

# Intellectual Property: Content and Digital Telecommunication Policy

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## IP as Policy Driver

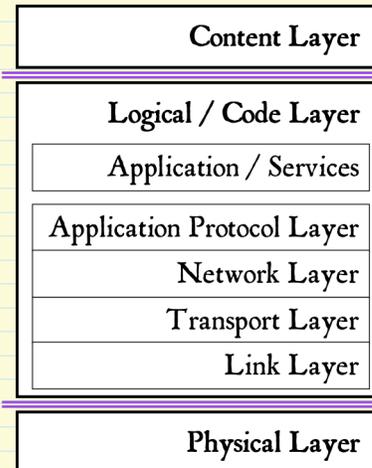
- Increasingly difficult to distinguish copyright policy and telecomm policy
  - Updates to the law of copyright - EUCD, DMCA
  - Updates to international treaties - TRIPS, WIPO
  - Subsidiary legislation and regulations
    - *SSSCA/CBDTPA & the "Analog Hole"*
    - *"Broadcast Flag" and HDTV*
  - Increased scrutiny of technologies & devices (CPRM; Trusted Computing; DVDCSS)

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## How Did “e” Come To Be A Telecomm Issue?

- Derives from several sources
  - The political economy of copyright
  - The nature of the legislative and judicial process
  - The design of the digital communications network
- A complex interplay of interests ...  
Leading to a complicated set of highly politicized problems
- Fundamentally, a question of control



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## Copyright - A Construct of the Law

- USC, Title 17, § 102. Subject matter of copyright: In general
- (a) Copyright protection subsists, in accordance with this title, in
  - original works of authorship
  - fixed in any tangible medium of expression, now known or later developed,
  - from which they can be perceived, reproduced, or otherwise communicated,
  - either directly or with the aid of a machine or device.
- Works of authorship include the following categories:....

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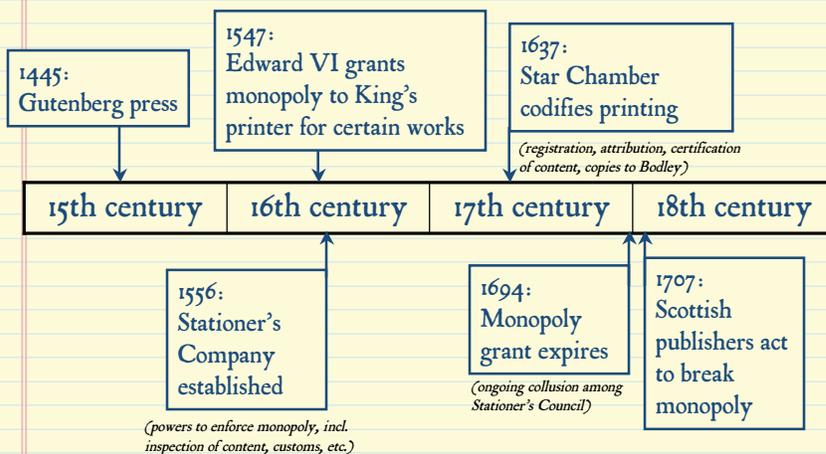
## What An Odd Idea – Why Does It Exist?

- Copyright is a So-Called “**Legislated Right**”
  - Exists Only as a Matter Of Law
  - Among the Most “Strictly Constructed” of Rights
  - Exception to Several Ideals of Enlightenment Polity
    - *An Award of Monopoly Powers*
    - *Imposes Limits on Communication/Speech*
    - *Moreover, the Limits are a “Prior Restraint”*
- Not a Natural Right in most jurisdictions
  - Exception:
    - Continental concept of “droit d’auteur” or “moral rights”

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## Historical Context



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## Statute of Anne - 1709/10

### *"An act for the encouragement of learning"*

- Legal protection for consumers of copyrighted works
  - Curtailment of the term of copyright
    - *Stationer's Company Essentially Held Copyright In Perpetuity*
    - *Effective Monopoly On What Would (and Could) Be Published*
  - Creation of a "public domain" for literature
    - *Copyright Only For New Works*
    - *Limited Term*
    - *Limited Copyright To Power To Print, Publish and Sell (i.e., control of the copy is relinquished once sold)*
  - Copyright Belonged To The Author/Creator
- Essential Principles Maintained To Date

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## Statute of Anne Contentious Until 1774

- 1769 - Millar v. Taylor
  - Publishers retain control over copyright "forever"
- 1774 - Donaldson v. Beckett
  - Millar overturned
    - *Millar had sold his copyright to Beckett*
  - Statute of Anne's limits on copyright terms upheld
- "Modern" copyright law established
  - Unanswered/unresolved:  
"common law" vs. "statutory" copyrights

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## Intellectual Property - Basis in US Constitution

- Article I, Section 8, Clause 8:

The Congress shall have Power ...

*To promote the Progress of Science and useful Arts,  
by securing for limited Times to Authors and  
Inventors the exclusive Right to their respective  
Writings and Discoveries;*

- Note (arguable) parallelism
  - “Author is to “Science” as “Inventor” is to “useful Arts”
- A notable Constitutional clause
  - Only enumerated power that also dictates **how** the power is to be exercised

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## Controversial Monopoly Grant - T. Jefferson

If nature has made any one thing **less susceptible** than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of every one, and the receiver cannot dispossess himself of it.

Its peculiar character, too, is that no one possesses the less, because every other possesses the whole of it. **He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me.**

... **The exclusive right to invention [is] given not of natural right, but for the benefit of society**

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Letter to Isaac McPherson; August 13, 1813



## Copyright: General Principle

- Objective:
  - Wide distribution of a diversity of creative expressions
    - > Recall: "Learning"
- Difficulty: Cannot sustain economic incentives to do so
  - High up-front costs in creation & setup for distribution
  - Negligible marginal costs in copying for distribution
  - Non-rivalrous good
- Solution: Award creators with monopoly powers
  - Marketable asset; Rents can be extracted
  - Use the power of the State to create/maintain scarcity

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## Exclusive Rights Associated With ©

- 1790 - Right to **Copy**
- 1790 - Right to **Distribute**
- 1870 & 1909 - Right to **Make Derivative Works**
- 1856 & 1897 - Right to **Public Performance**
- 1976 - Right to **Public Display**
- 1990 - Rights of **Attribution and Integrity**
- 1994 - Fixation and Trafficking in **Sound Recordings and Music Videos**
- 1998 - Right to Incorporate **Technological Protection Measures**
- 1998 - Right to Include **Copyright Management Information**

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## What Is Covered?

1790	Books, Maps & Charts
1802	Prints
1831	Music
1865	Photographs
1870	Drama, Paintings, Drawings & Sculpture
1912	Movies

1964, 1976	Computer Programs
1971	Record & Tapes
1976	Dance
1990	Architecture
1998	Boat Hull Designs

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## Exceptions

- Practical exceptions
  - Monitoring exclusive rights excessive & intrusive
    - Copying - "Fair use"
    - Commerce - "First sale doctrine"
- Political exceptions
  - Mitigation of prior restraints on free speech
    - Commentary and scholarship - "Fair use"
- Public domain
  - Materials out of copyright usable by all
  - Raw material of new creations

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## Exemptions to Copyright - Fair Use

Figures removed for copyright reasons.  
Book cover: Weiner, Ellis, and Barbara Davilman.  
*Yiddish with Dick and Jane*. New York, NY: Little,  
Brown & Co., 2004.  
News coverage: Wyatt, Edward. "Primer Spoof  
With Yiddish Faces Suit (In English)." New York  
Times, 15 January 2005.

See Jane *schlep*.  
*Schlep*, Jane. *Schlep*.  
*Schlep*, *schlep*, *schlep*.

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## **“Works of Utility” -- Not Copyrightable**

Figures removed for copyright reasons.  
Recipes and cookbooks; clothing designs.

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## Implementation

- Legislature creates laws
  - “Strict construction” requires active development in the face of changing circumstances
- Agencies develop regulations
  - Specifics of implementation
  - Institution for implementation
- Conflicts among parties resolved by judiciary
  - Civil complaints - arguments about money
  - Criminal complaints - State intervention

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## Judicial Review - Key Implementation Issue

- Courts prefer NOT to make decision
  - Require an issue at conflict BEFORE taking a case
  - Moreover, will be “strict constructionists” wherever possible in IP
- A problem for the key exceptions to copyright
  - Even when obviously appropriate, fair use is frequently challenged
    - *Costs of litigation*
    - “Chilling effects”

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## **International Propagation**

- Multilateral Treaties
  - TRIPS (trade-related aspects of intellectual property rights)
  - WIPO (World Intellectual Property Organization)
- Bilateral treaties, followed by calls for “harmonization”

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## **© Implicitly About Communication Technology**

- Challenges to Notions of (Author's) Control
  - Printing Press
  - Player Piano
  - Music Boxes
  - Sound (Phonograph) Recordings
  - Radio
  - Videocassette Recorder
  - Audio Recording, Analog and Digital
- A Continuous Cycle of Development & Reaction

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## © - A Technologically Sensitive Policy

- New technologies routinely upset “strictly constructed” legislated scarcity and exclusive distribution
  - New kinds of copying
    - *Player piano rolls*
  - Reduced costs of copying
    - *Photocopiers, tape recorders*
  - Reduced costs of distribution
    - *Radio, CDs*
- Challenge to maintain economic power
- (Engineered) Scarcity through control

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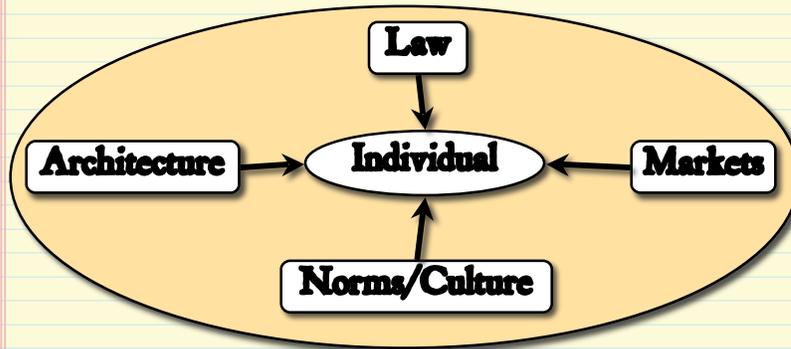
## Classical Control Elements in Copyright

- Legal limits: King’s patent, copyright law
- Economic limits:
  - Cost of printing press/orchestra/DVD plant
  - Cost to develop skills/know-how
- Social responsibility
  - Concerns about stability of institutions:  
State, church, markets
  - Support of creators

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## Control - Lessig's "New" Chicago School



See: *Code and Other Laws of Cyberspace*; Lawrence Lessig

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## Architecture - Technology As Policy

- Deployment of technologies as a method to achieve particular goals
- Many examples
  - Overt: turnstiles, airport terminals
  - Semi-overt: street widths, blue lights in restrooms
  - Latent: Jones Beach access

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## Architecture/Technology As Element of Policy

- Can be minor, major or dominant element
- Opportunities in implementation
- But, important limitations
  - Flexibility/Ease of refinement
  - Discretion?
  - Transparency - recognition it's happening
- Key issue:  
**Increasingly requires formal appreciation of the technology itself before the scope of architecture's influence on the policy can be appreciated**

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## Architecture as Control

- Potent Combination
- Especially When The Technology Gets "Clarkian"  
  
"Any sufficiently advanced technology is indistinguishable from magic"  
- Arthur C. Clarke, "Technology and the Future"
- The Lessig Dilemma
  - Significant Effort Necessary To Appreciate The Threat
  - Without This Appreciation, The Threat Is Shadowy, At Best
    - > **Wake up, Neo.....**

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## Digital Telecommunications

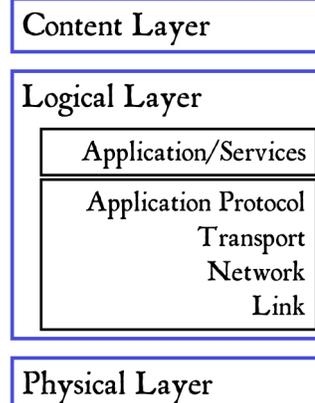
- The current revolution in copyright
- Several key elements
  - Digitization of communication/information
  - Transition from circuit switched to packet switched communications networks
    - *Smart networks to dumb networks*
  - Increasingly inexpensive computing power
- A revolution in distribution of information

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## Architecture of Digital Telecomm

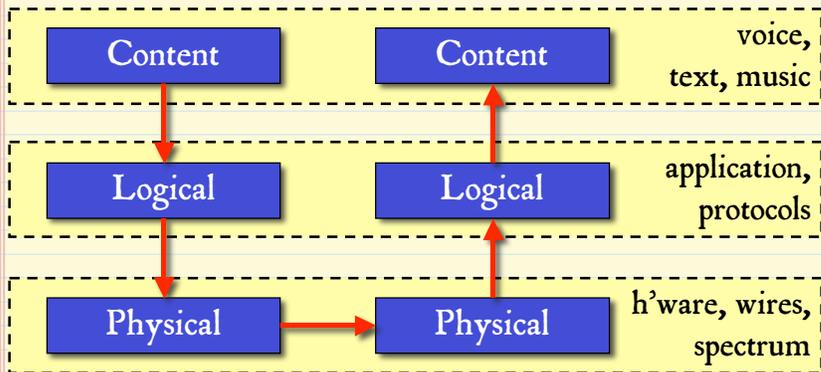
- A simplified summary (that should be familiar)
- Three "layers" of digital communication
  - Content - text, speech, music, ...
  - Logical (*code*) - applications, protocols, etc.
  - Physical - hardware interfaces, wires, spectrum, etc.



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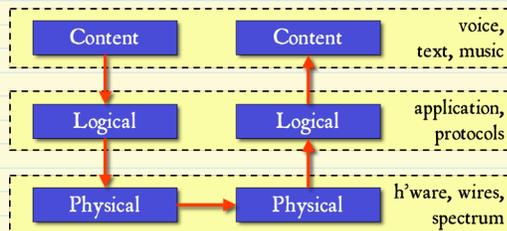
## Communication & the Layers Metaphor



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## Implementation Issues



- As a fundamental descriptive metaphor, no problem
- Implementation, however, leads into difficult regimes
- Digitization, in particular, troubles copyright

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## Digitizing of Information

- Claude Shannon; “A mathematical theory of communication;” *Bell System Technical Journal*; July and October, 1948 (published in two parts)
  - Study of how to communicate in the face of limits of communication channel
  - Modeled information transmission as one of symmetric encoding and decoding of information
    - Led to key (then impractical) insight - benefits of encoding (digitization) of information in communications
- Available at <http://cm.bell-labs.com/cm/ms/what/shannonday/paper.html>

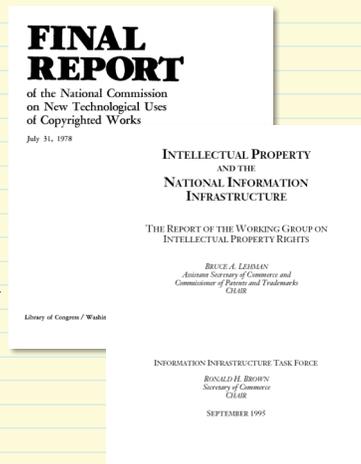
Photo of Claude Shannon removed for copyright reasons.

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## Digitization and Copyright

- Encoding offers key benefits in communications
  - Validation of transmitted content - “Good copies”
- US Library of Congress Studies/Reports
  - The CONTU Report - 1978
  - Intellectual Property and the National Information Infrastructure - 1995
- Declared, as a matter of policy, that all copies generated by computers in the course of their operation were subject to the copyright laws (!!)



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## Key Government Policy Reports: CONTU and the NII White Paper

### FINAL REPORT

of the National Commission  
on New Technological Uses  
of Copyrighted Works

July 31, 1978

Library of Congress / Washington 1979

<http://digital-law-online.info/CONTU/PDF/index.html>

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### INTELLECTUAL PROPERTY AND THE NATIONAL INFORMATION INFRASTRUCTURE

THE REPORT OF THE WORKING GROUP ON  
INTELLECTUAL PROPERTY RIGHTS

BRUCE A. LEHMAN  
Assistant Secretary of Commerce and  
Commissioner of Patents and Trademarks  
CHAIR

INFORMATION INFRASTRUCTURE TASK FORCE

RONALD H. BROWN  
Secretary of Commerce  
CHAIR

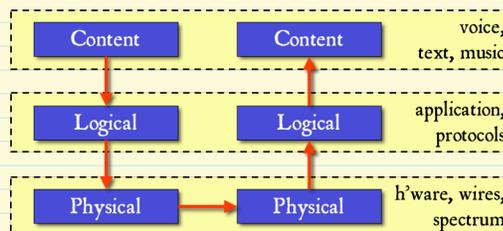
SEPTEMBER 1995

<http://www.uspto.gov/web/offices/com/doc/ipnii/>



## The Concern

- Copies everywhere!
- “Transport” of content is not happening
- Rather, copies are being made at each locus
- Engineers’ reaction
  - “I’m shocked, shocked that there’s copying going on here!”



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## Current Network Design is no help to ©

- End-to-end design means the network, by design, does not know or care about what it's transmitting
  - "Phone taps" on the internet are hard
- Thus, copyright owners could not, a priori
  - Monitor traffic
  - Identify participants
  - Control actions/copying/distribution
- Have asked for (demanded) new powers to do so

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## What kind of powers?

- Exploiting digitization in another way
- Another key consequence - **alienation**
  - a withdrawing or separation of a person or a person's affections from an object or position of former attachment  
- Merriam-Webster Collegiate Dictionary Online
- In other words:

**Encoding of content converts it into a form inaccessible to individuals without technological instruments**

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## **Not Always Something We Think About**

- “Let’s play some music.”

Photos of guitar, drumset, CD duplicator removed for copyright reasons.

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## **Alienation; Vocaloid Article, NYTimes**

Figure removed for copyright reasons.  
See Werde, Bill. "Could I Get That Song in Elvis, Please?"  
New York Times, November 23, 2003.

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## A Reminder.....

- US Code, Title 17, § 102. Subject matter of copyright: In general
- (a) Copyright protection subsists, in accordance with this title, in
  - original works of authorship
  - fixed in any tangible medium of expression, now known or later developed,
  - from which they can be perceived, reproduced, or otherwise communicated,
  - **either directly or with the aid of a machine or device.**
- Works of authorship include the following categories:....

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## A Key Insight: Technological Alienation

- Unlike other domains for distribution, digitized distribution forces content consumers to rely upon complex, technological artifacts
  - Contrast with books, sheet music
  - Reading ability is internal to consumers
- With digitized content, consumers are alienated from the ability to read content as delivered
  - Also true for analog music, video, etc.
- An opportunity for control *via access*

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## Copyright Now Speaks of Technology

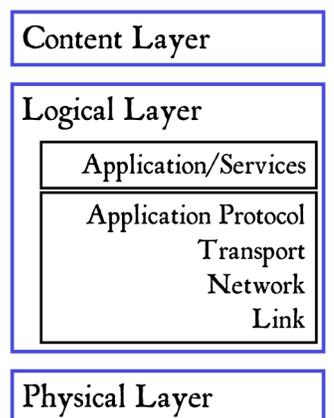
- Digital Millennium Copyright Act - 1998
  - Made the addition of “digital locks” one of copyright’s exclusive rights
    - > *Right to Incorporate Technological Protection Measures*
    - > *Right to Include Copyright Management Information*
  - Criminalized lock-picking – “anti-circumvention provisions”
  - Established new subpoena procedures to enforce these strictures
- EU Copyright Directive, others include many of these same elements

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## © — Intervention at the Logical Layer

- Copyright law protects copyright owner’s rights to interfere with the transparency of the logical layer
  - The “end-to-end” network
- Lessig’s *Code*: Choices of architecture influence the opportunities that the “built space” affords



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## For Example:

- Sony BMG's use of First4's CD copy protection technology
- "Analog hole" legislation
- Broadcast flag
- Trusted Computing / Next Generation Secure Computing Base

Images removed for copyright reasons.

See: Krelbs, Brian. "Study of Sony Anti-Piracy Software Triggers Uproar." Washington Post, November 2, 2005.

Pogue, David. "Sony BMG's Copy-Protecting Watchdog". The New York Times, November 9, 2005.

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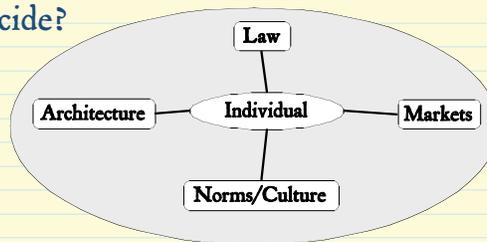
Bray, Hiawatha. "Computer worm exploits software on Sony's CDs." Boston Globe, November 11, 2005.

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## What Kind of “Built Space?”

- Fundamental questions
- What is the network supposed to be?
  - A service or a tool?
- What goals should it serve?
  - Who gets to decide?
  - How?



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## “End-to-End” - Creative Context

- Framework for innovation
  - In hardware
  - In applications
- Unlike previous communication networks
  - “Smart” versus “dumb” networks
- No need to ask permission to try something new
  - Agreements among users, rather than between network operator and innovator

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## For Example

- HTML/WWW - the “web”
- ICQ - messaging
- VoIP - voice over the Internet
- VPN - virtual private networks
- P2P - peer-to-peer networks
  
- Inventions by “non-adults” and “foreigners”

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## Digitization - Argument for Control

- Perfect communication has become perfect copy
  - Fundamental (intentional?) misunderstanding of what happens
- DMCA and its related laws only a start
  - Alienation - end run on fair use via access
  - A Second Enclosure Movement
- Several key issues building upon this set of concerns/initiatives

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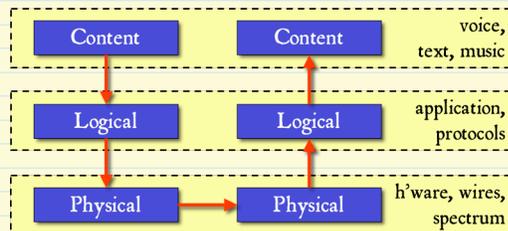
## The Views At Conflict

- Content drives the development of the internet	- Content drives the development of the internet
- Content providers need to retain classical forms of control to support the economics of creativity	- The economics of internet distribution change the business of content distribution radically
- The law should protect those controls - And technology should be managed to maintain these controls	- These economic benefits are a sufficient incentive to provide content - Technology & law need not change dramatically
- Then, and only then, will content providers participate fully	- Only those willing to adapt to these changing economics will survive

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## Working Metaphors for Policy



- “End-to-end” (Lessig) - Policies should be undertaken to ensure that the network stays “dumb”
  - Intelligence at the edges, not in the middle
- “Layers model” (Solum) - Policies should be undertaken to ensure that the integrity of the layers is maintained
  - Nothing that requires regulation across layers

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