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Hidden Characteristics: Applications

SI 680, ICD: Contracts & Signaling

Jeff MacKie-Mason

SI examples

NEESGrid

- $80 million collaboratory
- Mandate: share equipment for 2-3 month experiments with multiple teams
- Who values what, how much, and for when?

SI Faculty Involved: Thomas Finholt and Yan Chen

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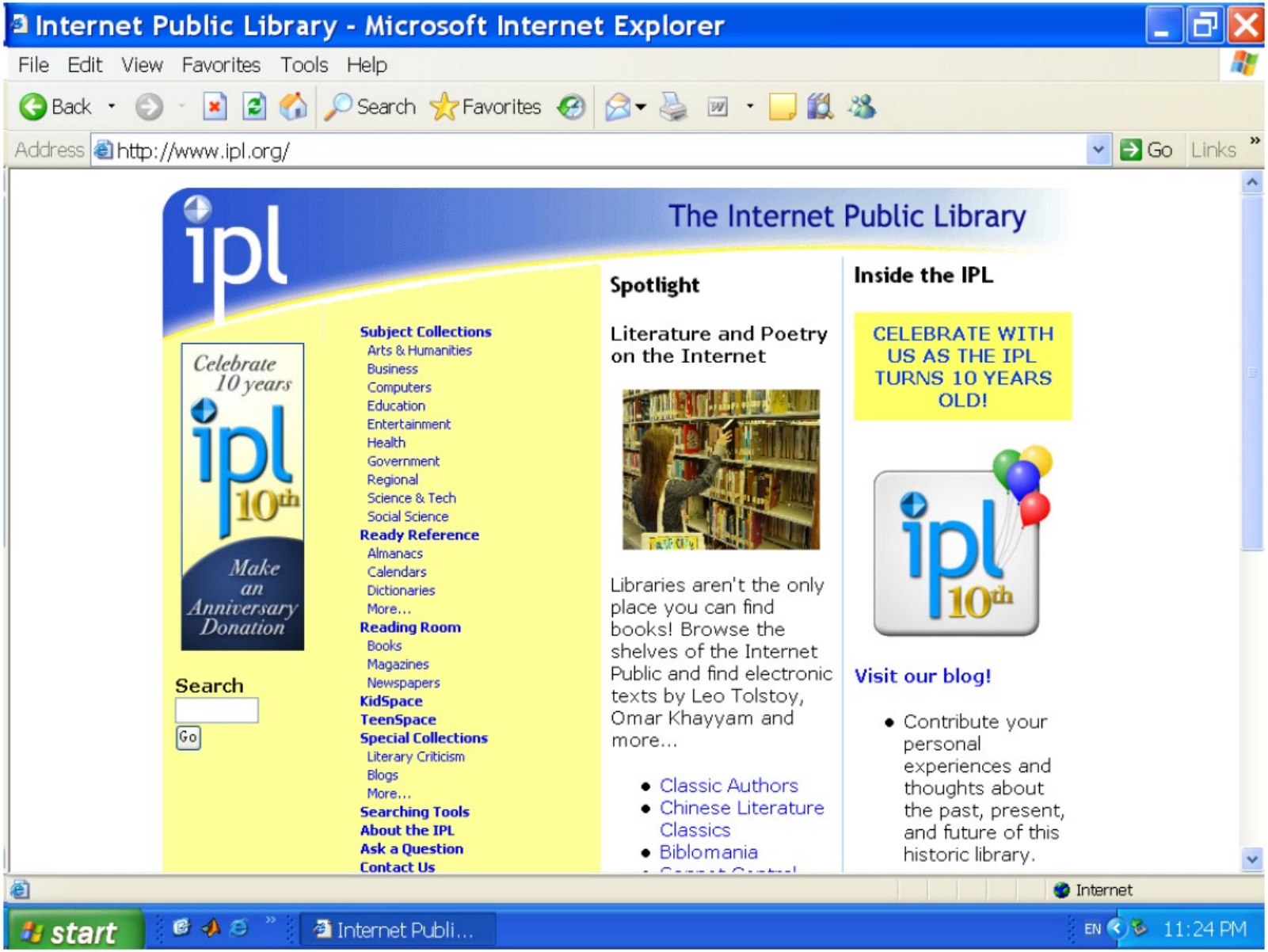

SI Faculty Involved: Jeff MacKie-Mason and Yan Chen

Making spammers pay for attention

Figure 1, distribution of Message Values (p. 6)

Source:

Loder, Theodore; Van Alstyne, Marshall; and Wash, Rick (2006) "An Economic Response to Unsolicited Communication," Advances in Economic Analysis & Policy: Vol. 6 : Iss. 1, Article 2, 6.

Available at: http://www.bepress.com/bejeap/advances/vol6/iss1/art2

General examples

Warranties / guarantees

- What is the hidden characteristics problem?

- Q: Which is more effective:
  - Money-back guarantee?
  - Replacement warranty (renewable)

Price discrimination

- Inverse elasticity rule: $$\frac{p - MC}{p} = -p'(q)\frac{q}{p} = \frac{1}{|\varepsilon_D|}$$
- What is the hidden characterisics problem?
- Airline pricing
  - What are some of the schemes?
  - Why do they work?

What problems with these schemes?

ICD method: Metering

- Want to identify high-intensity users (higher wtp for device)
  - They don't want to report usage
  - So charge them based on supplies
- Problems?
  - Not perfectly correlated with value (low value high volume users vs. high value low volume)
  - Need to prevent third party suppliers, or prices get bid down to MC
    - Laser cartridges, ink jet cartridges
    - Lexmark case: Tried to protect ink jets with DMCA!
- Examples?
  - United Shoe (staples)
  - IBM (punch cards; leasing)
  - Electrofax (coated paper)
  - Kodak, Xerox (per copy service contract; leasing)

Voting

- Who should pay how much to support IPL (SI, UM, other libraries, users…)?
- How should a multidisciplinary faculty select a new faculty member (with more than one "favorite")?
- How should an e-community decide on which new service to implement if it can only afford time/resources for one of N?
- How should a project team reach a decision on a meeting time? Project assignments?
- Closely related to matching problems that are increasingly tackled with networked systems
  - medical resident matching
  - law clerk matching
  - kidney exchange
  - public school assignment
  - college housing assignment

Majority voting

	Voter		
	1	2	3
1st choice	x	y	z
2nd choice	y	z	x
3rd choice	z	x	y

- Who wins in pair-wise majority vote?
  - No one: Condorcet cycle
  - Individual preferences *are* transitive, but group preferences are *not* transitive

Repairing majority voting?

- Suppose status quo wins if cycle occurs; say z
- What happens below?

	Voter		
	1	2	3
1st choice	x	y	z
2nd choice	y	z	y
3rd choice	z	x	x

- Clear majority winner: y
- But, suppose #3 votes according to z>x>y (misrepresents). What happens?
  - Then we have a Condorcet cycle
  - z wins, which #3 prefers to y
- So, #3 has incentive to *manipulate*

Summary: majority voting

- Pairwise majority voting subject to
  - cycles
  - manipulation
    - ***manipulation:*** not incentive compatible to always tell the truth