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**Learning From Our Experiments : The Remarkable Implications of
OhioLINK and HEAL-Link Electronic Use Data for Collection
Development**

ABSTRACT The combination of new purchasing models for journal literature undertaken by OhioLINK and HEAL-Link with highly accurate tracking of electronic journal use, is providing remarkable new data about patron research and instruction needs. Prior journal use studies were limited to a library's subset of a publisher's titles and restricted by unsatisfactory methods of collecting use data. With the clearer and more accurate picture we now have, a number of collection development issues obviously need to be revisited. Most striking is the now questionable nature of title-by-title selection. The presentation will review the new data in some detail (mostly OhioLINK but some HEAL-Link data) and draw appropriate conclusions for consideration in ongoing collection development." I would like to ask a big favor and request 30 minutes for my talk. I know that's longer than you wanted, but it really is important to take that long to adequately present the data. I think you will not be disappointed; there are some really remarkable findings. Hope all is well and am very much looking forward to the conference.

Learning From Our Experiments

The picture on the screen is the clearest and most accurate full profile image of Mars which exists. It was taken by the Hubble telescope and shows for the first time in such detail a full planetary profile. Earlier space probes, at least those which didn't crash because Americans couldn't tell the difference between feet and meters, have provided close looks at small sections of the planet. But a relatively new tool, the Hubble telescope, is providing new and better data which will help us understand the planetary dynamics of Mars in a fuller and more profound way. Indeed, we have only to reflect on the development of telescopes (e.g. Copernicus) and microscopes (e.g. Pasteur) to realize how profoundly such new tools and the new information they provide us can reshape our views of the world, indeed the universe, around us.

Today, in an admittedly less cosmic but still, for librarians, important realm, I would like to talk about how a new tool, computer tracking of electronic journal use, is providing new data which is seriously changing how many librarians are beginning to view collection development. Several years ago both OhioLINK and HEAL-Link pioneered a new approach to collection development - mass purchase of journals rather than title-by-title selection. In this new model, all of a publisher's journals were purchased for all members of the consortium. It was an extremely powerful approach because it provided huge numbers of new journals for a very small increase in price.

To remind you understand why expanding access was so important to us, let me show you some statistics that, in my experience at least, libraries rarely show. Usually libraries brag about how many journal subscriptions they have or, nowadays, complain about how many journals they've

cancelled. What one seldom sees is what proportion of the relevant journal literature they provide to their patrons. Painting with an admittedly broad brush, OhioLINK identified 18 significant publishers for the academic market (4,016 journal titles) and compared the former print holdings of 13 core OhioLINK libraries against this larger, generally desirable group of titles. Only Ohio State University held more than half of the titles and it was a bare half at 53.2%. University of Cincinnati followed with 38.7% of the titles and the percentages drop rapidly after that. On average, before electronic journals Ohio academic libraries (excluding 2-year institutions) were individually providing access to less than 25% of the potentially desired journal literature. Even ILL, and I remind you that it is a relatively costly solution for libraries at \$30.00 an article, would not solve a gap of this size. We needed a new approach and, like you, turned to mass purchase of journals.

In terms of adding new journals and getting better value for our money, it was a wildly successful strategy. Let me remind you just how significant this new approach was by referring to the data from the first two OhioLINK publisher deals - Academic Press and Elsevier Press.

Academic Press publishes 175 titles. Before the contract OhioLINK libraries had 1,140 subscriptions to these titles; after the contract the libraries had the equivalent of 9,100 subscriptions for a 10% additional annual cost. For Elsevier's 1,150 titles, OhioLINK libraries increased from 3,600 subscriptions to the equivalent of 59,800 subscriptions for a similar 10% additional annual cost. As you can see, this is a lot of new journals for a very small amount of money.

Another way of looking at these deals is to consider what happens to the per journal cost. Before our deal with Academic Press, OhioLINK libraries were paying an average cost per AP title of \$964.91; after the contract even with the 10% increase for electronic journals that average cost had dropped to \$132.97 per title. The Elsevier contract had equally dramatic results, going from \$1,944.44 per title to \$128.76 per title. This, of course, is a consortial view. For individual libraries, the reduction is variable. Those with very few subscriptions end up with incredibly low average costs, while those with the most subscriptions have smaller savings. The important point, however, is that even the largest libraries, OSU and UC, reduced their average costs by approximately half since they each had only subscribed to approximately half of Elsevier's journals.

It's a powerful model which is not only more suited to the electronic world than the traditional model, but which allows libraries and publishers to work together and both come out ahead. As is true of you as well, we have since done additional deals with other publishers - a partial list is on the screen. Talks with a number of other publishers are continuing. All told, Ohio academic libraries, through co-operative buying are now spending just over 19 million dollars a year on such deals. For the University of Cincinnati Libraries our share runs around a quarter of our total acquisitions budget. It is a major commitment, but the payoff in terms of expanded journal access, both for OhioLINK and UC is tremendous. Every library has at least doubled their journal access from each publisher for a roughly 10% increase in expenditure. For the state as a whole we have added literally a combined total of over 100,000 new serials titles to

libraries' collections. And, of course, publishers once again have a growing, increasingly lucrative market.

The only cloud on the horizon was a small but persistent rumbling from non-OhioLINK librarians and even some of our own faculty wondering why would we want to subscribe to all those journals. After all, we weren't "selecting" the journals, we were just adding them in mass lots. As people pointed out to us more than once, getting a bargain on something you don't need (or particularly want) is no bargain at all. A few local studies, for example one we did at the University of Cincinnati, showed that indeed, included in the mass purchase were a number of titles which we had been wanting for some time or which, in earlier years, we had been forced to cancel. Although reassuring, such small, localized studies really didn't carry the weight of the argument, didn't speak with the kind of authority we felt we wanted and needed. So we began to take a look at the use data for electronic journals in a systematic way. Specifically, we wanted to compare use of the newly available titles with the ongoing use of our original, carefully selected titles.

Research Context

The data we looked at were article downloads on a state-wide basis. By downloads we do not mean necessarily printing the article off, but simply clicking on the icon which causes the full article to be displayed, i.e. a step beyond the viewing of the abstract. This article could then be read on the computer screen or printed off or both in its entirety. Such an action, this click, would constitute one use or download.

Over 3,500 journal titles are currently available in full text electronic as a result of these package deals. The titles we looked at came from a variety of major publishers through a series of data snapshots. The publishers are listed on the screen.

Use, as measured by article downloads, started strongly and built rapidly - starting with 2 to 3,000 downloads per week and rising to 45,000 weekly downloads last winter. Keep in mind that there are two growth drivers: not only are patrons becoming more aware of and comfortable with electronic access, but OhioLINK is substantially increasing the article universe with the addition of new publishers and titles. The growth shows no sign of slowing and as we enter our fourth full year, the cumulative number of article downloads has topped 2,000,000 articles.

Who are using these articles? It is probably useful for me to remind you that OhioLINK represents all of Ohio higher education and so is probably fairly representative of North American higher education generally. Presently, there are 79 OhioLINK members running the gamut from major research institutions to small community and technical colleges and including both public and private institutions. As you might guess, looking at these very substantial use patterns - millions of downloads and a full range of academic institutions and patron types -- we have learned a number of interesting things.

Findings

The first is that not all journal titles and, indeed, not all publishers are equal in their usefulness to the academic community. Please keep in mind that we are not talking here just of university or college or community college use, but of all higher education use in the state of Ohio. In our first snapshot using 1999 data what we found was a difference from the old 80-20 rule of journal use. Rather than 20% of the journals accounting for 80% of the use, we found that it required almost forty percent of the titles to account for 80% of the downloads or use. As you can see, this was an absolutely consistent pattern for not just one or two but all five commercial publishers studied. At the extremes, as you can see, are the really heavily used titles where 1-2% of the titles account for the first 10% of the downloads and the much bigger group at the other extreme where it takes about 50% of the titles to account for the last 10% of the downloads. This greater than expected asymmetry suggests interesting implications for collection building — particularly in a resource constrained environment. Both libraries and publishers alike may want to revisit their commitment to such a large group of low-use journals. A quick look at a second snapshot showing the figures for the year 2000, and including even more article downloads and more publishers, confirms this use pattern.

Secondly, looking at the article downloads through the perspective of proportional use, i.e. the number of articles made available by each publisher divided by the number of downloads from that publisher grouping, we see considerable differences among publishers. The range runs from very sparse use of the article universe, approximately 2 articles out of a hundred used in a six-month period for the American Physical Society to just over 50 articles out of a hundred downloaded for Wiley. Of course we need to keep in mind that popularity and importance can be two very different things.

The third point is that articles do not seem to be, by and large, fungible — a fancy way of saying interchangeable. Rather the idea that a journal title represents a kind of natural monopoly, that a journal article is unique and irreplaceable seems to be confirmed by the reality that adding access to the titles of a new publisher does not decrease the use of titles provided by other publishers. Each publisher seems to have their own level of use which is not affected to any great extent by the articles/titles provided by another publisher. Here too our follow-up snapshot from a year later including more publishers (but not Elsevier) shows more complexity but the same independent pattern. It will, of course, be interesting to see if SPARC changes this.

The fourth point, and the main purpose of our study, is the most interesting and suggestive. How important is selection title by title? We took several camera shots of the data. When we looked at the 865,000 articles downloaded in June 1999 through May 2000, and compared articles downloaded from titles already held in each library versus titles not previously held in that library, we were astonished. Overall, 58% (502,000 articles) were downloaded from titles not previously held at that institution while only 42% were from titles already available on campus. Our next year's data on significantly more downloads showed exactly the same

percentage. We were getting more use from non-selected, than selected journals.

This was unexpected and disturbing. Even breaking the data down into more discrete chunks for an April 1999 - March 2000 period, the basic finding remained intact although the picture become more complex. When only university communities were considered, for example, the case for selection would appear to be somewhat stronger. The percentage of article downloads from not previously held titles dropped to 51% overall, with the three institutions showing the most extensive use of electronic articles, Ohio State University, University of Cincinnati, and Case Western Reserve University revealing non-selection rates of 31%, 44% and 46% respectively - a perfect inverse relationship to size of print holdings. Looking at the opposite end of the academic spectrum reflects the same pattern. When only the smaller four-year and two-year community colleges were considered (not shown) the percentage of downloads from not previously held journals rose above 90% with many approaching 100%. While it may be flattering to consider that the larger library staffs and more sophisticated faculty of the Universities allows them to do a better job of selection than their smaller counterparts, the more elegant and straight-forward explanation appears to be that size matters. It seems likely that large institutions do a better job of meeting their patrons' needs simply because they are able to provide a larger proportion of the journal literature, not because they have a better selection process.

Our first, and somewhat alarmed, conclusion therefore was that our selection process was seriously flawed. After all, on an overall basis, the journals which had not gone through a rigorous title-by-title selection process appeared to be generating more use than our carefully selected purchases. Even the data at the major universities where downloads of articles from selected journals exceeded 50% was not particularly reassuring. Our first thought was that perhaps continued use of print copies was a confounding factor. It could be argued that the relatively low use of digital versions of the already held print journals resulted from continued use of print copies (which was not measured and so not factored in). Further investigation is clearly called for. Nevertheless, front line librarians actively involved with their patrons are likely to be skeptical that print use of currently held titles will turn out to be a major factor. Our main use of the journal literature is by students — undergraduates because there are so many of them and graduate students because their per capita use rates are so high. And students have almost entirely abandoned use of the stacks. When power failures or other mischance have brought down our online systems, the students simply leave the library. When library staff point out that much of the material remains available through conventional print sources, the inevitable reply is a casual "we'll wait for the system to come back up." And even that most traditional group of patrons, faculty, seem unlikely to account for significant print use. Not only are they a relatively small proportion of the academic community with modest use of the library journal collection, but in fact the anecdotal evidence suggests that they too are actively embracing digital journal access.

Further studies proved helpful. When we undertook actual title by title comparisons and looked, for instance, at the average number of downloads

of titles previously held at UC (i.e. selected titles) versus the average downloads of the new titles (i.e. purchased by lot) we were somewhat relieved. Downloads from selected journals at UC averaged 51 per title while downloads from non-selected journals averaged 23 per title. But this in turn raised the question: if individual selected titles get more use than non-selected titles, how can the overall use of non-selected titles be so large?

The answer is that although selected journals were used, on average, more heavily by patrons than non-selected journals, our selected journals simply did not cover enough of the potential journal universe which patrons wanted and needed. The reason newly available non-selected journal use was so high was simply that they represented the majority of the journals now available to most library patrons. Remember that first study pointing out that statewide only around 25% of the potentially useful titles were held in state institutions and the answer becomes blindingly clear. Adding the remaining 75% , even at a lower per capita use rate, provides so many new journal titles that the use of non-selected titles swamped use of selected titles.

Just exactly how much expansion in title use can be seen by comparing the number of previously existing subscriptions receiving at least one download versus the number of newly available electronic titles receiving at least one download. Even at OSU with the largest number of print titles previously available (1,253 titles) the number of new titles used represented a doubling (2,501 titles) of access. The reality, therefore, was not that we had selected the wrong journals originally, but that we had not selected enough journals. There is, in short, a huge pent up demand for access to the journal literature and the solution is not better selection, but broader access. Mass purchase, by substantially expanding access does indeed appear to be justified.

Let me simply add that early Greek data shows that your experience is very similar. HEAL-Link data, although still preliminary, shows a similar pattern - a huge expansion of journal access and patron use, with 62% of the downloads from journals not previously available to library patrons.

Changes in Collection Development

As you might imagine, this information has caused us to begin to rethink how we do collection development. Since the situation is still preliminary, let me simply outline a few directions or issues for your consideration.

The HEAL-Link/OhioLINK Approach Provides a New Argument for Funding

One of the key problems of librarianship in the pre-consortia, pre-electronic world, is that it was impossible to raise library funding as fast as serials inflation. Consequently, not only have librarians been asking year after year for larger increases in collections budgets than their universities could afford, they were also cutting journals because the increases they did get were insufficient. This has led to a very curious, and self defeating,

situation for libraries. In essence we are saying, we need increases but we'll still buy less. It's like asking people to invest in the Titanic - after it hit the iceberg. No one wants to invest in a sinking ship.

We, on the other hand, have a strong, positive message. While others seek new money to delay disaster (paying more and more but getting less and less), we are able to show that our new money has substantially increased collections. And indeed, increased the availability of materials which are not just used, but heavily used.

Increasing Access Rather than Better Selection

What we have also seen today is a wonderful illustration of the old aphorism that changing circumstances, changing times, can make vices of old virtues. Great care in selection based on such traditional and virtuous assumptions or motives as, being responsible with limited funds, keeping the journal collections focused on key titles and subject areas, anticipating faculty and student needs for the journal literature, begin to appear in the light of these data just presented more as rationing access than encouraging it. As we have seen, it is not necessary for us to continue to live in such a restricted world. Rather than the librarian as bibliographic commissar or rationing official, it would seem that the librarian's new role is to focus on increasing access so that the patron can decide what they need and can use from the richest possible environment. We need to worry less about selection and more about increasing access.

Repricing, Not Cancellation

A related concern is dealing with the reality that not all parts of a publisher's journal profile, we're talking here of the sum total of a publisher's stable of titles, are equally valuable as determined by use. I am willing to admit at the outset that use and importance are not identical. As a practical matter, however, I think it would be very difficult for either libraries or publishers to ignore use as a key factor in the pricing equation. While I think that publishers have been pretty aggressive in the last decade or two about testing the upper limits for journal prices based on the accurate perception that some of their journals are very desirable to library audiences, I think it is very likely we will now begin to see libraries beginning to aggressively test the idea of significantly lower prices for the low use part of the publisher database. As you will recall, the generalized fog surrounding journal use is being burned off by the harsh sunlight of detailed digital use statistics. If almost half of a publisher's journals are only accounting for 10% of a library's use, it may be time for both librarians and publishers to revisit what libraries are paying for these materials. The point is not, as is presently the case, to see these titles as candidates for cancellation, but rather and more appropriately, as candidates for substantially lower pricing.

The Importance of Consortia and the Decline of Isolated "Island" Library

Library consortia are now a significant fact of life and, I think, are clearly understood to be a crucial keystone in any strategy to radically expand access. Probably most interesting is that we are already moving beyond individual consortia to consortial combines. In North America libraries are beginning to develop a kind of super consortium, to do national and even larger deals. One such national deal has already been done and we are well on their way to implementing a second national deal. The first was with Lexis/Nexis for *Academic Universe* and was a significant event, including as it did 53% of the US colleges and universities, more than 600 institutions involving some 23 consortia and 3.7 million full time students, signing a single contract. The second, and likely even larger deal is with Oxford University Press for the *Oxford English Dictionary*. This latter deal, by the way, has a significant international dimension to it and may be laying the groundwork for full-fledged international consortial deals in the very near future.

Consortial combines are developing outside of the US as well. In northern Europe the Nordic countries (Sweden, Norway, Denmark, Finland) are already exploring the possibilities of transnational, common action. And in southern Europe Greece is taking the lead in exploring the possibility of northern Mediterranean transnational co-operation and information sharing. The first meeting of the SELL group was held here in Thessaloniki last Monday, involving library representatives from Spain, Italy, Portugal, Greece and Turkey. We are only at the earliest stages, still taking baby steps, but it is a promising and exciting future which beckons.

In Conclusion

My message today has been simple. First, the economic model of mass purchase, pioneered by HEAL-Link and OhioLINK, has not only vastly expanded access to the journal literature for our patrons, but has provided access that is needed and used - heavily used. We are on the right track. And second, our success has also validated the idea of consortial action. The secret of the future here is the same secret on which our past success have been built - cooperation, working together, joint effort. It is a future which we don't have to wait for someone to give us, but a future which we can create ourselves. Together, we can do it. Thank you.