Report from Dagstuhl Perspectives Workshop 12452

Publication Culture in Computing Research

Edited by

Kurt Mehlhorn[1], Moshe Y. Vardi[2], and Marc Herbstritt[3]

1 **MPI für Informatik – Saarbrücken, DE,** mehlhorn@mpi-inf.mpg.de
2 **Rice University, US,** vardi@cs.rice.edu
3 **Schloss Dagstuhl – Leibniz-Zentrum für Informatik, DE,** marc.herbstritt@dagstuhl.de

Abstract

The dissemination of research results is an integral part of research and hence a crucial component for any scientific discipline. In the area of computing research, there have been raised concerns recently about its publication culture, most notably by highlighting the high priority of conferences (compared to journals in other disciplines) and – from an economic viewpoint – the costs of preparing and accessing research results.

The Dagstuhl Perspectives Workshop 12452 "Publication Culture in Computing Research" aimed at discussing the main problems with a selected group of researchers and practitioners. The goal was to identify and classify the current problems and to suggest potential remedies. The group of participants was selected in a way such that a wide spectrum of opinions would be presented. This lead to intensive discussions.

The workshop is seen as an important step in the ongoing discussion. As a main result, the main problem roots were identified and potential solutions were discussed. The insights will be part of an upcoming manifesto on Publication Culture in Computing Research.

Seminar 06.–09. November, 2012 – www.dagstuhl.de/12452
1998 ACM Subject Classification K.4 Computer and Society, K.7 The Computing Profession, K.7.2 Organizations, K.7.4 Professional Ethics
Keywords and phrases scholarly publishing, conference, journal, peer review, open archive, open access, indexing, research evaluation
Digital Object Identifier 10.4230/DagRep.2.11.20
Edited in cooperation with Andrew P. Bernat, Jon Crowcroft, Jan van Leeuwen, Bertrand Meyer, Fred B. Schneider, and Douglas B. Terry

1 Executive Summary

Kurt Mehlhorn
Moshe Y. Vardi
Marc Herbstritt

The dissemination of research results is an integral part of research and hence a crucial component for any scientific discipline. While computing research has been phenomenally successful, there is a broad feeling that the publication models are quite often obstacles. Yet there is no agreement on whether the publication models need to be radically changed or fine tuned, and there is no agreement on how such change may occur. Over the past few years, a vigorous

discussion has been going on through editorials, Viewpoint articles, and blogs of the Communication of the ACM – see Jonathan Grudin's overview available at http://research.microsoft.com/en-us/UM/People/jgrudin/publications/publicationculture/CACMreferences.pdf.

In spite of this ongoing debate, the community seems no closer to an agreement whether a change has to take place and how to effect such a change.

The workshop brought together key players in this debate for an intense three-day discussion and deliberation, with the aim of analyzing the issues and developing guidelines for the way forward. A specific focus of the workshop was to develop consensus around a set of guiding principles. An expected outcome of the workshop is a manifesto to be published afterwards.

Topics

The workshop addressed several topics that were part of the community's collective conversation on publication culture during the last years:

1. The uniqueness of the publication model in computing research:
   - the emphasis on conference publishing and the decline of journal publishing;
   - the large and growing number of specialty conferences and workshops that are really conferences;
   - coping with established publication cultures in the (other) sciences and with the different cultures of different computing sub-communities.
2. Cultural issues:
   - the culture of hypercritical reviewing and the decline of thorough constructive reviewing;
   - tenure and promotion practices that encourage short-term research;
   - the influence of bibliometry on publication behavior and tenure practices and the quality of bibliometry.
3. New publication models:
   - the tension between open access and reader-pays publishing, and the spectrum in between;
   - the role of social media in scholarly publishing;
   - the role of various actors: commercial publishers, scientific societies, academic publishers and archives;
   - the place of self-publishing or publishing in public repositories;
   - the need to develop new rules for data citation, sharing, and archiving.

Organization

The workshop was organized by Moshe Y. Vardi and Kurt Mehlhorn with coordinating support by Marc Herbstritt. Additionally, a program committee (PC) was set up, including Andrew P. Bernat, Jon Crowcroft, Jan van Leeuwen, Bertrand Meyer, Fred B. Schneider, and Douglas B. Terry. The PC helped in seeking suitable contributions and advising the organizers in shaping the program. Each invitee was asked to submit a position statement which was reviewed by the organizers and the PC. The collection of accepted position statements provided a broad and concise overview of the problems in the publication culture of computing research, disclosing a variety of different and competing viewpoints.

On Wednesday Nov. 7, 2012, the workshop started with a session presenting standpoints from scholarly societies and commercial publishers, among them Ronald Boisvert

(NIST/ACM), Dan Wallach (Rice University/USENIX), Maarten Fröhlich (IOS Press), Alfred Hofmann (Springer Science Business+Media/LNCS), Sweitze Roffel (Elsevier), Andrew Bernat (Computing Research Association), and Moshe Y. Vardi (Rice University/ Editor-in-Chief of Comm. of the ACM). The afternoon session focussed on peer review and research dissemination, including the talks from Bertrand Meyer (ETH Zürich/Informatics Europe), Ursula Martin (Queen Mary University London), Lance Fortnow (Georgia Institute of Technology), Doug Terry (Microsoft – Mountain View), Nicolas Holzschuch (INRIA Rhône-Alpes), George Danezis (Microsoft Research – Cambridge), and José Palazzo Moreira de Oliveira (UFRGS).

On Thursday Nov. 8, 2012, the workshop continued with a morning session on "conferences versus journals" as well as on "open access", with talks from Manuel Hermenegildo (IMDEA), Keith Marzullo (NSF), Kurt Mehlhorn (MPII), Jeff Mogul (HP), M. Tamer Özsu (University of Waterloo), and Vladimiro Sassone (University of Southampton). The afternoon session focussed also "conferences versus journals", but also on indexing and general cultural issues; talks were given by Reinhard Wilhelm (Saarland University), Jan van Leeuwen (Utrecht University), Jonathan Grudin (Microsoft Research – Redmond), Andrei Voronkov (Manchester University), Srinivasan Keshav (University of Waterloo), Fred B. Schneider (Cornell University), and Batya Friedman (University of Washington).

Batya Friedman moderated the "Future Workshop", which (1) interactively asked participants after the sessions to contribute brief descriptions of substantial shortcomings in our current publication culture, according to one's own opinion, (2) asked participants to describe an idealized publication culture for computing research, and (3) finally, asked participants to provide brief accounts of potential solutions to the problems raised and ways to reach ideal outcomes.

The results of the "Future Workshop" were discussed on Friday Nov. 9, 2012, and served as basis for working groups. The working groups met in small teams and presented the results from their discussions to the audience. Finally, Moshe Y. Vardi gave a summary on the workshop and talked about future actions.

The organizers and the PC met on Friday afternoon to clarify core issues for the upcoming manifesto.

Outcomes

The main outcomes will be covered in the upcoming manifesto that will be published in the "Dagstuhl Manifestos" series[1]. However, as discussed during the organizers and PC meeting on Friday afternoon, a first sketch of a consensus list with regard to problems and desired solutions is as follows:

- Problems:
  - *Scaling*: The publishing ecosystem in computing research—conference and journals—has not scaled up.
  - *Policy*: We have no universally accepted norms and policies, and no single authority.
  - *Data*: We have many opinions but little data.
  - *Business model*: Huge gap between publishers and authors/readers.

[1] http://drops.dagstuhl.de/dagman

  - *Incentives*: Large number of small papers.
  - *Measurements*: Highly imperfect metrics.
  - *Conferences*: Too many submissions and resubmissions, random-like decisions, too many conferences, too much travel, conferences as "journals that meet in hotels".
  - *Journals*: Not exciting, hard to find reviewers, poor journal management systems.
  - *Reviewing*: Increasing burden, declining standards, declining competence.
- Wish list:
  - *Defragmented Community*: Learn to operate at scale.
  - *Rational reviewing*: Eliminate treadmill, eliminate hyper-criticality, reintroduce review rounds.
  - *Revitalized journals*: Perhaps through jourference/cournal hybrids.
  - *Reduce paper inflation*: Focus on quality, not quantity.
  - *Appropriate bibliometrics*: Recognize conferences, eliminate self-citation.
  - *Open Access*: Research results should be available to all to read and assess as soon as possible.
  - *Viable associations*: Strong associations that can enable, facilitate, and lead a better publication culture.

Resources

Position statements and slides from the presentations are available at http://www.dagstuhl.de/mat/index.en.phtml?12452.

2 Table of Contents

3 Overview of Talks

3.1 Thoughts on the Publication Culture in Computing Research

Andrew P. Bernat (Computing Research Association, US)

The computing fields have a unique publication culture that relies heavily on conferences as a venue for publishing scholarly work. This situation predates the 1999 CRA Best Practices Memo "Evaluating Computer Scientists and Engineers For Promotion and Tenure" by Patterson, Snyder and Ullman [1], which laid out the reasons for this situation. The intent of that memo was simply to lay out how "impact" should be evaluated in the computing research field, but it has been used ever since as a justification for publishing in conferences and downplaying the importance of publishing in journals, the typical practice in other scientific disciplines.

The response was quick and the discussion has continued to this day, from arguments for a grand-scale rethinking of publication practices to a discussion of the "negative" impacts of our "conferences as journals" rather than "conferences as community".

Adopting a different publication model has not been impact free to the computing research community; among the negative impacts are:

1. the large and growing number of specialty conferences and workshops that are really conferences
2. coping with established publication cultures in the (other) sciences and with the different cultures of different computing sub-communities
3. the culture of hypercritical reviewing and the decline of thorough constructive reviewing
4. tenure and promotion practices that encourage short-term research
5. the influence of bibliometry on publication behavior and tenure practices and the quality of bibliometry
6. by emphasizing conference publication there is an inevitable de-emphasis on the other values inherent in a conference including:
   (a) creating opportunities for cross-fertilization
   (b) creating a community gathering
   (c) providing a venue for high quality dissemination of research results
   (d) providing a high profile public venue for computing research

At the same time, it is clear that the publication model in use today throughout scholarly endeavors is under considerable stress:

1. the tension between open access and reader-pays publishing and the spectrum in between
2. the role of social media in scholarly publishing
3. the role of various actors: commercial publishers, scientific societies, academic publishers and archives
4. the place of self-publishing or publishing in public repositories
5. the need to develop new rules for data citation, sharing, and archiving
6. the impact of new publishing models on the business models of our societies

References

1 D. Patterson, L. Snyder, J. Ullman, Evaluating computer scientists and engineers for promotion and tenure, Best Practice Memo, Computing Research Association, September 1999, http://cra.org/resources/bp-view/evaluating_computer_scientists_and_engineers_for_promotion_and_tenure/.

3.2 Fair Access: Society Publishing and the Subscription Model

Ronald F. Boisvert (NIST – Gaithersburg, US)

Joint work of Boisvert, Ronald F.; Davidson, Jack;

We present the perspective of non-profit professional societies as scholarly publishers, which we characterize as "fair access." Fair access is a subscription model based on low cost for access and liberal author rights including self-archiving, with surpluses used to improve the health of the profession. We describe implementation of fair access by the Association for Computing Machinery (ACM), an educational society governed by its members, and how it is continuing to adapt its policies to changes within the computer science community.

3.3 The peer-review process: Insights from the largest computer security conferences

George Danezis (Microsoft Research UK – Cambridge, GB)

URL http://conspicuouschatter.wordpress.com/2011/10/23/acm-ccs-2011-reviewing/

In 2011 and 2012 ACM Computers & Communication Security (CCS) conferences received, and accepted, an unprecedented number of submissions, making them the largest academic computer security conferences to date. In 2011 the surge in submissions was unexpected and the peer review process had to be streamlined to make optimal use of the reviewing resources available. This forced the chairs to have a very close look at the quantitative and qualitative data from the whole process, as well as assess its function in the overall decision making process. Over the two years over 2000 reviews were filed from about 100 PC members and hundreds of external reviewers, making it the largest data set to study the variability of reviews, scores, and their evolution over the course of the review process. In both years program committee members had a large workload, that allows us to study different profiles of reviewers, as well as the variance between individuals. In this talk I will present some tools we developed based on these data-sets, and some conclusions about publishing culture supported by both quantitative and qualitative data.

Related blog post as position statement: http://conspicuouschatter.wordpress.com/2011/10/23/acm-ccs-2011-reviewing/

3.4 Separating the Editorial from the Distribution in CS Publications

Lance Fortnow (Georgia Institute of Technology, US)

Conference and Journal publications in computer science have traditionally played multiple roles: As a method to choose great papers, give comments to the authors and to distribute those publications to the CS community. In many industries, like books, music, movies and newspapers, the Internet has broken this link between content and distribution. While there is no direct mapping from academic publications to those industries, we nevertheless need to rethink the role of publications in this new environment. The academic community, especially in computer science, wants their publications to be accessible to everyone at any time. People should post their research papers on unedited or lightly edited publicly accessible archive sites. In addition there should be a system that allows conferences and journals to choose from these papers, both to help the community find the best papers in the field as well as a method of giving authors a way to claim quality on their papers. This position paper will discuss a few different approaches toward this goal, discussing some of the benefits and challenges of each.

3.5 Intellectual Culture: Perspectives on the Publication Culture in Computing Research

Batya Friedman (University of Washington, US)

In my remarks I will reflect on the current publication and intellectual culture in information and computer science, particularly the ways in which the culture and practices incentivize (though perhaps not intentionally) rapid, small(er), stand-alone, non-interdisciplinary intellectual contributions; and place a downward pressure on young(er) scholars to do more and to achieve more earlier and earlier in their careers. I will discuss the implications of such a culture for developing and valuing mature scholars and deep scholarship. Then I will contrast the current culture with one that prioritizes scholarship that builds substantively on prior work, values longer-term programmatic research with theory construction, supports careful implementation and reporting of method, and appropriately rewards authentic interdisciplinary efforts. As time permits, I will suggest some ideas toward the recovery of mature scholarship. In so doing, I will touch on what making such a cultural transition might entail including ethical issues, and call out potential hazards along such a path.

3.6 Publishing at IOS Press

Maarten Froehlich (IOS Press, NL)

Of the 100 or so journals and approximately 125 books which IOS Press publishes each year, 30 journals and about 75 books fall broadly into the category of Information and Communication Sciences. An increasing number of these are now offered in an Open Access context, both for our journal and book platforms. These open access publications are referred to as the IOS Press Open Library®. Open peer review is another area which is also being explored successfully. We offer services to institutional scientists, organisations and conferences using a range of publishing models, from full e-publishing to e and paper. The latter is still in demand for a variety of purposes, but everything we publish exists in digital form as part of the production workflow. Clients and authors decide on how they want the material to be delivered to them.

3.7 Conferences, Journals, and the Competitive Exclusion Principle

Jonathan Grudin (Microsoft Research – Redmond, US)

Journals were invented to serve purposes not served by meetings, notably to widely disseminate and permanently archive results. Conferences served to build and maintain the community that comprises a field. For centuries, journals and conferences occupied these distinct niches. In computer science today, conference proceedings are widely disseminated and permanently archived. In these and other ways, conferences have invaded the niche occupied by journals. The competitive exclusion principle formulated by evolutionary biologists states that two species cannot occupy the same niche: One will become extinct or be forced to move to a different niche. We have a third option, rarely possible in biology – we can create a single hybrid. I will describe numerous ongoing experiments to create conference-journal hybrids or mergers. I argue that the conference-journal question will likely work itself out, and that a more critical issue is the empty community-building niche vacated by conferences.

3.8 Conferences vs. Journals in CS, what to do? Evolutionary ways forward and the ICLP/TPLP Model

Manuel Hermenegildo (IMDEA Software and UPM – Madrid, ES)

We computer scientists seem to do it differently to other sciences: we publish mostly in conferences and our conferences are of a different nature. Our journal papers are long and take a long time to review and publish whereas often their papers are short and published quickly. And all this interacts with the tendency to evaluate researchers or departments frequently and in a mechanical way (via paper numbers and citation counts) instead of infrequently and deeply (by actually reading papers) and the fact that the current way in which bibliometry is done makes our papers invisible to the world. This position paper offers

my viewpoint on what the problems are and why they are important, and also elaborates on some realistic ways forward. In particular, regarding the issue of conferences vs. journals, it proposes the model adopted a few years back by the logic programming community for its main conference (ICLP) and journal (TPLP, Cambridge U. Press). This model is based on the assumption that CS journal papers can be of two types: rapid publication papers (similar to those of other sciences and also close to our conference papers) as well as the longer journal papers that are traditional in CS. Then, the concrete proposal is to, instead of publishing the traditional conference proceedings, have the papers submitted instead to a special issue of an (indexed) journal which is ready online in time for the conference. The traditional conference reviewing process is also improved (following journal standards for rapid publication papers and special issues) to include at least two full rounds of refereeing and a final copy editing step. I argue that this model offers an evolutionary path that solves a good number of the incompatibility problems with other sciences of the current CS models, without giving up the essence of CS conferences. For this reason I believe that this model (or one of the closely related models being proposed) would be a clear path forward, and relatively straightforward for the community to adopt widely.

This viewpoint was further elaborated in the following position paper and slides presented at the dagstuhl meeting:

– http://www.dagstuhl.de/mat/Files/12/12452/12452.HermenegildoManuel.Paper.pdf
– http://www.dagstuhl.de/mat/Files/12/12452/12452.HermenegildoManuel.Slides.pdf

3.9 Computing Research Publishing at Springer – with a Particular Focus on LNCS

Alfred Hofmann (Springer-Verlag – Heidelberg, DE)

We first present some figures about the overall STM publishing market to put computer science research publishing in relation to publishing activities in other scientific disciplines; also, several particular features of the STM market are addressed. After positioning Springer as a computer science publisher in comparison to its main competitors and highlighting several special aspects in computer science research publishing, we present Springer as a leading full-scope publisher in computer science in more detail, with a particular focus on Lecture Notes in Computer Science. We demonstrate that Springer supported computer science research community development and (self -)organization in manifold ways and continues to do so, also by experimenting with novel approaches to research result publishing.

3.10 Open Archives and the Invisible College: driving forces towards a new publication model

Nicolas Holzschuch (Inria Rhône-Alpes, FR)

URL http://hal.inria.fr/hal-00749806

Publication methods have been and are constantly evolving in Computer Science. My position, expressed in this paper, is that in this current landscape, there is room for a new publication model, combining OpenArchives for immediate access with editorial peer-reviewing. A key interest of this proposal is that peer-reviewing happens after the results have been released. I start by reviewing recent changes in publication methods in Computer Science and some of their consequences, drawing practical examples from Computer Graphics. I then review existing forces that are contributing to changes in publication methods, and how these forces push towards a new publicationmodel. I describe this model, and review practical requirements to make it work.

3.11 The Relevance of Journals to Computer Science

Srinivasan Keshav (University of Waterloo, CA)

Every scientific discipline builds on the past: new ideas invariably appear from the analysis, synthesis, and repudiation of prior work. It is necessary that records of prior work be as free from error as humanly possible. However, conference publications, by their very nature, are susceptible to errors. A field that treats conferences as archival publications is building on a foundation of sand. I believe, instead, that we should restore the integrity of archival journal publications by taking steps such as reducing publication delays, increasing the pool of journal reviewers, and removing artificial page limits.

3.12 The best science? The best scientists?

Ursula Martin (Queen Mary University of London, GB)

We draw attention to some effects of the computer science publication culture, looking at ways in which this affects the profile and career trajectory of individuals when compared other scientists, both within and beyond computer science. We highlight in particular the huge waste of effort of authors and referees brought about by overpublication and conferences with low submission rates; the way in which the conference is biased towards those with the resources (money, time, family circumstances, political freedom) to attend and this may miss out on the best science; and the difficulties that can arise for individuals and the discipline when decisions are made by other scientists and administrators do not understand the computer science publication culture.

3.13 Community, Conversation, and Evaluation versus CISE Publication Trends

Keith Marzullo (NSF – Arlington, US)

Scientific journals appeared about 350 years ago to create communities of scientists (at that time, professional societies) and to archive "conversations" among this community. Much more recently, scientific publication has become important as a way to evaluate scientists for promotion and tenure. In computer science and information sciences, and to some degree computer engineering, conference proceedings now dominate scientific journals in the venue of choice for publication. The effects of this transformation have had well-known perverse effects as well as some less-well known ones, but it is hard to see how we can go back. I would like to review the perverse effects and give some ideas of how the forces that have led to this transformation might be used to help alleviate some of the perverse effects.

3.14 Publishing for the Citation Index.– The Subtle Influence of Instant Rating Tools

Friedemann Mattern (ETH Zürich, CH)

The performance of an author can now be evaluated with our fingertips instead of our intellect – thanks to tools like "google scholar" that analyze the publication web and compute bibliometric indicators (such as citation counts) in real-time. Or do these tools just measure popularity? And does this correlate with quality? Anyhow, scientists understand that evaluators, peers, and search committees increasingly rely on such tools. They adapt to that and keep the citation indexes in mind when they publish. This does not go without influence on our publication culture.

3.15 Journals versus Conferences

Kurt Mehlhorn (MPI für Informatik – Saarbrücken, DE)

In the first part of my talk I compare personal experiences as PC chair of ICALP 2012 and editor of JACM, TALG, and CGTA. Despite the fact that the former are more pleasant, I nevertheless believe that CS needs a strong journal culture. As a reader I prefer polished journal articles over conference papers and as an author I like to archive my results in polished form.

In the second part of the talk I describe a very successful (since 10 years) new journal format used in the geophysics community. I combines rapid publication as discussion papers with in-depth reviewing for the journal.

3.16 Towards more constructive reviewing of CS papers

Jeff Mogul (HP Labs – Palo Alto, US)

Many people in CS have expressed concerns about an increasingly "hypercritical" approach to reviewing, which can block or discourage the publication of innovative research. The SIGCOMM Technical Steering Committee (TSC) has been addressing this issue, with the goal of encouraging cultural change without undermining the integrity of peer review. Based on my experience as an author, PC member, TSC member, and occasional PC chair, I examine possible causes for hypercritical reviewing, and offer some advice for PC chairs, reviewers, and authors. My focus is on improving existing CS publication cultures and peer review processes, rather than on proposing radical changes.

3.17 Computer Science publication culture: where to go from here?

M. Tamer Özsu (University of Waterloo, CA)

It is well known that computer science follows a publication policy that is predominantly conference-based. Although this dependence on conferences has helped the field in its initial growth years, it is now starting to have a negative impact on the field. I find it inevitable that we will be moving to a journal-based publication culture. The question is how we start from where we are and end up there. I offer some suggestions for some steps that we can take.

3.18 Books, conferences, open publications: culture and quality

José Palazzo Moreira de Oliveira (UFRGS – Porto Alegre, BR)

My position, exposed in this paper, is that the emphasis on conference publishing, in open publishing and the decline of journal publishing are not a specific Culture in Computing Research but the materialization of the new world supported by the Information Technologies. As the Computing Research Community has the domain of the technology it was possible to integrate this knowledge into our cultural environment. The problem now is to change the minds to accept that quality is not tied with the physical appearance of the media but it is intrinsically associated with the quality of the content. We are living in a changing world and a really great challenge is to support the new reality against the established culture.

3.19 Publication culture in computing research – a perspective from a publisher

Sweitze Roffel (Elsevier Publishing – Amsterdam, NL)

Since the 1960's publishing has undergone many changes, mostly driven by technological developments. But technology only impacts the creation and dissemination of knowledge to a certain extent, and in this talk I'll try to give a publisher's perspective of some main drivers in worldwide media today and try to separate what seems to be happening from what people might perceive to be happening. Using examples from Elsevier research into academia I'll compare other fields with the specific publication culture in computer science and touch upon its conferences, new and traditional publication models, the many different actors and their various business models – and its specific research, reviewing, tenure, technical, infrastructural , and "let's re–name the sub field" culture. Seeing technology also allows us to move from processing digital equivalents of paper to much richer forms of knowledge management, I'll present some early attempts at doing so for the computing sciences, highlighting how the many actors need to learn to cooperate as well as compete in an increasingly distributed environment. Technically, organizationally, and with regard to shared standards and infrastructure. This view from a publisher aims to help the discussion on how we can all contribute to better disseminate and promote the enormous creativity and research contributions of the computing sciences.

3.20 Considerations on open access publication and on the role and publication of conference proceedings

Vladimiro Sassone (University of Southampton, GB)

The Computing community makes a very significant use of conferences as a vehicle for the publication of short papers. Like in many other research fields, computing conferences provide an excellent context for early dissemination of results and interaction within the research community on ongoing research. Differently from many other fields, however, computing conferences –some indeed more than others– carry a highly-valued publications, which arguably absorb a high proportion of the community's overall workload. The question therefore arises as to whether such an effort is well spent, or whether an alternative strategy might be more profitable. One problem is that conference publications are not currently indexed by official collectors of bibliometrics. Most often, later journal papers based on conference publications do not receive a significant number of citations, because authors keep citing the original conference paper. Are we damaging ourselves with respect to other scientific communities by publishing our best results in papers whose bibliometrics do not matter? Should learn to publish conference proceedings in a bibliometrics savvy way? Or would we be better advised to de-emphasise the value of conference publications? It is easy to develop an inflated sense of the wider impact of a conference, and as long as the reward from publication in our best conferences is sufficient for career progression, the incentive is taken away from journal publication. And in fact, several significant results end up to never

to be published as full articles. Also, as they become increasingly perceived as a vehicle for publication, conferences becomes a very expensive way to publish and partially lose their interactive "raison d'être". An issue closely related to the above regards open access to research and its copyright status. Whilst the behaviour of professional publishers remains at time questionable, some practical and long-term concerns seem to exist on community-driven publications. How to monitor production quality, guarantee long-term open access availability, defend author-retained copyrights, etc, without overburdening the research community?

3.21 Impact of Publications Culture

Fred B. Schneider (Cornell University – Ithaca, US)

The nature and role of various styles of publication and other vehicles associated with disseminating and/or incentivizing research has changed over the last two decades. (Conferences vs Journals is just one dimension.) And some researchers now voice concern that these changes are not in the best interests of the field, citing anecdotes to justify adopting new mechanisms to create different incentives and presumably reinforce improved values for the field and society.

I submit: before proposing solutions we need to understand the problem. Specifically, we need to understand how our scientific culture is changing and what are the consequences of those changes. To what extent is the nature of research that computer scientists undertake determined by the publications culture and how will changes in the culture affect the research enterprise? What are the costs to the field of various aspects of our current practices and how might those costs be expected to change?

3.22 Publish Now, Judge Later

Douglas B. Terry (Microsoft Research – Mountain View, US)

Conferences these days face a reviewing crisis with too many submissions and not enough time for reviewers to carefully evaluate each submission. Conferences boast about their low acceptance rates as if this were the main metric for evaluating the conference's quality. Numerous good papers get rejected and are resubmitted many times over to different conferences before the paper is eventually accepted or the authors give up in frustration. Good ideas go unpublished or have their publication delayed, to the detriment of the research community. Poor papers get rejected with little attention and do not get the constructive feedback necessary to improve the paper or the work.

My proposed solution is simple: Conferences should accept and publish **all** reasonable submissions. A submission is "reasonable" if it contains something new (a novel idea, new experimental results, validation of previous results, new way of explaining something, etc.), explains the novelty in a clear enough manner for others to learn from it, and puts the new results in a proper context, i.e. compares the results fairly to previous work. The role of reviewers, rather than looking for reasons to reject a paper or spending time ranking papers,

is (a) to assess whether the submission is reasonable according to this criteria, and, perhaps more importantly, (b) to offer concrete suggestions for improving the paper. Ultimately, papers will be judged in the fairness of time by their citation counts and impact on the industry. The "10 years after" or "hall of fame" awards should be used as the way to honor the best papers (as well as publishing them in journals), and these awards should be noted in the ACM Digital Library.

3.23 To Boycott or Not to Boycott

Moshe Y. Vardi (Rice University, US)

There has been sound and fury in the Open Access movement over the past sever months. In December 2011, The Research Works Act (RWA) was introduced in the U.S. House of Representatives. The bill contained provisions to prohibit open-access mandates for federally funded research, effectively nullifying the National Institutes of Health's policy that requires taxpayer-funded research to be freely accessible online. Many scholarly publishers, including the Association of American Publishers (AAP), expressed support for the bill.

The reaction to the bill and its support by scholarly publishers has been one of sheer outrage, with headlines such as "Academic Publishers Have Become the Enemies of Science." On January 21, 2012, renowned British mathematician Timothy Gowers declared a boycott on Elsevier, a major scholarly publisher, in a detailed blog posting. The boycott movement then took off, with over 12,000 scientists having joined it so far.

Frankly, I do not understand why Elsevier is practically the sole target for the recent wrath directed at scholarly publisher. Elsevier is no worse than most other commercial publishers, just bigger, I believe. Why boycott Elsevier and not Springer, for example?

Beyond the question of whom to target with a boycott, there is the question of the morality of the boycott. Of course, authors can choose the publications of their choice. Also, as a scholar, I can chose which publications I am willing to support by becoming an editor. but the boycott petition also asks signatories to refrain for refereeing articles submitting to Elsevier journals. This means that if you sign this petition than, in effect, you are boycotting your colleagues who have disagreed with you and chose to submit their articles to an Elsevier journal.

I believe an keeping science separate from politics. If it ok to boycott because publishing politics, why is it not ok to boycott for other political considerations? Is it ok to boycott British journals because of objections to the monarchy? Where do you draw the line to avoid politicizing science?

My perspective is that what really propelled the open-access movement was the continuing escalation of the price of scientific publications during the 1990s and 2000s, a period during which technology drove down the cost of scientific publishing. This price escalation has been driven by for-profit publishers. In the distant past, our field had several small- and medium-sized for-profit publishers. There was a sense of informal partnership between the scientific community and these publishers. That was then. Today, there are two large and dominant for-profit publishers in computing. These publishers are thoroughly corporatized. They are businesses with one clear mission.to maximize the return on investments to their owners and shareholders. At the same time, the scientific community, whose goal is to maximize

dissemination, continues to behave as if a partnership exists with for-profit publishers, providing them with content and editorial services essentially gratis. This is a highly anomalous arrangement, in my personal opinion. Why should for-profit corporations receive products and labor essentially for free?

Nevertheless, I do not believe that boycott is the solution. Beyond the moral issue that I raised above, there is a major practical issue. For-profit publishers play a key role in computing-research publishing. For example, Spring, through its Lecture Notes in Computer Science series is probably the largest conference-proceedings publisher in computing. It plays an absolutely critical role in the computing-research ecosystem.

If we want to drive the for-profit publishers out of business, we have to do it the old-fashion way, by out-publishing them. If the professional associations in computing research would expand their publishing activities considerably, they should be able to attract the bulk of computing articles. Even if this will not drive the for-profit publishers out of the computing-research publishing business, it would force them to reform their business practices, which is, after all, what we should be after.

3.24 Future Publishing

Andrei Voronkov (University of Manchester, GB)

We discuss future publishing, including open access, licenses and search for publications.

3.25 The USENIX Association: A Financial Case Study for Open Access

Dan Wallach (Rice University, US)

Many of our professional societies rely on the revenues from paid-access publications to support their ongoing activities. The desire for open access must necessarily compete with keeping the books balanced. This short paper discusses the recent financial history of the USENIX Association, a non-profit professional society that manages a number of top-tier academic conferences in computer systems, networking, and security. Every USENIX publication has been freely available online since 2007, making it an interesting case in point. I'll review USENIX's public financial statements and consider how they have managed.

3.26 The Good, the Naïve, and the Ugly – to Index, or not to Index: that is the Question

Reinhard Wilhelm (Universität des Saarlandes, DE)

DBLP, the bibliographic database for Informatics, developed by Michael Ley at Trier University, is currently expanded in a collaborative project between Trier University and the Leibniz Center for Informatics in Schloss Dagstuhl. The coverage of the computing literature is vastly increased since the project started. Although the man power behind DBLP is increased due to the project, capacity is still limited. This forces the DBLP team to set priorities for publication venues wanting to be indexed in DBLP. A set or rules and a process is being developed to take indexing decisions by a board of scientists. I present the background, the problems, and ask the participants for advice on defendable criteria for indexing decisions.

3.27 Where to send your paper?

Jan van Leeuwen (Utrecht University, NL)

The present publication culture in computer science favors publishing in conference proceedings or even in the arXiv over publishing in journals. To restore the balance and regain a leading role in our dynamic field, the journal tradition in computer science should scale up to meet the needs of the modern times. In particular, computer science needs more high-quality journals with a short submission-to-publication time, monthly or even bi-weekly issues (if the notion of issue is to be maintained at all), and open-access. Scattered initiatives are already beginning to change the scene. The 1999 guideline of Patterson et al. [1] needs amending, to guide the assessment of publications and their impact in the Internet Age.

References

1 D. Patterson, L. Snyder, J. Ullman, Evaluating computer scientists and engineers for promotion and tenure, Best Practice Memo, Computing Research Association, September 1999, `http://cra.org/resources/bp-view/evaluating_computer_scientists_and_engineers_for_promotion_and_tenure/`.

4 Working Groups

During the workshop, a collaborative effort based on the concept of a "Future Workshop" [1] was undertaken to reveal the main problems in the publication culture of computing research and to identify potential solutions to these problems. The "Future Workshop" was suggested and moderated by Batya Friedman. On Wednesday and Thursday, based on the topical sessions, all participants were asked to submit brief statements about shortcomings. These statements were then classified by Batya Friedman with the help of Lance Fortnow, Nicolas

Figure 1 (left) Batya Friedman moderated the "Future Workshop" sessions. (right) Sample statements submitted by the participants.

Figure 2 The workshop participants discussed and formulated potential remedies for the main problems in the publication culture of computing research.

Holzschuch, and Srinivasan Keshav. Fig. 1 shows a sample of statements as collected during the workshop.

In the second phase of the "Future Workshop" the participants were asked to submit potential solutions. These actions raised a lot of discussions and interactions among the participants and helped to focus on the common grounds of the suggested remedies. See Fig. 2 for some impressions.

In the next phase all participants were asked to "vote" for the most precise and insightful statements. This resulted in a number of statements which in turn were used as basis for working groups. People gathered in front of their favorite statements; leading to working groups of 3-5 participants. The working groups spread out to intensively discuss their chosen topic. As outcome, the working groups provided a brief but concise problem statements along with suggestions how to address these problems. These outcomes are summarized in the following sections.

References

1 F. Kensing, K.H. Madsen, "Generating visions: future workshops and metaphorical design," in J. Greenbaum, M. Kyng, (eds), "Design at work", pp. 155–168, ISBN 0-8058-0612-1, L. Erlbaum Associates Inc., USA, 1992.

4.1 Working Group "On incentives for paper reviewing"

Participants: *Ronald Boisvert, Maarten Fröhlich, Srinivasan Keshav, and Douglas B. Terry*

Our breakout group, consisting of Ron Boisvert, Maarten Fröhlich, Srinivasan Keshav, and Doug Terry, discussed four main issues:

- What incentives exist today for paper reviewing?
- Are there incentives to do good paper reviews?
- What does it mean to do a good paper review?
- What incentives can be put into place to encourage good reviewing?

We all agreed that there are few incentives for reviews to be done in the first place, let alone done well. For conference papers, there are two incentives. First, to gain status by publicly known to be on the TPC. Second, to gain access to relevant papers before publication, privileged information that gives the TPC member an edge [see the reference at the end of this note for more details]. For journal papers, however, there appear to be no incentives at all, other than, perhaps, to curry favour with the journal editor. It was pointed out that in some research areas, such as Mathematical Software, there are no conferences, and TOMS journal is the only publication venue, which puts these research areas at a disadvantage in terms of attracting reviewers.

If someone were to accept to do a review, what incentives exist to do a good review instead of a cursory one? For conferences where reviewers can view each other's reviews, peer pressure guarantees a minimal review quality. Of course, altruistic reviewers, who wish to ensure a high quality conference (or journal, for that matter), go well beyond this base quality level. Later in this abstract, we discuss incentives to do good reviews.

What does it mean to review well in the first place? We think that a good review has the following qualities:

- Timeliness
- Constructive: help improve paper quality rather than finding reasons to reject (hypercriticality)
- Is based on a careful and thorough reading of the paper
- Is unbiased
- Is looking for value, not looking to reject; that is calling out what is good, not just what is bad
- Carefully checks proofs + associated data if applicable
- Validates evaluation results and their statistical significance, if applicable

We also came up with a list of potential incentives for conferences and journals. A simple first step would be to create a "best practices checklist" that could potentially become an ACM standard. This could build on the best practices document already defined by Bertrand Meyer. Another potential approach is to have second-round reviewers (TPC members) rate the first-round reviews. This is already being done in some conferences and serves to increase peer pressure for good reviews. On a more positive note, some conferences are handing out best reviewer awards.

A different tactic is to improve quality by slightly de-anonymizing the reviewers. Public (signed) reviews could be encouraged and the names of the reviewers could be published with accepted papers (as is done with journals today). Potentially, good reviews could earn points,

and the reward for a good rating would be that your paper would be reviewed by reviewers also with good ratings, or perhaps you would be asked to be on the TPC/Editorial Board.

A third type of approach would be to maintain a database of reviewer quality assessments by conference chairs and journal editors. The American Physical Society not only does this but also periodically issues a list of top reviewers; these reviewers are sent a formal letter of commendation, with a copy to their supervisor. This ensures that employees value refereeing. Similarly, Springer gives out a Top 20% award to top reviewers. We are not sure if there might be legal drawbacks when doing this, since the database contains inaccessible private information.

Finally, we thought that reviews written by an applicant may be solicited by tenure and promotion committees. This would highly motivate junior faculty.

Incentive structures are studied more formally in [1].

References

1 J. Crowcroft, S. Keshav, and N. McKeown, "Scaling the Academic Publication Process to Internet Scale," Communications of the ACM, Vol. 52, Issue 1, pp. 27–30, January 2009, http://dx.doi.org/10.1145/1435417.1435430.

4.2 Working Group "Hiring based on counting papers"

Participants: *Marc Herbstritt, Kurt Mehlhorn, Jeff Mogul, and M. Tamer Özsu*

Specific issue: CS departments and other employers expect new PhDs to have lots of papers on their CVs.

- How does this differ from other fields?
- How did we get here? Hypothesis: Growing ratio of applicants to openings, desire to have a quick filter on which cvs to take seriously, plus a self-reinforcing cycle of students behaving strategically and increasing the number of papers on their CVs.

Suggestions that the group considered, for academic departments and research labs that are hiring computer scientists:

Suggestion #1: Require CVs (and also papers as published) show clear indications of whether each author was primary, secondary, or supervisory. (Concern: May encourage students to have even longer CVs.)

Suggestion #2: Make it clear that students will be evaluated based on just one paper, chosen by applicant, supported by a research statement to set context. (Concern: Might also perversely encourage a student to publish too many papers, in order to be able to have 1 "best" to choose from.)

Suggestion #3: Require that CVs include (near top) a single, concise paragraph describing the student's deep and major contribution, and without making reference to number of or venue for published papers. (This is to improve to "quick filter" process and to encourage students to have an identifiable major contribution beyond the single paper.)

The working group did not suggest that these are all good suggestions, especially if followed individually. Possibly it would be a good idea to adopt all three of these as a group, to reduce risk of perverse outcomes.

4.3 Working Group "Wrong incentive in publication industry"

Participants: *Bertrand Meyer, Vladimiro Sassone, and Reinhard Wilhelm*

Question was on the wrong incentive in the publication industry.

From the point of view of publishers, indexing companies, and conference organisers this is clearly money. We felt the economic drivers there make it a tough question, and didn't spend much time on it.

Prompted by Andrei Voronkov, we focussed on the incentives for authors and reviewers.

We thought that it would be interesting to form a pool of reviewers rewarded according to the quality of their reviews. The quality would be assessed by the editors, and also by feedback from the authors, e.g. from a rebuttal phase. Reviewers of journal papers should be paid for their work, and the fee might depend on the quality of the reviewer's reviews.

We focus on the idea of open refereeing. The suggestion is that when writing a report referees should make the explicit choice of whether or not to be anonymous. The positive aspects of this are obvious, as it would promote high quality good refereeing. However, it may have the effect of refereeing trying to please powerful authors. etc.

We discussed the idea that there could be a history attached with each reviewer (and each author). There could then be blacklists of authors and reviewers. But this is dangerous ground, because everybody should be allowed to make mistakes without these being attached to them forever.

Finally, we discussed about best practice for journal editors-in-chiefs and conference PC chairs. The community should develop best practice handbooks.

(During the report phase, Marc Herbstritt pointed out that this exists: http://publicationethics.org/resources/code-conduct.)

5 Further links, immediate outcome, and follow-up discussions

5.1 Workshop-related resources

- Collection of position statements and slides from seminar participants: http://www.dagstuhl.de/mat/index.en.phtml?12452
- Collection of literature and resources on the web related to the workshop topic: http://www.bibsonomy.org/search/12452
- CRA collection on "Scholarly Publications": http://www.cra.org/scholarlypub/

5.2 Immediate outcome

- Srinivasan Keshav, "What is a good quality paper?", checklist draft. http://blizzard.cs.uwaterloo.ca/keshav/mediawiki-1.4.7/index.php/Evaluating_a_research_paper
- Bertrand Meyer, "Conferences: Publication, Communication, Sanction," Blog@CACM, January 10, 2013. http://cacm.acm.org/blogs/blog-cacm/159380-conferences-publication-communication-sanction/fulltext

- Bertrand Meyer, "The Waves of Publication," Blog@CACM, January 27, 2013. http://cacm.acm.org/blogs/blog-cacm/160071-the-waves-of-publication/fulltext
- Jonathan Grudin, Gloria Mark, and John Riedl, "Conference-Journal Hybrids", CACM Viewpoint, CACM, Vol. 56, No. 1, pp. 44–49, 2013. http://dx.doi.org/10.1145/2398356.2398371

5.3 Further links

- European Forum for Information and Communication Sciences and Technologies (ICST): http://www.eficst.eu/.
- IEEE black list of conferences: http://www.ieee.org/conferences_events/conferences/publishing/author_form.html.
- An alternative view of scam at IEEE: http://anti-ieee.blogspot.de/2008/02/scam-ieee.html.
- Presentations of Anne-Wil Harzing about scam and fraud in scholarly publishing:
  - How to become a highly cited ESI author: http://www.harzing.com/esi_highcite.htm
  - Predatory "open access" (i.e. author pays) practices: http://www.harzing.com/download/predatoryoa.pdf
- Brian Osserman (UC Davis, US), "Improving the Refereeing Process: A Simple Proposal" (Notices of the AMS, Nov. 2012): http://www.ams.org/notices/201210/rtx121001383p.pdf
- Slow Science Movement:
  - Manifesto: http://slow-science.org/
  - Cross-check by John Horgan in the *Scientific American*: http://blogs.scientificamerican.com/cross-check/2011/07/29/the-slow-science-movement-must-be-crushed/

Participants

- Andrew P. Bernat
Computing Research Association, US
- Ronald F. Boisvert
NIST – Gaithersburg, US
- George Danezis
Microsoft Research UK – Cambridge, GB
- Lance Fortnow
Georgia Inst. of Technology, US
- Batya Friedman
University of Washington, US
- Maarten Fröhlich
IOS Press, NL
- Jonathan Grudin
Microsoft Res. – Redmond, US
- Marc Herbstritt
Schloss Dagstuhl – Saarbrücken/Wadern, DE
- Manuel Hermenegildo
IMDEA Software – Madrid, ES
- Alfred Hofmann
Springer-Verlag – Heidelberg, DE
- Nicolas Holzschuch
Inria Rhône-Alpes, FR
- Srinivasan Keshav
University of Waterloo, CA
- Ursula Martin
Queen Mary University of London, GB
- Keith Marzullo
NSF – Arlington, US
- Friedemann Mattern
ETH Zürich, CH
- Kurt Mehlhorn
MPI für Informatik – Saarbrücken, DE
- Bertrand Meyer
ETH Zürich, CH
- Jeff Mogul
HP Labs – Palo Alto, US
- M. Tamer Özsu
University of Waterloo, CA
- José Palazzo Moreira de Oliveira
UFRGS – Porto Alegre, BR
- Sweitze Roffel
Elsevier Publishing – Amsterdam, NL
- Vladimiro Sassone
University of Southampton, GB
- Fred B. Schneider
Cornell University – Ithaca, US
- Douglas B. Terry
Microsoft Research – Mountain View, US
- Jan van Leeuwen
Utrecht University, NL
- Moshe Y. Vardi
Rice University, US
- Andrei Voronkov
University of Manchester, GB
- Dan Wallach
Rice University, US
- Reinhard Wilhelm
Universität des Saarlandes, DE / Schloss Dagstuhl – Saarbrücken/Wadern, DE