

## Moving Mountains and Crossing Rivers: A Report from the Second Conference on Library Physical Delivery

Valerie Horton (vhorton@clicweb.org)  
Executive Director, Colorado Library Consortium

### Abstract

This article is a summary of the second Moving Mountains Conference on the physical delivery of materials. The Conference was held in Cincinnati in September 2008. An ad hoc group of librarians involved in delivery regularly meet to discuss best practices and new applications. This article covers similarities between the logistic industry and libraries, a survey of physical delivery practitioners, and new trends in home delivery and automatic material handling systems. This article also discusses the growth of physical delivery, models of delivery, vendor relationships, and the Rethinking Resource Sharing group.

### Physical Delivery in Libraries

#### Introduction

Physical delivery has long been the ignored stepchild of the library world. For most of the twentieth century, library delivery was seen as the practice of moving items between branches of public or university library systems, or alternately using the United States Postal Service (USPS) to move interlibrary loan items between libraries. A comprehensive review of library literature (Dean, Robin 2007) found almost nothing written on the subject. Aside from an occasional mention in a few conferences on electronic delivery, there is no evidence of any group meeting to discuss library delivery during the entire twentieth century.

The role of delivery in the library community has been changing as the number of items loaned between libraries has grown. By the 1990's, consortium-based, direct patron circulation systems and statewide interlibrary loan (ILL) systems were sending the number of ILL transactions skyrocketing. Statewide interlibrary loan systems, often including hundreds of libraries, now exist in many states including Texas, Kansas, Minnesota, Ohio, Wisconsin, and Colorado. In 2007, Colorado alone saw a 35% increase in interlibrary loan transactions. Colorado has

several long-standing resource sharing consortium systems in place and is well past the initial growth patterns found in new, shared ILL systems. Further, traditional ILL also continued to grow. OCLC's WorldCat interlibrary loan service has reached ten million transactions a year, and is growing by 100,000 transactions annually. To further illustrate this point, the chart below shows Direct Consortium Borrowing (DCB) information from several large systems. These consortia include not only university systems, but combined public and university library systems, too.

Not surprisingly, the growth in ILL transactions was accompanied by a similar growth in physical delivery services. In the physical delivery world, every ILL transaction equals two delivery transactions; so Orbis Cascade's 456,000 ILL transactions equal 912,000 deliveries. When hundreds of thousands of items need to be moved, libraries quickly find that the USPS is too expensive, too labor- and material-intensive, and too slow. As a result, most resource sharing consortia either host or connect to a library courier service.

Figure 1: Consortia Interlibrary Loan Statistics

System	# of Libraries	Unique Records in MILLIONS	In-Consortium Borrowing
Orbis Cascade (WA, OR, ID)	34	9.2	456,000
Prospector (CO)	25	8.3	426,647
MOBIUS (MS)	62	4.3	189,092
Ohiolink	90	11	850,000
GIL (GA)	37	3	98,406
CARLI (IL)	76	10	645,038
CoPY (northeast)	7	n.a.	137,500
EZ Borrow (northeast)	62	n.a.	163,000

A 2007 American Library Association (ALA), Association of Specialized and Co-operative Library Agencies (ASCLA) study found 126 consortia hosted courier services for members (American Library Association).

The need to move millions of items a year between libraries, often over great distances, has become a major management problem for librarians. In September 2006, the first-ever conference dedicated to physical delivery took place in Denver. Called Moving Mountains, the conference attracted 125 people from across the country and three Canadian provinces. An Ad Hoc group of dedicated librarians made an ongoing commitment to work together; creating a LISTSERV (Moving Mountains Physical Delivery Discussion Group) and a best practices web site. A second delivery conference was held in Cincinnati in September 2008. The conference was named “Moving Mountains and Crossing Rivers” in honor of Cincinnati’s many waterways. The rest of this article will cover the programs presented during that conference. The conference highlighted several significant trends in physical delivery. This article describes the state of library delivery as it was presented at the 2008 conference.

**Keynote Address: Logistics Industry and Libraries**

David Millikin, Product Manager for Library Logistics, OCLC

Millikin made a compelling case that library functions closely match those performed by the logistics industry. The \$1.4 trillion U.S. logistics industry divides its functions into three categories of management: inventory, transportation, and administration.

- 1) Inventory Management is a close match to managing a library’s collections development, cataloging and part of the circulation function. Co-operative collection development and floating collections are examples of logistics methods that can improve collections while keeping costs low.
- 2) Transportation Management is part circulation and part library delivery services. Transportation also includes patrons travelling to and from the library to use library resources. Effectively managing fleets of trucks or courier routes and reducing the number of trips patrons must make helps to keep transportation costs low for library constituents.
- 3) Administration Management is what library managers do daily to keep the lights and heat on, staff employed,

and costs as low as possible while providing excellent service. Managing risk and keeping insurance low is an important logistics function.

This similarity between professions means that librarians can learn new concepts and standard practices from the logistics and supply chain industry and use that knowledge to improve library delivery services.

A number of trends are impacting the logistics industry at this time, according to Millikin. These include new technological solutions such as GPS, the impact of the Internet on shopping and shipping, rising insurance costs, rising gas costs, and a shortage of quality drivers. Transportation companies operate on very low profit margins, as low as 2 or 3%. One significant cost factor for a trucking firm is the price of fuel. Ten years ago fuel was approximately 14% of a long haul trucking company's overall costs, and now it's up to about 32%. The only way a transportation operation can remain in business is to charge clients for fuel, and fuel surcharges have become a contractual norm.

Given skyrocketing fuel prices and other costs, Millikin discussed some of the ways the logistics industry is keeping costs low. These include reducing empty miles – a truck should leave full and return full. Another idea is to reduce miles and hours driven by wise use of routing software and choosing the correct-sized vehicle for the load on the route. The concept of shifting to the cheapest transportation mode (e.g., transportation by air, ground, LTL or “less than truckload,” and full truckload) keeps per-unit costs down as well. For instance, shipping a book in a single container by overnight express can easily cost \$5 to \$10. A pallet of books may cost only about a dollar per book, and a full truckload of books may cost pennies per book to ship.

Millikin suggested one of the best ways to reduce cost is to use the idea of conjunctive or combined deliveries. If you work with a carrier who is also moving film, pharmaceutical, and banking records, you divide the

cost among all the other shippers and thereby significantly lower the cost per item for each shipment. According to Millikin, there are lots of reasons for librarians to look at supply-chain management for ideas to improve speed, flow, processing dynamics, and costs in all areas.

### **Library Courier Survey Results**

Greg Pronevitz, Regional Administrator, Northeast Massachusetts Regional Library System (NMRLS)

Pronevitz presented a survey of library delivery services conducted in the spring of 2008 by Brenda Bailey-Hainer (BCR), Valerie Horton (CLiC), Greg Pronevitz (NMRLS), and Melissa Stockton (QUIPU Group). The survey had 90 unique respondents of which fifty-one were consortia and seventeen were state libraries; other respondents were central libraries with branch delivery.

The majority of survey respondents were from regional systems that deliver fewer than 200,000 items a year; about five were much larger, serving between 400 and 600 libraries, and one service delivered to 1,100 libraries. It is likely this pattern is a reflection of the national landscape of library delivery services. Survey respondents included twenty in-house-run delivery services; thirty-four customers of commercial regional carriers, three who use overnight package shippers like UPS or Federal Express, and five who used some combination of those listed above.

There are a number of pricing schemes in use to recover costs from participating libraries, with membership fees for consortia members and per stop charges being the most widespread. Those groups using national overnight carriers charge by the package and tend to have smaller transaction counts. A fair number of couriers are free to participating libraries as the costs are paid for by regional system budgets, a state subsidy, or LSTA funding.

Given the volume that some courier services are moving (shipping ten, twelve, fifteen,

and even twenty million items), it is not surprising that sorting is a big issue. The smaller systems often sort either en-route by the driver or at the sending library. Larger systems tend to use a single sort or a series of regional sorts. Materials are moving in totes, tubs, and canvas or nylon bags with capacities that range from 1 to 50 items. Almost all systems have some form of label printing or preprinted labels available. Other available services include on-demand delivery, Saturday delivery, and special handling of archival materials. Many couriers report moving correspondence, furniture, and toilet paper – whatever needs to be moved to make participating libraries successful.

The survey included a study of the customer/vendor relationship of those systems that use commercial carriers. Generally, libraries are satisfied or very satisfied with their carrier service. Those with the highest satisfaction are those that allow drivers to sort en-route and those using overnight commercial services. These tend to be low-volume systems. Libraries and carrier vendors report that good communication skills, responsive contractors, flexibility, an understanding of libraries' needs, and quick turnaround are important in maintaining strong relationships.

Vendor problems crop up in the area of inappropriate information exchange between drivers and participating libraries: problems dealing with growing volume of materials that must be moved, too many staff changes on the carrier part, and poor customer relations skills on the part of the carrier company. Pronevitz summarized two of the main conclusions that can be drawn from the survey: courier service is very diverse and delivery practices develop because local preference influences decision-making. Overall, the survey found a robust and reasonably positive library delivery environment.

### **Building Earth's Largest Library: the Delivery Piece**

Valerie Horton, Executive Director, Colorado Library Consortium

Horton presented a summary of the state of delivery in libraries. She introduced five models of physical delivery:

- 1) United States Mail: traditional, slow, moderately expensive, requires heavy packaging, and ubiquitous
- 2) Overnight commercial services: fast, expensive, requires heavy packaging, and ubiquitous
- 3) In-house fleets and drivers: very common in library systems with branches and also used in many consortia
- 4) Regional carriers: commonly used with consortia delivery
- 5) Hybrid: some mix of the other four; for instance, an in-house fleet combined with mailing to some locations

The hybrid model is very common. There are many physically isolated places where delivery is both difficult and expensive. In these cases, USPS or an overnight carrier is used in addition to regional carriers or in-house fleet delivery.

As mentioned early in this article, the number of Interlibrary Loan (ILL) transactions is skyrocketing due to factors such as easier patron access to traditional ILL service, statewide ILL systems connecting hundreds of libraries, the growth of resource sharing consortium, and the popularity of patron placed holds. Conversely, two things hold back ILL growth: staff intervention between the patron and the ILL requester and the use of commercial, overnight carriers. In the first case, staff-assisted transactions add time constraints not found in patron-direct borrowing systems. In the second case, the costs of commercial carriers are substantially higher than any of the other four models presented early and higher costs tend to hold down usage (Lietzau, Zeth 2007).

Horton's conversations with delivery staff from Wisconsin, Colorado, and Florida found that library deliveries are still primarily book-based, with each state moving about 60% books, 20% CD (music/audio books), and 20% (DVD/video).

Horton discussed options in linking existing courier services. According the 2008 study Pronevitz discussed earlier, 51 library courier services already link with another service. Several statewide services also link; for instance, Wisconsin and Minnesota transport almost one million items annually across their borders. Horton addressed what would be required for more linking between states.

As stated earlier, traditional OCLC ILL has reached 10 million transactions, and there are numerous ILL systems in operation across the country. As a first step, transporting OCLC ILL requests could save libraries considerable money. Seven states in the west (OK, TX, MS, KS, NM, AR, and CO) borrow 700,000 items between themselves

alone via OCLC. A quick cost comparison found that linking couriers would halve the costs of shipping the same number of items using the U.S. mail. It is likely that if states link couriers for traditional ILL requests, more traffic will start moving that way making use of a courier service even more cost effective.

There are several issues that need to be resolved to connect courier service. Different circulation periods can be troublesome. There are no standard circulation periods, with seven, fourteen, twenty-one, and twenty-eight days all being commonly used. Many libraries will add a week or two to the circulation period if the items are shipped by mail. While the lack of a common circulation period has been the norm for some time, a common circulation period would facilitate lending and borrowing.

There are also no standards for packaging. The graphic below shows four common packaging types: bin or tote, canvas or plastic bag, and cardboard or paper wrapping.

Figure 2: Library Delivery Containers



Photographs by permission from Orbis Cascade and the Colorado Library Consortium

Figure 3: Pallet of boxes and a sample courier routing slip



Photograph from Flickr.Com' Creative Commons Attribution-Non Commercial-ShareAlike License

The last example of cardboard packaging adds considerably to the cost and labor involved in moving materials, not to mention environmental impact. Most consortia report that few items get damaged in transit. The Michigan Library Consortium is currently running a 'No Packaging' pilot program, and libraries have an opt-in or opt-out choice. It is likely that items moving across state lines will be palletized (stacked on a wooden pallet as illustrated below) and, therefore, will likely need to be shipped in bins or boxes. A simple labeling system is also illustrated above.

We know that library delivery services are linked to other library couriers. It is likely that links will continue since library courier delivery is substantially less expensive than all other alternatives. We know there are no current agreements regarding check-out periods, labeling, or packaging. The question Horton raised to those attending is: do we want these linkages to continue to develop ad hoc and scattershot, or do we want to try to come up with some standard practices to assist in collaborative borrowing.

**Rethinking Resource Sharing: An Update**  
Melissa Stockton, Quipu Group, LLC

Melissa Stockton, chair of the Physical Delivery Committee of the Rethinking Resource Sharing (RRS) group spoke about the

ad hoc group's goals and projects. RRS advocates a complete rethinking of the way libraries share materials. Stockton suggested we think of this group as a future-oriented think tank with some radical ideas and a user-centric focus. Three trends have driven these librarians to rethink resource sharing at this time. The first is technology and the changes it has created, and the second trend is that users have different expectations based on web 2.0 concepts such as more self-service options and wanting access to library materials 24/7. The third trend is the pressure on libraries to do more with less. Librarians need to rethink old behaviors and find ways of reducing costs while improving services.

Stockton discussed the seven principles found in the Rethinking Resource Sharing Manifesto (Rethinking Resource Sharing Initiative, Policy and Cultural Issues Group. Basically, the principles call for less restriction on borrowing and lending, different media or methods for the user to receive information: global access, access to cultural heritage organization resources, and other ideas like offering fees for service when appropriate and making everyone a library user regardless of their geographical boundaries.

The group has completed a Firefox download, formerly the "Get it Button" but

now called the "Go Getter." Go Getter uses open source applications to find an item located on any web page such as in WorldCat, online bookstores, libraries, etc. A group is working on marketing and user needs. The delivery group has decided to focus on home delivery. Rethinking Resource Sharing is seeking new volunteers to help spread the word.

### **Home Delivery of Library Materials**

Jo Ann Sampson, Orange County Library System, FL

"What we need to figure out is how to manage that last mile; the mile to deliver to the person's home." The previous quote by Jo Ann Sampson was the start of a presentation on Orange County's long-standing home delivery project. Orange County, Florida has been delivering to the home since the 1970's, first via the U.S. Mail and later by a private courier company. In 2007, the library system was moving 69,000/month.

Orange County considers home delivery to be equivalent to one of their branches; indeed home delivery is the third largest branch when looking at circulation numbers. Home delivery is the default pick-up location for a hold request. Of the current holds, 85% are delivered, 7% are mailed, and 8% are picked up through drive-through pick-up windows. The USPS is used for those without a deliverable address such as a post office box.

The service operates with twelve full-time and six part-time staff. Items are checked out and bagged in reusable bags. The label is inserted into a slip sleeve, and the bag is stapled and delivered during day light hours only; often with the items left on the doorstep. Despite bags being left outside, only 1 out of 1000 items gets lost and many of those are returned later. Orange County uses the "Two Time" delivery rule: if a patron loses materials twice, the library will pick up the cost; the third time the patron loses something, they lose the home delivery option.

Orange County is able to deliver to the home at a cost of \$2.46 per transaction (a transaction is one book delivered to one house). Impressively, when comparing transaction costs this makes home delivery the fifth most efficient operation of the sixteen branches. Patrons are responsible for returning the items via mail or drop-off at the library. Home delivery is a very popular program with 97% of respondents rating it as a "great" service. The fact that 34% of county residents never use the library, only home delivery, attests to the success of the service. Home delivery is so popular that the library Board has chosen to delay opening new branches rather than cut back on home delivery.

David Millikin, OCLC's Product Manager for Library Logistics, spoke after Sampson about OCLC's home delivery projects. The Montana home delivery project had twelve participating libraries. Items were mailed from each location directly to the patron; often over great distances. OCLC did not find the project sustainable as the participating libraries weren't able to self-fund home delivery, despite patrons reporting a 90% satisfaction rate. When asked, patrons were either unwilling to pay the full costs themselves, or they were willing to pay less than \$5 per transaction, suggesting that some form of patron-compensation might be feasible.

Millikin also spoke about another home-delivery pilot project that ships interlibrary loan requests from a used book supplier, Better World Books, directly to patrons. Patrons keep the books for a month and can buy them or send them back in a postage-prepaid return envelope. Millikin is seeking to find out if the overall cost of an home-delivered ILL transaction is less than the cost of a standard interlibrary loan, considering the fact that there is no labor required on the library's part. The project is new and results are not yet available. His overall goals with the project are to reduce wasteful steps, get requests to patrons faster, reduce ILL costs, and add more value to WorldCat.

Figure 4: Automated Material Handling System from King County, WA



Photographs courtesy of Greg Pronevitz

### **Automated Materials Handling Systems and Return on Investment**

Greg Pronevitz, Regional Administrator, Northeast Massachusetts Regional Library System and Cory McCoy, FKI Logistex

Greg Pronevitz introduced the audience to some of the amazing developments in automated material handling system (AMHS) for libraries. Currently, these systems are working in libraries of all sizes around the United States and in many European countries. Two large, high-volume systems are now in use for multi-location sorting at the Seattle Public Library and the King County Library System (Washington).

Massachusetts' regional library systems are investigating AMHS for sorting the 12-13 million items shipped annually. This volume is a five-to-six fold increase from ten years ago. The old models for delivery and in-library processing need to be reconsidered. There are six vendors who currently provide AMHS services to libraries: Bibliotheca, Envisionware, FKI Logistex, Integrated Technology Group, Libramation, and TechLogic. A partnership of Kiva Systems and Barrett Distribution Centers has also made a unique proposal to provide library-sorting services with robots.

Pronevitz reported that the savings or return on investment needed to include a re-

duction of physical effort in the libraries (not only at the sort site) in order to justify the investment. The largest investment was the AMHS. However, there are other costs involved; e.g., networks for communicating with nine ILS's in Massachusetts, standardized containers, application of a new "external" barcode or new RFID tags, facilities procurement and build-out, and perhaps vehicle upgrades.

Cory McCoy discussed the many technologies in use for AMHS. He discussed and showed photos of automatic feeders, self-loaders, scanners, software interfaces and downloads, belts, trays, and robotic shelving delivery features. McCoy reported that a well-developed system allows a human to sort around 600 items per hour; an AMHS can sort 4,000 to 6,000 items per hour. The sorted items can be delivered in many ways including grouped by call number on carts ready for shelving or in containers for shipping to other locations.

The benefits of an AMHS include an end to labeling because RFID or external barcode labels allow the system to communicate with the ILS to sort and route materials faster and more gently. An AMHS provides sorting with less human error and allows for automatic check in of the entire inventory of containers, likely producing savings on overall labor costs and ergonomic improvements at the sort site and in libraries.

McCoy said that it will take several years to recoup the upfront costs of the system, but over time an AMHS can be a huge benefit for system moving and sorting millions of items a year.

#### **Learn a New Way to Manage Your Vendor** Debi Baker, Business Manager, Orbis Cascade Alliance

The final speaker at the conference was Debi Baker who spoke about managing vendor relationships. She spoke about approaching courier vendors as if they were customers by using all the techniques of strong relationship building, including holding the provider to a high standard. Baker stressed that the foundation of a solid relationship with a vendor is for the vendor to know what the library wants in terms of delivery – the goals, the costs, and the terms of the contract. Orbis Cascade approached their delivery vendor wanting standard labels, a set delivery schedule, the ability to deliver 80% of items within two days, the ability to add and drop stops, and a flat fee pricing for standardized processes. Baker covered the steps in developing a relationship of mutual trust and benefit with the courier vendor. She sees communication as the key to a successful relationship. Baker concluded by discussing the online reporting Orbis Cascade has available for participants that includes online forms such as drop site closures, claims forms, and problem reports. Baker concluded by saying, “Remember, your goal is to close the gap that may be between you and your vendor to ensure your customers have the best service possible.”

#### **Conclusion**

The main theme of the Moving Mountains and Crossing Rivers Conference was voiced by Greg Pronevitz who said, when looking at library delivery: “local preferences heavily influence decision making”. Because of the growth of ILL and consortia borrowing, library courier services are busier than ever. But we are also in a time of experimentation with new services such as AMHS and the

option of home delivery changing how we think of delivery. The ad hoc group agreed to hold two more conferences: one in Atlanta in 2010 and one in St Louis in 2012.

For those interested in learning more about delivery, joining the Moving Mountains LISTSERV as discussed earlier is the logical first step. Further, ALA’s Association of Specialized and Cooperative Libraries Agencies (ASCLA), Interlibrary Cooperatives and Network Section (ICANS) created a Physical Delivery Discussion Group to focus on delivery issues. This group meets at every ALA on Sundays from 8 a.m. to 10 a.m.. Finally, the ad hoc Rethinking Resource Sharing Group also created a Physical Delivery Subcommittee. This group has chosen to concentrate of expanding home delivery options.

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