A century ago,
A century from now
Predilections and Prejudices

Mathematician
Begin with first principles (like mathematics)
Examples, from mathematics
A century ago

Thinking about the past
The purpose of journals ... 

- Began 1665: Henry Oldenburg
- *Philosophical Transactions* ...
- Contrast with *Journals des Sçavans*
- Validate research
- Validate author (IP)
- **Audience changed ....**
- **.... future** as well as **present**
Early twentieth century

- Journal model had matured
- Subscriptions: shared financial responsibility
- Fundamentals the same:
  - Small initial audience ...
  - Larger subsequent readership
- Large collection of scholarship with high integrity
  - lots of growing indices—Royal Society Catalogue, Jahrbuch für Mathematik, etc.
During Past 100 years

- System has evolved
- > 25,000 scholarly journals
- 1000s of publishers
- **Goals** of journals slowly differentiated by discipline ...
Journals by Field: Medical Science

- Clinical Medicine
  - Immediacy key
  - Availability important
  - Short-life
  - Goal is to inform -- Professional development
Journals by Field: Mathematics

- **Mathematics**
  - Stability key
  - Accuracy important
  - Long-life
  - Goal is to amass knowledge -- web of scholarship
Recent Citations to Annals of Math

From 200 mathematics journals published in 2004 to past 100 years of the *Annals of Mathematics*
Dual Nature of Journals

- Medicine
- Mathematics
Changing perspectives

- 25 years ago, preprints/journals
- Two major changes:
  1. Subscription prices soared, forcing libraries to cut subscriptions ... limiting exchange
  2. Internet (e-journals) made exchange of immediate info easier ... and (seemingly) free.
- First caused crisis
- Second became viewed as solution
Religious experiences

- Faith that Internet was the solution
  - ... passion
  - ... anger

- People redefined journals to fit their solution.

- Journals equated with immediacy (cure for cancer, technology breakthroughs, ...)

- "Removing access barriers to literature will accelerate research, enrich education, share the learning of the rich with the poor ..., and lay the foundation for uniting humanity..."
  
  Budapest Initiative

- "[Societies] should serve their members, and when they don't, there's no reason to keep them going. ... I don't believe that traditional business plans that depend upon the sale of subscriptions to these journals should be how these societies finance their activities.

  Harold Varmus
But should not forget dual purpose...

- Exchange information now

**Sustain scholarship for the future!**

- Integrity
- Access
- Rights (IP)
- Archiving
The Internet

Thinking about the present
Internet and Journals

- Internet is built for immediacy
- Provides wide access
- Seemingly free
- But …
Internet and Journals

- NOT reliable long-term
  - (check links on your personal web page)
- NOT especially accurate
  - (Google some mathematical terms…)
- NOT stable … not meant to be!
- NOT especially good at second purpose

Fermat's Last Theorem is solved using the binomial series. A new theorem determining the irrationality of a number using its infinite series expansion is presented.

http://www.elect_Gore.org
Does Internet solve price problem?

- Analysis of one dollar of revenue
  - MS processing (unaccepted too): 5¢
  - Editorial work (ESL): 10¢
  - Technical (graphics): 10¢
  - Printing / Mailing: 20¢ (20-25% costs)
  - Overhead (heat, electricity, janitor, computers, software): 45¢
  - Profit: 10¢
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- Reduce price by 20%!

Plus many NEW costs!
Have we solved price problem?

- Journal prices
  - Price of some subscriptions 3x in past 10 years
  - Avg annual increases >10%
  - Per page cost now varies …
    - 10 cents -- 4 dollars
Internet make other things possible?

OPEN ACCESS

(1) Self-publishing
(2) Repositories
   - Central (arXiv)
   - Distrib (institutional)
(3) Governments
   - NIH pubmed central
(4) Author pay
   - PLoS
   - $1500-$3000/article

Credit: Stevan Harnad (Photo courtesy of Business Week)
Pros and Cons 1 & 2
(Self-publishing / Repositories)

Pro …
- Good access
- Immediacy
- Low cost (?)

Con …
- Lack of stability
- Substitute for preprints, not journals
- Solves journal problem only in the sense that it does away with them
Pros and Cons 3 & 4
(Governments / Author-pay)

Pro …
- Free access for readers
- Integrates publication with research funding
- Shifts costs away from libraries

Con …
- Restricted access for authors
- Publication depends on grant funding
- Shifts decision-making away from libraries

'Back Room' Decision to Cancel Hubble Servicing Criticized

Senate adopts plan to trim federal deficit

In FY2005, the U. S. Government spent $352 Billion on interest payments
Nothing wrong with Open Access, but…

- Shifts attention from REAL problems faced by journals:
  1. Short-term nature of Internet
  2. Price crisis
- Open Access...
  - About immediate exchange
  - NOT about sustaining scholarship
100 Years from Now

Thinking about the future
Protecting scholarship for future

- How do we sustain scholarly literature for future?
- THAT’S WHAT JOURNALS ARE FOR!

- To sustain literature...
  - Internet improves immediate exchange, but makes sustaining harder
  - To sustain ...make journals compatible with Internet
How to make journals compatible

- **Integrity (editorial)**
  - Adopt strict policy of versioning
  - Maintain historical record of literature

- **Access**
  - Internet requires exposing product
  - Make more material available (bibliographic data, references, etc.)
  - Moving wall(?): Older material adds value to the present, which links to it.
How to make journals compatible

- **Rights**
  - Give *authors* rights for appropriate present use (posting)
  - Give *publishers* rights for appropriate future use (unknown)

- **Archiving**
  - Set standards
  - Ensure multiplicity
  - *Portico* (trusted third party)
What about prices?

- We are consumers …
  - Create competitive market for journals
  - More like public radio than groceries
  - Be aware of journal prices!
  - www.ams.org/tools
  - Fight bundling!
  - … promote choice
What about prices?

- We are suppliers …
  - Submit papers to “good” journals
  - Referee for “good” journals
  - Serve on editorial boards of “good” journals
  - Pressure can make a difference…
  - … but beware of hucksters
    (Bergstrom/McCafee)
Postscript

Can we protect scholarship?
Will journals succeed?

- Many institutions canceling
- Attrition drives up prices
  - especially for e-journals (no cost savings)
- Need to do something!
- ... but be sure it helps

“The future will be better tomorrow.” -Dan Quayle
Reality

- Commercial publishers are dominating
- 1990, 24% of math journals were commercial
- 2000, 30% were commercial
- More than half of all journal articles are now in commercial journals (up from 38%)
Two scenarios

- Scenario A
  - Turmoil drives out small publishers
  - Commercials continue to expand (deep pockets)
  - Market dominated by 2-3 large publishers

- Scenario B
  - Scholars take more control of journals
  - Promote change through action, over time -- together
  - Journals proliferate and evolve
Which will happen?

Don't Know!
But I do know some things ...

- Protecting scholarship for future generations is important
- Journals are meant to do this
- Allowing ourselves to be *distracted* (open access) makes solving hard problems even harder
- Trying to *destroy* the journals system isn’t progress

LONG-TERM