The Links Between Peer Review Systems and Production Processes

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Synopsis: *Science's* Peer Review Content

- Components
  - *Science* products: http://www.scienceonline.org/
  - Primary journal has print, online, and digital interactive versions.
- Submitted original research manuscripts are peer reviewed, as are all Reviews, and some commentary pieces (Perspectives, Viewpoints, Policy Forums).
- Supporting material for original research is published online, but also peer reviewed.
- Research content is repurposed in several forms

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Brief Overview: *Science*'s Electronic Peer Review System

- Custom-built Web-based system that combines the functionality of importing and scanning submissions (95% now submitted electronically), comprehensive manuscript tracking, and digital storage of pre-published manuscript-related text, figures, and PDFs. All manuscripts converted to and reviewed as PDF files.
- Built for many users, simultaneous use.
- Designed in-house using Microsoft Access software and Sequel Server for the database, linked to a secure WWW site.
- Files required to be in or converted to MS Word at acceptance for copyediting.

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The Editorial to Production Hand-off: Disconnected Systems, Reliable Results

- No direct interface of peer review system with downstream production processes.
- Most files downloaded, then copied from server-to-server, whether destined for internal or offsite use.
- Composition and repurposing of peer reviewed manuscripts beyond the copy editing stage is handled by different systems, different departments, and separate vendors.

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The Editorial to Production Hand-off: Disconnected Systems, Reliable Results
continued

- Deliverables
  - PDFs at multiple stages (galleys, pages, released pages, PDF X1a for printing, compressed PDF for online use).
  - Images (varying sizes, formats for online posting, archival use).
  - SGML abstracts (for purchase/use by assorted clients).
  - SGML full text (for archiving and purchase/use by assorted clients).

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Web Peer Review System Functionality: What Works

- Digital nature of files makes transport and modification flexible and efficient.
- Peer review system has been modified to accommodate expanded features and is a proven success on multiple fronts.
  - *Science* Express example: http://www.sciencemag.org/feature/express/introduction.shl#link1
  - Manages sophisticated versioning
  - Exports spreadsheets and assorted customized reports
  - Handles volume efficiently: now up to 11,000 papers per year
  - Saves costs: over $1M since inception in 2000
  - Eliminates many data entry needs

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Web Peer Review System Functionality: What Works *continued*

- If disconnected from peer review, back end production processes can evolve as needed using state-of-the-art technologies.
  - Composition can be anywhere as long as deliverables meet expected criteria.
  - Diverse online media (interactive files, animation, videos, etc.) can be created and maintained in their appropriate/native environments.
- Cyclical, weekly workload means that all downstream processes are directed at the prioritized, releasing data.
- Multiple, elaborate quality control checks assure accuracy and completeness.

Reality Check: The Downside

- Rushed into use because of failing Rbase tracking system so the interface of all processes from submission through production never completed.
  - Implemented workarounds to bridge the missing steps can be cumbersome, antiquated, long term.
  - System formatting is different, therefore some information may need to be entered and tracked redundantly.
- The new system outlived the tenure of its primary designer making some system modifications more difficult, expensive than expected.
- Access software not as robust as predicted in the long haul (e.g., not for Mac users).

Reality Check: The Downside *continued*

- Access for all users may not be efficient.
- Not all *Science* products can reside on the peer review system.
  - Some data does not fit the peer review model.
  - Size of the system must be adjusted for the advent of new products, files, and formats.

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What's Ahead for Peer Review Systems?

- Linking between systems will be dependent on compatible design and engineering.
- Sophisticated access control will be able to determine exactly which users can interface with what information.
- Streamlining of file processing can be enhanced through the automation of certain processes.
- Archive and retrieval of finalized data may be incorporated features of peer review systems.

What's Ahead for Peer Review Systems? *continued*

- Incorporation of XML up front, throughout the accept-to-publish process will maximize file functionality for post-publication use.
  - Tagging files with XML at the earliest possible stage may save downstream reformatting and composition costs.
  - Tagged data resident on the system can be reused, reformatted, repurposed.
  - Authors, internal staff may play key role in controlling production and manufacturing costs.

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