Background  
• UC/CMI was launched in September 2001 with the intent of accomplishing two general objectives:  
  • produce empirical data on the impact on research library users of reliance on digital versions of scholarly journals;  
  • lay groundwork for a multi-institutional print backfile of ejournals in shared storage in order to mitigate the risks associated with digital journal impermanence and unreliability.  

• UC/CMI generously funded by the Mellon Foundation because of the Foundation’s interest in supporting experiments intended to develop strategies for creating durable and reliable archives of digital collections, and in making the results of such experiments available to a broad audience.

Research Objectives (3)  
• Title-by-title comparison of print and digital use under experimental and control conditions  
• Consideration of the factors that may influence the acceptability of digital as a substitute for print, including:  
  • Characteristics of the journal, in both print and digital formats  
  • Characteristics of the user, and the user’s technology environment  
  • Characteristics of the purpose of the use  
• Analysis of the costs and benefits, including space savings, that might be achieved by canceling print and relying on digital in cases where the data show this strategy would be acceptable
Why the University of California?
• History of collaboration amongst UC libraries.
• Overtaxed library facilities due to:
  • Competing proposals for classroom/faculty office space;
  • Deteriorating campus infrastructure;
  • Needed seismic upgrades.
• Availability of CDL collections on every campus, including a collective total, at the time, of more than 7,000 electronic journal titles.
• Availability of two remote storage facilities where “seldom used” library collections can be stored.
• UC campus libraries still maintain some—not nearly as many as once upon a time, but still some—duplicate journal subscriptions and journal backruns, a necessary condition for the study.

Project Phases
I: Journal Use (October 2001–September 2002)
• Criteria for selection of journals:
  • Sufficient use data had to be available from the publishers of electronic journals selected (not all publishers of ejournals are able to provide use data).
  • Mix of journal titles should include:
    • titles for which current issues were available in both print and digital form;
    • titles for which the digital form was available only retrospectively (e.g., JSTOR titles).
  • Journal titles should represent a variety of disciplines and a variety of content characteristics, including:
    • Graphics;
    • Language;
    • Article length.
### UC/CMI Title Overview

<table>
<thead>
<tr>
<th>Subject Category</th>
<th>Number of Titles</th>
<th>Control Campus Usage</th>
<th>Experimental Campus Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Print</td>
<td>Electronic</td>
</tr>
<tr>
<td>Arts &amp; Humanities</td>
<td>22</td>
<td>528</td>
<td>5,475</td>
</tr>
<tr>
<td>Life &amp; Health Sciences</td>
<td>130</td>
<td>3,601</td>
<td>34,449</td>
</tr>
<tr>
<td>Physical Sciences &amp; Engineering</td>
<td>102</td>
<td>1,635</td>
<td>54,737</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>26</td>
<td>260</td>
<td>2,812</td>
</tr>
<tr>
<td>Grand Total</td>
<td>280</td>
<td>6,044</td>
<td>97,493</td>
</tr>
</tbody>
</table>

- Approximately 300 journal titles were selected by campuses from a universe of approximately 3,000 titles that:
  - were licensed for Universitywide access in digital form;
  - were held in print by at least two campuses;
  - were published by publishers able to provide reliable and timely data on use of the digital versions.

- For each of the 300 or so titles selected for study, one campus (the “experimental” campus) relocated to remote storage all hardcopy issues of the journal that were also available digitally, and monitored requests for recall of the print from storage. Another campus (the “control” campus) retained these same issues on its library shelves, and actively monitored all uses of those print issues for the duration of the study. Usage data for the digital versions of the same journal issues were provided by their publishers for both the “control” and “experimental” campuses.

- The ca. 300 journal titles selected were apportioned amongst four general subject categories:
  - Arts and Humanities (ca. 10%)
  - Life and Health Sciences (ca. 45%)
  - Physical Sciences and Engineering (ca. 35%)
  - Social Sciences (ca. 10%)

- Journal Usage, Conclusions:
  - In all four general disciplinary areas, digital use exceeded print use by at least an order of magnitude. Even allowing for differences in the way use of the two formats was measured, differences in use of an order of magnitude and greater are significant, and not just statistically.
  - Digital use of journals was considerably higher than print use, at both control and experimental campuses.
  - This latter conclusion is dramatically obvious in the following slide, which also demonstrates that journal issues removed to storage at experimental campuses were not frequently requested.
Users who did request journals from remote storage were asked why they were requesting the items, and more often than not indicated they were doing so because of differences in content available in the two formats (about which more later).

II: User Preference Survey

• Between February and March 2003, 20,000 UC faculty, students, and staff were invited to participate in a User Preference Survey. The stratified, random sampling methodology employed in the survey provided for campus-level significance testing for the responses of faculty and graduate students, and systemwide significance testing for undergraduates, campus professional staff, and health science professionals.

• By the end of the data collection period on April 1, 2003, more than 6,000 responses had been received, a response rate of 30%.
Response rates were fairly even across the campuses, although the preponderance of Life and Health Science journals combined with the preponderance of UCSF Health Sciences faculty and graduate students (indeed they have no undergraduates) to deliver a particularly high response rate at that campus.

In addition to demographic questions, the 60 questions posed in the Survey sought to elicit responses to these four general questions:

- Do you use Ejournals?
- What do you use them for?
- What do you like about them?
- What are the barriers (if any) to your using them?
• User Preferences, Conclusions:

• Uniformly strong preferences for digital:
  • Less than 25% of faculty and less than 20% of all respondents agreed with the statement that print journals are more reliable than electronic.
  • Conversely, over 70% of faculty and over 80% of all respondents agreed with the statement that electronic journals are a suitable alternative to print.
Both faculty and all respondents generally described their research as being dependent on both print and electronic journals.

That said, more respondents, including faculty, described their research as being dependent on electronic journals than did on print journals.
Over 60% of faculty respondents and almost 70% of all respondents found electronic journals easy to locate in online catalogs and well represented in A&I databases. Whether this is cause and effect or not isn’t clear, but roughly the same percentages of respondents indicated they were likely to browse more and different electronic journals than print.
• When asked what kinds of uses they put electronic journals to, almost 60% of all respondents and almost 50% of faculty respondents indicated they prefer electronic for browsing past issues. Surprisingly, almost half of all respondents, and a third of faculty, also indicated they preferred electronic for browsing current issues.

• Uses for which electronic journals were preferred by faculty over print by 50% or more included:
UC/CMI User Preference Survey: 6

• Copying articles;

Kinds of Use: 2

- Making copies of articles
- Keeping current outside my field
- Keeping current in my field

- All
- Faculty

- Definitely prefer electronic
- Mostly prefer electronic
- Either print or electronic
UC/CMI User Preference Survey: 7

• Citing articles; and locating specific facts.
• Electronic journals were also preferred by faculty for keeping current inside and outside their field by very nearly 50%.
Comparing and contrasting articles was, however, not a use to which electronic journals seem yet to lend themselves.
And, interestingly, use of electronic journals in classroom instruction by faculty still falls below 50%.
• When it comes to the advantages of Ejournal use, the “Library-Without-Walls, 24/7 nature of the content is a clear favorite, as is the availability of related information, including links and downloadable data.
• The highest barrier to Ejournal use is content coverage. Unavailability of older and recent issues in electronic form was cited by all respondents as a barrier to use, with short back files cited as a major barrier by over 60% of respondents.
"Ease of Use" barriers to electronic journal use

- Reading on-screen;
- Annotation limitations; and
- Difficulties moving between sections of articles.
Finally, “Computing Equipment” barriers to use cited by respondents included:

- Off-campus authentication difficulties; and
- Slow Internet connectivity speeds at home.

In summary, Ejournal uptake is substantial, across the disciplines. They are very much woven into the fabric of the “diffuse library.”

That said, there remain non-trivial barriers to their use, especially content barriers; and, a goodly percentage of faculty research remains dependent on the print literature.

As a consequence, the care and feeding of hybrid collections of print and digital content is likely to be with us for some time to come.