)
 - Assumptions about “Pareto distribution” (the 80/20 rule) often precludes marketing to the “tails,” where amazon.com and Netflix profit (see C. Anderson, *The Long Tail*, 2006)
 - Sellers and database firms: invasions of privacy

Supply-Side Dilemmas: The Perils of Falling Marginal Costs

- Marginal costs versus average costs: high front-end costs & “lumpiness”
 - Mass-production parallels
 - Should “early-adopters” get penalized?
- Public goods and the “free-rider” problem: paying for information infrastructures
 - When are taxpayer subsidies or cross-subsidies desirable? (recall out discussion of wired phones & electricity)
 - Getting beyond moralisms: maybe the rich *should* pay
- Problems in declining-revenue products
 - Saturated markets: sell once & then...?
 - Featuritis & forced upgrades

Ways to Mitigate Risks in IT Products

● Microsoft's approach

- Control “choke-points” (the OS), or .NET, DRM/“trusted computing”
- Massive diffusion (by whatever means!) means implicit standards, forcing purchases & lock-in among community members, leveraging network effects

● Boutique pricing, especially in software

- From Adobe to AutoCAD and CATIA
- Doesn't preclude momentum from massive diffusion

● Continuing-revenue modes: renting software(?)

Locating Value and Rewarding It: An Alternative Approach

- Basic approach (which preserves basic logic of capitalism): reward according to contributions
- Where does value get added?
 - Content creators
 - Distributors & other intermediaries
 - “choke-point” occupants
 - Consumers (mind-share is crucial)
 - (Obvious problem in terms of administering this...)

Old and New Software Models: Proprietary vs. Open-Source

- Apple, Microsoft and proprietary systems/software
 - Apple: glitzy software to sell hardware
 - Microsoft: just sell software
 - Both leverage lock-in
- Open-source: spreading risk and minimizing exposure
 - The new IBM: how can/does it work?
 - Security issues and adoption by foreign governments
 - Problems: scalability of the development model, tech support, diffusion, and user skill base
 - Is it sustainable once the buzz wears off?
- A new model: Open-source content!

Is Open-Source the Future?

- Yes, because for both content and software...
 - It helps create social capital by generating new voluntary communities based on interest
 - Helps to develop independent skill and knowledge communities
 - It is far cheaper up-front, probably cheaper over time as well
 - Creative Commons and the Public Library of Science are now commonly recognized parts of the academic community—even blogs are “open-source”
- Maybe not, because...
 - Microsoft has massive momentum, installed base, and lock-in
 - Many firms & universities regard open-source as too radical and a bit flaky
- Maybe it depends on what happens in Bangalore...

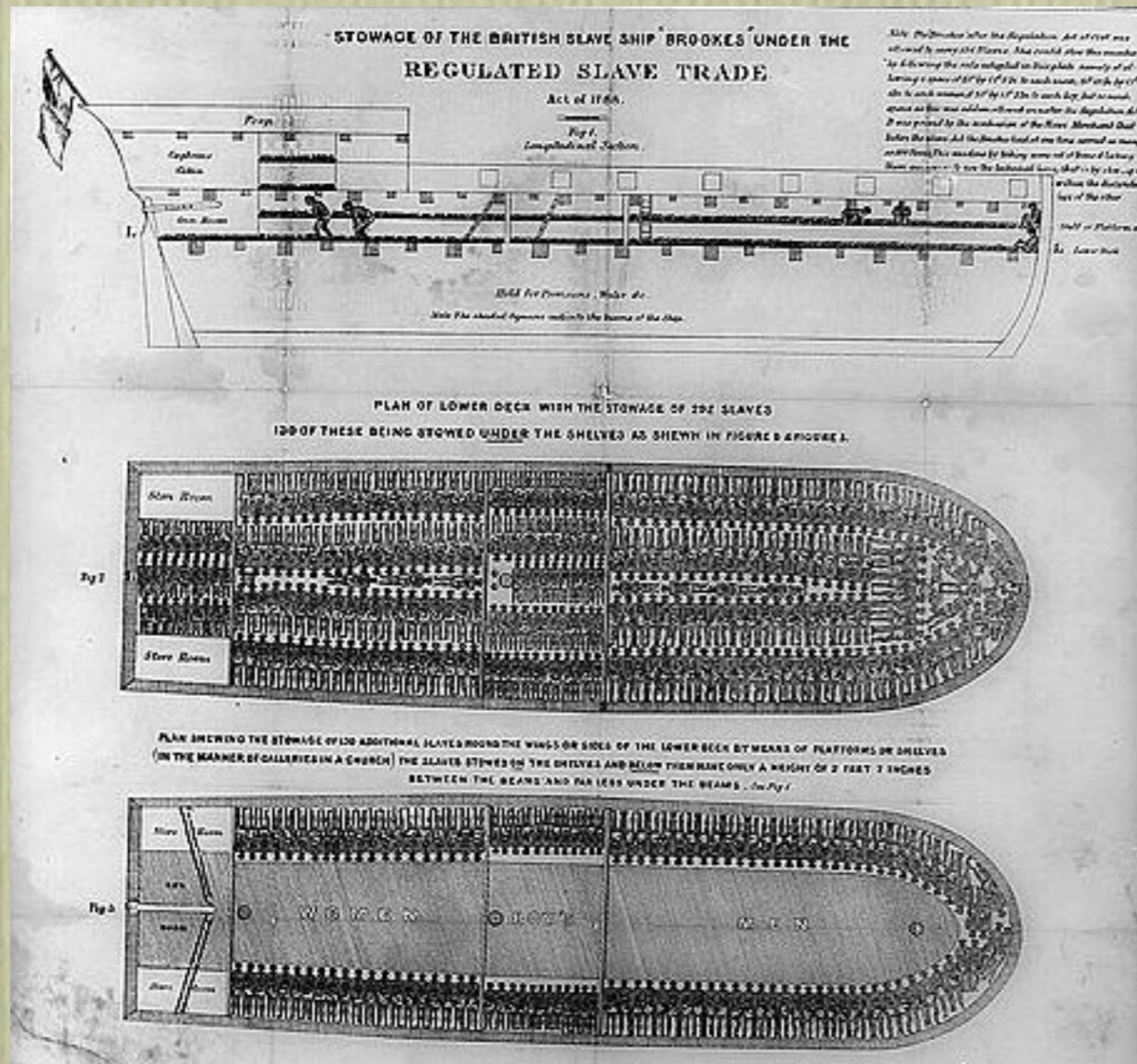
Part II: Info *in* Business & in the World

- But first, a few remarks on “the new economy” ...

How “New” is It?

- There’ve been many previous economic “revolutions”
 - Commercial Revolution, 1492-1780s
 - Rather more plunder than commerce
 - Slaves, rum, sugar and the triangular trade
 - Industrial Revolution, 1780s-1850s
 - Role of globalism, world markets
 - Slavery as early US centerpiece
 - Second Industrial Revolution, 1870s-1914
 - Knowledge-based industry
 - Productivity revolution

More “Efficient” Use of Resources Isn’t New, Either



a slave ship, 1788;
consider as well the
resource-use models at
Auschwitz...

Source: [http://lcweb2.loc.gov/cgi-bin/query/h?pp/PPALL:@field\(NUMBER @1\(cph 3a34658\)\)](http://lcweb2.loc.gov/cgi-bin/query/h?pp/PPALL:@field(NUMBER @1(cph 3a34658)))

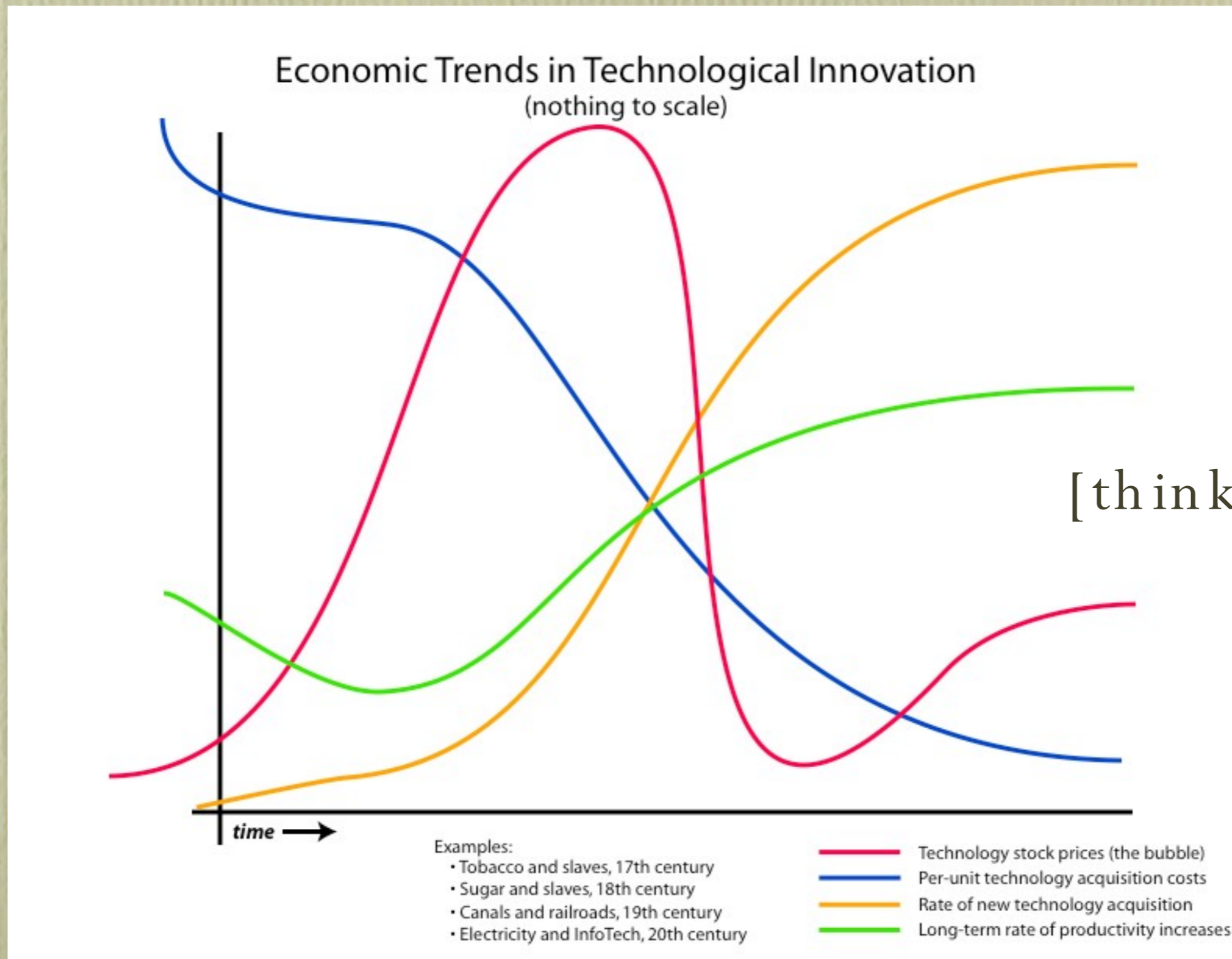
“Massifying” Production & Consumption

- Mechanical engineers transform production, advertising transforms markets, 1890-1980
 - Standard products, Sears, and one size fits all; Ivory soap
 - The massive middle class, rise of the PMC
 - Aesthetics of generic goods; “one size fits all”
 - High front-end costs mitigated by large markets
 - Very inflexible production system: changeovers expensive
 - “One-to-many” models, from Ford to NBC to NFL
 - Customers adapt to markets, not vice-versa (*cf. Cluetrain*)
- Socialism and alternative models
 - Similar beliefs in massification, different means to that end

The Crisis Begins, ca. 1975

- “Mature” industries became senescent (auto, steel, appliances, trucking)
- Industrial effluents began to engulf us
- Profits flattened, Wall Street wanted more, forcing firms to squeeze labor and suppliers
 - “Runaway” plants, union-busting
 - Abandoned cities (and the cost of rebuilding infrastructure)
 - Entire cities and industries “locked-in” to old ways could not shift practices
- In short, productivity stagnated in part because all possible gains under that model were achieved

Every Industry & Product Has a “Lifecycle”



So, What's "Informating" About?

- First and foremost, finer-grained knowledge and control over production and markets
- Changes in degree
 - The commodification of everything: labor, capital, goods
 - Faster, more precise design, produce, sell cycles
 - Supply-chain management and JIT
 - Integration of business processes using IT: ERP, CRM, etc.—CATIA (and why *two* car keys?)
 - Vast increase in the mobility of two factors of production, capital and knowledge, while labor remains immobile

Changes in “Kind:” Transformations

- Smart and flexible manufacturing, customized “mass” production: Flextronics
- New standardized vocabularies (thanks in part to ISO 9000) allow information-driven decentralized production
- Better, cheaper communication infrastructures permit precise tracking of people, money, & things
- Neo-liberal political domination allows corporations greater freedom to profit anywhere and by any means (almost) necessary

Information and the New Economy

- Information speed, depth, availability, and quality
 - More detail often yields new knowledge and capabilities: compare accounting on paper to Excel...
 - Productivity calculations remain ambiguous (think of “total factor productivity” and return-on-investment models), keeping Wall Street shuffling
- Corporate info flows can now more closely match organizational structures that are designed for better effectiveness: think “work groups”
 - Slight increase in meritocratic intra-firm politics thanks to better surveillance and evaluation methods—but the buddy system survives (of course!)
- Rise of information professions: what are the limits?

New Business Models?

- IT allows major *disintermediation*
 - A rise or fall in intermediaries?
 - Manufacturing, b2b: yes, with caveats
 - Media: NO— isn't that what DMCA etc is all about--a refusal to develop a new business model
 - Finance: NO—think of Enron
 - Retail: maybe—consider the Wal-Mart model of direct supplying by manufacturers; part of this is cost and risk diversion made possible by Wal-Mart's monopsonist position
 - Disintermediation is possible, but more than IT is required; consider real estate sales
- The software-driven back-office revolution
- The end of middle managers?

Keep *Cluetrain* Ideas in Mind...

● The old model

- Hierarchies & bureaucracies
- Disempowered and uninformed minions/workers
- One-to-many
- Institutional mediation
- Passive consumers

● The “new” model

- “flat” organizations
- Knowledge-empowered actors
- Many-to-many (and peer-to-peer)
- Disintermediation: rendering old models irrelevant
- Consumers actively creating mind-share and value

Points of Contention

- Is manufacturing dead in the USA?
 - Sweatshops and Chinese factories: simple things could be outsourced in the 1980s, now software and medical services can
 - Can lean and flexible manufacturing save us?
 - Constraint seems to be proximity of resources
 - The old “Keynesian” problem: if workers don’t make much money, who buys the products?
- Where is real value added?
 - What, really, is “real value”?
 - Pricing effects and speculation
 - The productivity puzzle
 - Intermediation issues again: value added vs. revenue-harvesting
 - How to account for the value of mind-share?

Information-Driven Globalization

- Two contrasting models
 - Korea and India: start as simple outsourcers, but learn—and compete directly later [China?]
 - Mexico, Malaysia, and Morocco: simply offer cheap (and well-policed) labor, an ability to pollute freely, and learn nothing
- A race to the bottom and the new brutalism are always possible
- The playing field will always be unlevel: in an age of mobility, labor is least mobile
- Who pays for infrastructure: the state, the companies, or gullible investors?

The Future of Production

- 100% decentered manufacturing?
- Mitigating factors: physical barriers remain
 - Physical presence remains important
 - Regional “tipping points” of presence: Silicon Valley; Grenoble; High Point, NC
 - Movement of employees among firms spreads quasi-proprietary knowledge
 - Turn-around times and shipping costs skyrocket with too much outsourcing
 - shifting sites of garment making, Guam or South-Central?
 - how much is GM willing to spend shipping parts from Mexico?
 - What does “Made in America” mean, anyway? Is a Lumina more “American” than an Accord?

Thriving or Dying in the New Economy

- Who pays, and who *should* pay for “externalities” such as brownfields, abandoned cities, and abandoned workforces?
 - Will we ever be able to know how corporate decisions are inflected by cost-shifting? How do tax policies affect those?
 - Education & cultural/social capital: who should pay for those?
- Are there “second acts” for firms and cities?
 - Portland, Oregon from lumber to IT, but...
 - Pittsburgh from steel to finance, but are there no limits to financial intermediation??
 - IBM from proprietary mainframes to linux & services; compare to Western Union or AOL
 - Whither Michigan?