Exploring the SCOAP³ Model for High Energy Physics

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A new model for funding high-energy physics (HEP) journals has emerged and is drawing concerted interest and questions from the library community - SCOAP³, the Sponsoring Consortium for Open Access in Particle Physics Publishing. An interested crowd of about 80 turned out for the presentations by Salvatore Mele of CERN at ALA 2009 Midwinter Conference in Denver and again during the 2009 ACRL National Conference another 22 came to an information session. The audiences were well apprised of the goals and desires for open access (OA) to the HEP journals. In addition, there was acknowledgement that the current subscription model in libraries is unsustainable and constructive change must be found. The audiences on both occasions were positive and hopeful, posing good questions; however, it continues to be worth showing how the SCOAP³ proposal offers libraries an opportunity to contribute toward OA in an innovative manner that fosters exploration of new possibilities.

Despite the growing number of OA journals and the studies undertaken to better understand the costs in peer-review management and publishing, the library journal subscription model continues with little price weakening even in these difficult times.[i]

Enter the SCOAP³ proposal from HEP scientists to achieve OA. This initiative redirects institutional journal subscription dollars through an international consortium to pay for peer-review management, editing and formatting services, and ensures author rights for open re-use and sharing of published papers as well as institutes a bidding process to establish the price of these services.[ii]

This innovative model originates with the stakeholders for an entire discipline, comprising the scientists, publishers, agencies, and libraries. There is no other proposal or potential model that has used problem definition, process of investigation, data gathering, and analysis to engage the entire community to work towards a solution. Every stakeholder group has a role in the change:

1. The authors commit to preferring SCOAP³ journals.
2. The publishers participate in a transparent bidding process.
3. The subscribing institutions around the world (libraries, agencies and so forth) redirect subscription dollars to the consortium that will oversee the bidding process and payments to publishers.

This basic framework was laid out for the audiences in Denver and in Seattle and prompted questions pertaining primarily to the governance of the SCOAP³ consortium and the bidding or tendering process. For the United States the model for an international consortium and bidding process introduces new concepts, as well as an unprecedented level of independent collaboration and coordination for use of academic library financial resources. They require a broad perspective of the needs of the scholarly community, across the entire country, in sync with an even wider worldwide effort.

These three conditions create a new formal scholarly communication model that changes behaviors, concurrently addresses the market inefficiency of institutional journal subscriptions, and captures a critical mass of papers in a field:

1. OA for the final peer-reviewed, publisher formatted version.
2. Engagement and commitment of a research community, a defined discipline.
3. An elastic pricing environment for peer-review management and publishing services.

The success and benefits of publicly funded research depend on the widest distribution of results. In the print model the transfer of exclusive copyright to publishers provided them the business incentive to publish research papers. While broad distribution remains a primary research and social objective, the means have been changed dramatically since the advent of the global network in the mid 1990's, opening the door for research output to become OA. SCOAP[3] describes this explicit goal as "articles shall be made available on an irreversible OA basis."[iii] The requirements go on to stipulate capture and re-use of the articles and associated metadata in subject and institutional repositories that can support text and data-mining applications.

No new model can succeed without the participation of the researchers. They are the source of the new capital - the manuscripts - that drives the entire enterprise. Since 2000 a number of alternative models have emerged that range from author payments after the publishing initiative is capitalized by a grant, e.g. PLoS; to author payments in addition to a hosting institution subsidy, *New Journal of Physics*; and to institutional payments coupled with author fees, e.g. Biomed Central. These models all have the objective of achieving OA for the final published versions of the peer-reviewed papers. In addition, with pressure from authors and funding agencies, some publishers release a journal's content after a 6 to 12 month embargo period (e.g. *PNAS)* or for a fee, the publisher will release the article immediately (e.g. Springer, Elsevier, and also *PNAS)*. These examples are based on a single new journal or publisher with the hope that they would attract sufficient individual researchers and their papers to succeed as a model. While these new ventures enjoy a range of success, they have not captured sufficient critical mass to leverage an entire discipline into a new model.

The SCOAP[3] proposal is a response to the clear call from the HEP scientific community to reposition the final formal version of papers for maximum availability. Specifically, those working at the CERN LHC accelerator, including over a thousand U.S. physicists, committed to only publish their articles under OA conditions to the point of voting to "privilege SCOAP[3]-friendly journals."[iv] To that end all the papers describing the construction of the Large Hadron Collider (LHC) apparatus are openly available in the *Journal of Instrumentation*.[v] HEP scientists have thus shown a willingness to conform their behavior discipline-wide in the interest of gaining OA across all peer-review publishing venues.

In the pre-print distribution mechanisms prior to the development and adoption of the *arXiv*, paper pre-prints were usually discarded from the library as final copy in the form of the print journal arrived, while a community-operated database, *SPIRES*, maintained the bibliographic information.[vi] Given the barriers to easy article use and reuse driven by financial barriers and publisher silos, the *arXiv* has achieved enduring utility that is operating parallel to the peer-reviewed publications. Currently in HEP the informal version is thus better integrated into scholarly communication activities than the final formal published version. Yet it is not desirable for HEP authors at this time to orchestrate a peer-review management model around the *arXiv* that eliminates the role of publishers. Career requirements for publication in high-quality journals are consistent across disciplines, and notwithstanding the scholarly communication practice in HEP, HEP scientists are dependent on publication in peer-reviewed journals, as are the vast majority of researchers worldwide. It should be noted that the conditions that work for HEP, reliance on preprints in particular, do not *currently* transfer to many other disciplines. It is not practical to envision a model for change without accommodating the evaluation aspects of the present day academic system. Without the journals the scientists will not and, indeed, cannot reasonably be expected to fully participate as a group.

As is the usual practice in HEP, when a major multi-national project is undertaken, the basis for consensus and the potential budget are first thoroughly discussed via the Expression of Interest

mechanism, followed by the creation of an international governing board with representatives from all countries involved. The case of SCOAP^3 would be no different. Based on the Report and presentations by Salvatore Mele[vii], SCOAP^3 moves forward as the governing board fleshes-out the tender requirements document to be sent to the publishers, whose bids will be evaluated for compliance. All bids or responses that meet the conditions would be accepted. If the bidding process is deemed successful, meaning that the publishers will, among other actions, unbundle the SCOAP^3 titles from the packages and reduce the price for the remaining portion, the governing board will issue Memoranda of Understanding (MoU), a financial contract, to the Expression of Interest signers. At this point the full details of the SCOAP^3 model will be known and can be evaluated prior to committing to the MoU. It is important to note that at this stage the Expression of Interest does not bind a signing U.S. library to a financial commitment.

Throughout this process the work of the board will have the legal and financial infrastructure support of the CERN laboratory in Geneva, an organization that has supported a $9 billion procurement process for the construction of the Large Hadron Collider. The details however, of the governing board constitution as well as the completion of the international fund-raising effort, cannot be worked out until more U.S. libraries sign the Expression of Interest.[viii]

To move forward and to learn more about possibilities to achieve OA U.S. libraries that subscribe to any of the five journals that are considered 100% convertible to SCOAP^3 (*European Physical Journal C, Journal of High Energy Physics*, *Nuclear Physics B*, *Physical Review D*, and *Physics Letters B)* need to participate. There are also three more titles with different HEP participation rates: *Journal of Instrumentation* at 50%, *Nuclear Instruments and Methods* at 25%, and *Physical Review Letters* at 10%. Titles in package or consortium deals would be prorated. The California Digital Library offers an exemplary process, described by Ivy Anderson at the 2008 ICOLC meeting.[ix]

It is no small undertaking to envision and implement a different model for the flow of funds to pay for peer-review management and editing services and to assure the rights sufficient for appropriate access and archiving over the long haul. The HEP physicists brought the world the Web; perhaps they have supplied a key to stimulating transformation of the scholarly communication enterprise. The SCOAP^3 2007 report is remarkable in the serious attention given to the challenging issues integral to a successful transition from the library subscription and licensing model to one allowing unfettered use of research papers for present needs and those unforeseen for the future.

The SCOAP^3 model should not be allowed to fail due to the lack of engagement solely on the part of the U.S. library community. Compared to other countries where both the research and universities are under public control with the government underwriting the grants and libraries, in the United States the organization of research and universities and their libraries is fractured and balkanized by the mix of public and private funding and by the differing practices among states. The lack of an over-arching public authority in the U.S. to set direction leaves many different entities to grapple on their own with both practical issues and strategic vision. This condition can be a strength if U.S. libraries will 'think global', really global, and 'act local.' Otherwise, the U.S. will likely abdicate any international leadership role in new scholarly communication models. Therefore, the challenge for U.S. libraries is to make the effort to see the bigger picture and find ways to align our disparate parts to create a better whole in the long run. SCOAP^3 offers a promising new approach worthy of our support to pursue next steps.

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[i] Van Orsdel, Lee C. and Kathleen Born. "Reality Bites: Periodicals Price Survey 2009," *Library Journal*, April 15, 2009. (http://www.libraryjournal.com/article/CA6651248.html).

[ii] See the FAQ at the SPARC website for answers to more specific information (www.arl.org/sparc/publications/papers/scoap3_09april.shtml).

[iii] *Towards Open Access Publishing in High Energy Physics*. SCOAP^3 Working Party. CERN, 2007. See 'Tendering Requirements' on pp. 24-26. (scoap3.org/files/Scoap3WPReport.pdf).

[iv] CMS (Compact Muon Solinoid) Collaboration Board Minutes from June 27, 2008.

[v] See this link jinst.sissa.it/LHC within the *Journal of Instrumentation.*

[vi] Poynder, Richard. "The Open Access Interviews: Annette Holtkamp." 2008. 26pp. (http://www.richardpoynder.co.uk/Annette_Holtkamp_Interview.pdf).

[vii] Mele, Salvatore. "SCOAP^3, Sponsoring Consortium for Open Access Publishing." Seattle, 14 March 2009. (http://scoap3.org/files/Seattle-140309-Mele.pdf). Page 19.

[viii] More information on the Expression of Interest can be found at tinyurl.com/scoap3us.

[ix] Anderson, Ivy. "Make SCOAP^3 Happen," Presentation at ICOLC, San Francisco, CA. 2008. See especially slides 8 and 10 (www.scoap3.org/files/anderson_icolc.pdf).