IMU on the Web

Communications and Information from the CEIC

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These columns, Communications and Information from the CEIC, known as `IMU on the Web', have appeared in each IMU-Net newsletter since IMU- Net 4 and here are accompanied by additional commentary and links. Some are signed opinions and some come from the CEIC itself. They intend to stimulate interest in and debate about electronic matters. Our first piece, written by the CEIC, was on the vexing problem of Journal pricing.

Incidental visitors to IMU on the Web are herewith cordially invited to subscribe to IMU-Net, the bi-monthly electronic newsletter of the International Mathematical Union.

IMU on the Web #29

Access Grid: enabling e-Collaboration

Access Grid

'Video-conferencing' covers a broad range of functionalities from basic two way use of video and audio for meetings to include document cameras, data exchange, desktop sharing, recording and shared applications (such as interactive whiteboards). Many versions, mostly commercial, of video -conferencing are available running in specially equipped rooms or on desktops/laptops. The Access Grid, AG, developed at Argonne National Laboratories [seehttp://www.accessgrid.org], has been described as video-conferencing 'on steroids': it's free, scalable to many Access Grid Rooms, AGRs, and flexible. AGRs run under Windows, UNIX or Mac environments. There's no typical AGR [for a photo gallery, seehttp://www.accessgrid.org]. However AGRs usually have a 'wall' one large projection screen of three (or four) linked computer projection screens. There's usually one audio stream and video streams from three cameras.

Working on 2 screens Many presenters work with two screens (with other screens used for video of remote audiences etc). One screen displays the main presentation (pdf slides, say) and one screen displays software demonstrations or 'Digital Ink': handwritten asides, worked examples or sketches. How Digital Ink is provided depends on the hardware and software used.

Since the AG uses VNC for the data/software stream, the presenter chooses to enable, or not, remote control: remote collaborators can take over the mouse and control the software (Maple, Word, etc).

PIGsThe AG software can run on a desktop/laptop: it's free and all that's required is a web-cam, headphones with a microphone and good internet connection;resulting in a Personal Interface to the Grid, a PIG.

Canadian seminars

For three years, led by Simon Fraser University and Dalhousie University, about 90 regional and coast-to-coast seminars, in mathematics and computer science, have been conducted via a network of Canadian AGRs [1]. [See http://www.westgrid.ca/resources_services/training/coast_coast_seminar_schedule.]

In Australia

ICE-EM (the education arm of the Australian Mathematical Sciences Institute, AMSI), is coordinating and partially funded 11 AGRs, in mathematics precincts in Australia. Most of the 38 universities in Australia have access to an AGR. In December 2007, an AMSI one-day seminar on engineering mathematics education had 16 remote AGRs participating.

Using AGRs to collaboratively teach Honours (that is, 4th year) mathematics and statistics courses commenced in July 2006. During 2008, 17 courses were offered [see http://www.ice-em.org.au] and follow the links Access Grid -> Subject and Course List]. Students, with the approval of their home university, can take courses for credit toward their Honours degree. All AMSI member universities are invited to participate.

The UK

Six centres in the UK, funded by the EPSRC, commenced (in October 2007) the teaching of 'broadening' courses for PhD students. Two of these centres use AG technology: the MAGIC consortium of 15 universities [seehttp://maths.dept.shef.ac.uk/magic/index.php] and the Taught Course Centre: a collaboration between the Universities of Bath, Bristol, Imperial, Oxford and Warwick [see http://tcc.maths.ox.ac.uk].

Conclusion

The Access Grid enables very rich multi-nodal remote collaborations in research and teaching. Likewise, it is also an excellent and travel-reducing way to run a variety of administrative and planning meetings. The mathematics community, in Australia, the UK and Canada, is leading the way with collaborative teaching of advanced mathematics or seminars across networks of AGRs [2].

References

[1] Borwein, J., et al., Coast-to-Coast (C2C) Seminar: Background, History, and Practice; and Apendices A & B. In Borwein, J., Rocha, E.M. and Rodrigues, J.F. (Editors), *Communicating Mathematics in the Digital Era.* AK Peters, 2008. Available fromhttp://users.cs.dal.ca/~jborwein/c2c08.pdf
[2] Bill Blyth, "What is Access Grid?... and what is it good for?" *AustMS Gazette,* 35, 5 (November), in press, 2008. Available from http://www.austms.org.au/Gazette

Bill Blyth (bill.blyth@ice-em.org.au) AMSI National Coordinator, Access Grid project

Australian Mathematical Sciences Institute, AMSI, November 5, 2008.

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IMU on the Web #28

Preserving our History

The use of TeX over the last decade and a half to write papers, lecture notes and even ephemera has moved from the unusual to the commonplace. Indeed, some of my younger colleagues can't remember using anything else but TeX to write mathematics. For those of us somewhat longer in the tooth, we remember using other software, which was preceded by the little golf balls that allowed typing of mathematical symbols, which in turn was preceded by writing in the mathematics by hand (with the hope that the typesetting would introduce only a few errors).

One of the happier results of this migration to TeX has been the ability to put our papers on personal web pages so that anyone with a standard computer configuration can acquire them. This usually means making a pdf or a PostScript file available for download. The little postcards that were mailed to request reprints has now joined those little golf balls as historical curiosities.

The use of TeX over the last decade and a half to write papers, lecture notes and even ephemera has moved from the unusual to the commonplace. Indeed, some of my younger colleagues can't remember using anything else but TeX to write mathematics. For those of us somewhat longer in the tooth, we remember using other software, which was preceded by the little golf balls that allowed typing of mathematical symbols, which in turn was preceded by writing in the mathematics by hand (with the hope that the typesetting would introduce only a few errors).

Happily, the papers that were written in the predigital era are not beyond redemption. They, too, can and perhaps should be made available for download. In the past several years there have been significant advances in the ability to scan paper documents. With the right equipment, scanning several hundred or even a thousand pages is not difficult.

The are two approaches, both of which work well. The first is to use a standalone scanner. Robust models with document sheet feeders are available for under $1000. These include the software for doing the scanning. There are lots of options when using such software, so here are some suggestions.

- When scanning the pages, the software can produce colour, grayscale or black and white files. Unless there is a compelling reason, black and white is usually the best choice for older documents. There is also a choice of resolution: 200, 300, 600 or 1200dpi (dots per inch). Usually the 600dpi is the best choice.
- There are also several different types of files that can be produced by the scanning software. All of them have some compression: these come in two types: lossless (no data lost during the compression) and lossy (some data irretrievable). A lossless compression is the best. There are also different file formats, the most common being pdf and TIFF. The pdf files are the ones to put on your web page; they can be read on any modern computer with readily available software. Note that there are two different types of pdf files: ones that are image only and those that are also text searchable. The latter type is preferable, and most scanners can produce them.
- There is also a compelling reason to keep lossless TIFF files. Newer and smarter software will emerge that will do things we can't do today. If you keep the TIFF files, there will be no need to rescan since the information is already in an industry-standard format.
- A second approach is to use a photocopier. Many of them come with scanning software built in: you feed in the pages and the image files are emailed back to you. Usually there are fewer options than with a scanner. The default resolution is usually 200dpi, so be sure to set it to 600dpi. The provisos given above for scanners are also valid for photocopiers.

I recently carried out a two-month project that involved scanning of some 53000 pages. It really wasn't difficult. In fact the hardest part of preserving your mathematical history may be taking the staples out of those old pages.

Our mathematical history is important and worth preserving. A bit of effort by all of us can produce a significant body of mathematical literature. Let's get our history out of the file cabinet and onto the web!

Michael Doob

Member of CEIC (October 4, 2008)

IMU on the Web #27

The digitization of the ICM proceedings and related material

One of the projects the CEIC is pursuing is the digitization of all the Proceedings of the International Congresses of Mathematicians to make them readily accessible to the public.

The whole material consists of 62 printed volumes with a total of more than 35000 pages. The last three ICMs (Berlin, Beijing, Madrid) produced electronically born proceedings while everything earlier was only printed and hence will be digitized.

The actual state of the metadata can be seen here:

http://www.math.uni-bielefeld.de/~rehmann/icm_proceedings.html

The list starts a few years before the first ICM of 1897 in Zürich with the Chicago Congress, held in 1893 on the occasion of the World's Columbian Exposition at Chicago, which gave birth to the ideas of international mathematical congresses and to the International Mathematical Union as a whole.

Felix Klein, in a talk on "The Present State of Mathematics", described the tendency of mathematics to become more and more specialized, and therefore evokes ideas for unifying our science and our scientific efforts, by saying:

> A distinction between the present and the earlier period lies evidently in this: that what was formerly begun by a single master-mind, we now must seek to accomplish by united efforts and cooperation. A movement in this direction was started in France some time since by the powerful influence of Poincar'e. For similar purposes we three years ago founded in Germany a mathematical society, and I greet the young society in New York and its Bulletin as being in harmony with our aspirations. But our mathematicians must go further still. They must form international unions, and I trust that this present World's Congress at Chicago will be a step in that direction.

(Quoted from "Felix Klein: Present State of Mathematics", Mathematical Papers read at the International Mathematical Congress, 1893, p. 133-135.)

After having collected the copyrights -- which we eventually got --our production process goes by first finding a copy of the respective proceedings volumes, and then in most cases -- horribile dictu for all bibliophiles -- by cutting them into single pages. This is a reasonable way to make use of an automatic page feeder.

The University of Michigan Library gave permission for the use of their images for the years 1897 through 1924.

Scanning is done with 600 dpi, since we found out that this is necessary for good quality. Math requires the readability of second order indices, which are typically of 5 point size.

Of course, the next step then is to run the scanned images through an optical character recognition process in order to make the volumes searchable.

In the final setup, the single articles of the respective proceedings will occur with their titles on dedicated web-pages as it is custom by now in E-journal postings. Display formats will be DJVU and PDF, but we will also make the scanned images publicly available, and we will encourage sites to mirror the collection, as this will contribute to its longevity: The more copies exist, the more likely is its survival in the long run.

For all who want to help: In addition to the ICM proceedings, we would like to digitize related material like Programmes, Abstracts, Short Communications etc.

Here we do not have all the items -- we mostly do not even know what was published at all. Some of this material is already listed in the metadata web page mentioned above. In case you are aware of or possibly even have and want to donate material which isn't listed please contact one of us:

Keith Dennis (dennis@rkd.math.cornell.edu)

Ulf Rehmann (rehmann@math.uni-bielefeld.de), July 31 2008.

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IMU on the Web #26

What is the price of a journal?

For that matter, what is the price of a car or a novel or a loaf of bread? All these things are frequently discounted, but we don't say they have no real price. Yet on several occasions recently, I've heard people say that we can't tell the price of journals because they are often discounted.

When the editorial board of the journal Topology resigned and began a competing journal, Elsevier wrote: "Because the majority of our subscribers purchase this journal in a larger set of journals, most are paying a fraction of the institutional subscription price." I've heard similar arguments from other publishers, who like to compute the "price" of a journal by dividing the total revenue by the number of subscribers. But that's not the price! It's the average revenue per subscriber.

The (list) price of a journal is set by the publisher, and it's plainly visible to anyone who examines annual price lists. Just as for cars or novels or bread, journals may be sold at a discount. But it's important to remember that publishers discount journals for business reasons, not because, in a sudden fit of remorse, they want to lower the price. Journals are sometimes discounted to agents, who consolidate them to help libraries purchase from multiple publishers. They are discounted to institutional members of scholarly societies as a member benefit, in return for dues. And journals are discounted to subscribers who buy bundles of journals, often making a commitment to buy for several years. In each case, the publisher is discounting journals in order to gain some advantage -- it's a business arrangement.

There is nothing wrong with discounting journals or business arrangements in general. But it doesn't change the price. Indeed, the list price is the starting point for all such business arrangements, defining the amount of money "given back" to the customer: I'll return a portion of the price in return for some action on your part - consolidating, being a member, or purchasing a bundle. Confusing the discounted price with the actual price ignores one half of the bargain.

We should pay attention to the list price of a journal because some subscribers (quite often, most) pay the list price. But there is another reason not to let publishers substitute the "average revenue per subscriber" for the price: the average revenue is a quotient, and publishers control both the

numerator and the denominator. We must rely on the publisher to tell us the numerator, that is, the total revenue for a journal. Calculating total revenue sounds straightforward until one realizes that when selling bundles, large publishers apportion revenue among many journals - a mysterious process that isn't easily discovered. For many publishers, the total revenue assigned to a particular journal is a very fuzzy number indeed. The denominator is even more problematic. How many subscribers does a journal have? If a publisher adds many journals to bundles at no charge, the number of "subscribers" will quickly rise. But adding unwanted (and frequently unused) journals to bundles doesn't REALLY change the number of subscribers to each journal. Allowing publishers to use these arrangements to calculate either the average price per journal (for an institution) or the average revenue per subscriber (for the publisher) is like allowing politicians to count all those people who MIGHT have voted for them (but didn't vote) in an election.

Scholars face a crisis today caused by high journal prices. If they are going to make headway in addressing that crisis, they have to get smarter about journals and more sophisticated about business practices. They can't allow publishers to redefine the problem by redefining the price. That's neither smart nor sophisticated.

John Ewing

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IMU on the Web #25

Looking Back After a Decade

The CEIC is turning 10 this year, and it seems appropriate to take stock of the changes, both good and the bad, that have taken place over this decade.

Ten years ago perhaps 10% of the mathematical literature was digitized, while now perhaps 65% is. The growth of the infrastructure of the internet has made physical/virtual access to this literature easy, but in practice there are impediments caused by individual knowledge and IT arrangements, licensing agreements, cost to the end-user, and much else.

Ten years ago searching on the web was still rudimentary. Today, while still not perfect, a mathematician may use a combination of MathSciNet and Zentralblatt MATH, Library tools, Google Scholar, Amazon, Wikipedia, [PlanetMath](#) among others, and this has enormously improved ability to find known material or to discover the existence of valuable but not readily available material.

Ten years ago, the freely available electronic publishing tools offered hopes that academic presses and individually operated journals would increase their presence in and share of the academic publishing market. In fact, just the opposite has happened as market consolidation has taken place and the remaining large academic publishers have increased their share of mathematical publishing from under 40% to over 60%. Journal prices remain at least as vexing an issue as a decade ago, while the purchasing decisions have become further removed from the academic user.

Some fine projects are coming to fruition within the IMU. These include: the soon to be complete digitization of the ICM Proceedings; excellent[Registries of electronic material](#) and a [Federated World Directory of Mathematicians](#) (soon to add many new features). On balance, the (digital) world of mathematics is much richer but no-less complex than a decade ago.

Jonathan Borwein, Chair CEIC, March 27, 2008.

IMU on the Web #24

Digital Feedback

The remarks of IMU on the Web #23 provided an unusual volume of feedback. I detail comments from Stevan Harnad of the American Scientist Open Access Forum explaining that Open Access comes in colours, specifically green and gold, the colours sported by Australia's representative teams.

Stevan Harnad, thinks Alf, confuses the issues.

[He writes that my comments were] right on one point, mistaken on all others:

(1) *OA = publishing in OA journals (*Gold OA*)*:
Incorrect. OA also (and mostly) means publishing in conventional journals but self-archiving the article (Green OA). Green OA is the most widely provided and fastest growing form of OA and, most important, it is the one with the potential to reach 100% virtually overnight, because all authors can do it, and all funders and universities can mandate it. (Green OA, too, is still far from 100%, partly because of the constant conflation with Gold OA, and the constant preoccupation with Gold OA.)

(2) *Other reform problems (reform of journal pricing, reform of copyright, reform of peer review) are more important and urgent than providing OA*:
Incorrect. Providing OA moots both the journal pricing and the copyright problem and other reforms (like world hunger) are important but irrelevant to the OA question.

(3) *Access is not the problem because access is already greatly improved by the online medium*.
Incorrect. Access is improved for some content, for some users, but the main thing the online medium has done is made OA possible, for all articles, for all users, and that possibility has not been met, for over a decade and a half now. OA articles have, on average, twice as many citations as non-OA articles (distribution is skewed toward top 20% of articles). That means 50% of potential research impact is being needlessly lost daily till OA is provided.

(4) *OA (Gold) would bias publication toward acceptance, for the sake of the money*:
Incorrect. Peers review, for free. If their advice is not followed, journal quality drops, journal usage drops, journal authorship declines, peers decline to review. For the highest quality journals, quality will continue to be their sole criterion. The lower quality 80% will continue to matter much less for the progress of research, exactly as now. And everything is already being published now, because the lower quality journals publish the lower quality research in order to continue receiving subscription revenue. They will continue, with Gold OA, as the vanity-press publications they always were, and everyone will know this, from their quality levels and their impact metrics.

(5) *OA (Gold) publishing is premature today*:
Correct: Institutional subscription funds are tied up in funding non-OA publishing today, so paying to publish in a Gold OA journal requires funds from elsewhere. (From research, if provided by a research funder.) So it is Green OA and not Gold OA that researchers should be providing (and universities and funders should be mandating) today. If/when 100% Green OA should ever make subscriptions unsustainable, then publishers can and will downsize and convert to Gold OA, and institutions can and will redirect part of their annual windfall subscription

savings to pay for peer review (Gold OA) for their article output. But what is urgent today is to provide Green OA, not to pay for Gold OA.

Stevan Harnad
American Scientist Open Access Forum

My mention of "Journal and Conference scams" led a reader to suggest I also issue a warning to respectable conference organisers. In brief, there is strong anecdotal evidence of persons claiming to intend to attend a conference and seeking a formal letter of invitation; yet their purpose likely is only to obtain an entry visa to the host nation. My comment: an organiser should hesitate to issue a letter of invitation without believable evidence of the mathematical bona fides of the putative attendee.

CEIC 1998-2008

The International Mathematical Union's Committee on Electronic Information and Communication was created at the behest of the Dresden Quadrennial Assembly of the IMU, 1998. One of its first formally endorsed recommendations was one we informally spoke of as "Personal Collected Works" and officially as a "Call to All Mathematicians to Make Publications Electronically Available": Open access to the mathematical literature is an important goal. Each of us can contribute to that goal by making available electronically as much of our own work as feasible.

I have in the past pointed to the difficulties in realising that goal. By now I am of course green with envy, wishing that we had been thoughtful enough to colour the notion.

On the occasion of the tenth year of the CEIC I include (as a pdf file) an expanded report of the CEIC's most recent meeting, primarily to showcase past actions and successes of the CEIC incidentally mentioned in the course of that report.

Alf van der Poorten (alfATmaths.usyd.edu.au), member of the CEIC, January, 2008.

IMU on the Web #23

Digital Downside

My remarks are largely extracted from various instructive essays that form part of the blog and associated pages of CEIC member John Ewing. I add as disclaimer to protect the guilty that his opinions are his and, for that matter, my implicit endorsements are mine. Of course I recommend that in significant parts they become yours.

It's hard to argue against having more access to scholarship. On the other hand, it can be bad if it causes us to ignore the real problems we face, and it can be tragic if new enticing technology combines with an irresistible fad to mislead us into acting against our own interests. Open access has had both affects on scholarly publishing. When planning for our digital future, we spend most of our time talking about access (already greatly improved) and almost no time talking about the integrity of scholarship, copyright issues, foolish bureaucrats who use faulty statistics, or (worst of all!) avaricious publishers who have created a crisis in scholarly publishing. Instead, we talk about access. I quote from elsewhere: "OA is the Botox of scholarly communications, a cleverly applied poison destined to keep a permanent smile on a publisherÃ¢Â€Â™s face."

We are all accustomed to fads and fashions nowadays --- clothes, food, and entertainment. The pace of life has quickened, and fads rapidly come and go. But scholarship is different. Scholarship

requires a long-term perspective and a steady hand in making changes. Scholarship is not about today; it is about tomorrow. Scholarship is essential to civilization, and the essence of civilization is not what creature comforts we have in our homes, but what legacy of wisdom we leave for our children ... and what they leave for theirs.

Bundling of Journals

Of course, we are already defeated. Bundling almost always involves multi-year contracts that don't allow cancellations or changes. The extra titles are often of marginal value to scholars. Most importantly, decisions about what is purchased are made at a high level, far removed from scholars themselves, and most importantly far removed from the individual disciplines. In the end, big deals make it more difficult for scholars to make sensible decisions about journals based on price and need. Of course, big deals give the big publishers a substantial advantage over little publishers ...

Why we should worry about author-pay

In the subscription model, users and librarians make decisions; in the author-pay model, authors and publishers make them. To succeed in the subscription model, a journal must secure enough subscriptions by convincing users and librarians that it has intellectual value. To succeed in the author-pay model, a journal must convince enough authors to submit papers and then it must accept enough of them to make money. Price will vie with prestige. The most prestigious journals will charge more and will attract authors who can pay the cost (grants will help). The less prestigious journals will discount their price in order to attract more authors and will increase the acceptance rate. Some institutions may demand that scholars use less expensive journals; others will demand that their faculty publish only in expensive ones. The result will be a distorted and ugly market, driven by some of the same forces that drive vanity publishing. This is what happens when a market is driven by producers instead of consumers.

I strongly counsel a careful reading of John Ewing's firm remarks on the implications for mathematics of an author-pay future and point out that he is not alone in his views by reminding you of a fine earlier diatribe on vanity publishing: "Samuel Johnson was simply wrong when he famously said that no one but a blockhead ever wrote except for money. The truth is that recognition is the greater motivator."

Journal and conference scams

Half a dozen years ago the European Mathematical Society issued "a common sense tip" to the effect (but using yet more circumspect wording) that if you receive an invitation to be involved in a journal or conference whose organiserÃ¢Â€Â™s reputability you do not already know, it is wise to check out the integrity and quality of what is proposed before sending any money or agreeing to let your name be used in what might be a purely money making scheme.

In brief, learn to press the 'junk' button and when in doubt recall that those who choose to be defrauded are often themselves fraudsters manqués.

Alf van der Poorten (alfATmaths.usyd.edu.au), member of the CEIC, November, 2007.

IMU on the Web #22

Scan this book!

Should we goggle at Google? "In the race to digitize the public domain, is the future of the library at stake? For all the potential of Web.2.0 technologies, our literary future still rests on what we make of our past, specifically, the centuries of ideas and human thought recorded in the miles of print books sitting on library shelves around the world."Ã,Â LibraryJournal.com (August 15, 2007) reports the views of the Open Content Alliance.

Not even wrong

In the very first IMU on the Web (March 2004) the CEIC commented sadly that some actions may have unintended consequences that will actually increase the strain on the journals system. The recent holus bolus resignation of yet an another editorial board (that of the journal "K-theory") gives rise to useful commentary that warrants thoughtful reading and of course prompt action in advising your university library to review and update its subscriptions.

The WDML vision

The vision of the World Digital Mathematics Library includes our being able to click on any citation and to be led seamlessly to that reference and thence onto its bibliography and then ... . Total costless seamlessness is still distant but the vision is being realised by the mathematical sciences review journals as clearly manifested in the June 2007 update of the Jahrbuch Database (forming part of the Electronic Research Archive for Mathematics) inter alia reporting the creation of new Jahrbuch/Zentralblatt entries providing links to the scanned literature.

Emus on the Web

It may well startle anglophones to be reminded that the rest of the world pronounces the letter 'i' as English speakers pronounce the shriek 'Ee!', but this happenstance provoked the CEIC, when IMU on the Web was inaugurated, to consider endowing it with a logo of Australia's large flightless bird somehow entagled in a spider's web. We must all be thankful that no artist was available to render such a logo.

Alf van der Poorten (alfATmaths.usyd.edu.au), member of the CEIC, September, 2007.

IMU on the Web #21

Biblioteca Digital EspaÃƒÂ±ola de MatemÃƒÂ¡ticas; the DML-E project

Our colleagues in Spain launch a beautiful website displaying their digitisations of a wide collection of major journals. Ã,Â The DML-E project offers full-text access to all articles published from 1980 ... Because the journals are commercial publications, their editors apply a moving wall policy: meaning that universal access is allowed to the full-text articles except for those of very recent publication. For articles behind the moving wall (generally those published in the past year), only abstracts are accessible unless the user has a subscription to that journal.

The website also offers useful links to literature on digitisation and the DML and to other digitisation projects.

Virtuelle Fachbibliotek Mathematik, Vlib MATH

The [Virtual Library of Mathematics](#) of the NiedersÃƒÂ¤chsische Staats und UniversitÃƒÂ¤tsbibliotek GÃƒÂ¶ttingen is a portal which will offer search of and access to link-collections, library catalogues, journals, other databases, and customised search engines allowing Google to give greater relevance weight to mathematical sites. Its project manager, Katharina Habermann, provides background details in her 2004 paper ["A Project for a Virtual Mathematics Library"](#).

In brief, under the policy of shared subject specialised collection development of the DFG (German National Research Foundation) the SUB Goettingen is assigned to acquire as complete a collection of literature in the field of pure mathematics as practicable. In this context a highlight is the delivery by the SUB of [ERAM](#) (the Electronic Research Archive for Mathematics) providing a digital archive of important mathematical publications of the 19th century and associated with the [Jahrbuch](#) database edited by Bernd Wegner in cooperation with the SUB. The portal is still under construction; its development team seeks feedback and cooperation.

Beyond Escher, In Worlds Far Away ... , Wikipedia

I recently stumbled onto the interesting site [Escher for Real](#) and [Beyond Escher for Real](#) and here share that discovery.

Second, I was surprised to find that a science fiction book I had acquired (courtesy of Amazon) included a CD and, more, that the CD contained the full text of some four dozen books readable in one's browser. Specifically, the Baen CD-ROM Library appears to be a bonus for those acquiring hard cover originals of Baen books and (in the case of which I am aware) features all earlier books by the author subject only to the "NOTICE: This disk and its contents may be copied and shared but NOT sold. Copyright 2007 Baen Publishing Enterprises." Your guess may be better than mine as to how to evaluate or interpret the publisher's strategy; read what the publisher [says](#). My disclaimer: I already owned a third or so of the books on the CD (were I a serious fan of the author, Eric Flint, I would of course have owned them all).

Third, I was correctly called to task for chattering on last month that "rewriting and rewriting again [is], somehow, not encouraged by the web." I still think that quick and easy 'publication' militates against careful editing, but obviously there are very explicit exceptions of which [Wikipedia](#) is one I plainly should have acknowledged. Ofer Hadas suggests that one way to impose additional peer review of editable sources on the web is to send and supervise students to do it for course credit.

Quantitative Assessment of Research

The drive towards more transparency and accountability in the academic world has created a "culture of numbers" in which institutions and individuals believe that fair decisions can be reached by algorithmic evaluation of some statistical data; unable to measure quality (the ultimate goal), decision-makers replace quality by numbers that they can measure. This trend calls for comment from those who professionally "deal with numbers" --- mathematicians and statisticians.

This paragraph is the preamble to the [Terms of Reference](#) given a joint ICIAM/IMS/IMU Committee, established on the initiative of the EC of the IMU following advice from the CEIC, and asked to create a summary of its finding to be endorsed and publicly distributed by the Executive Committees of ICIAM, the IMS, and the IMU. The Committee is requested to support its

conclusions by examples and statistical data to be provided in additional documents meant to provide evidence and a solid basis for its findings.

The Terms of Reference conclude with the exhortation: Academic achievement is a complicated mix of contributions to research, teaching, and supervision of students, as well as contributions to academic self organization/administration and to the scientific community. ICIAM, IMS, and IMU acknowledge that the evaluation of scientific quality is notoriously difficult; simplistic answers to complicated questions of judgment are unlikely. However, the committee is also asked to investigate whether it sees possible alternatives to measures based solely on citations that may help to evaluate research and academic achievement and indicate quality in a sensible way.

Alf van der Poorten (alfATmaths.usyd.edu.au), member of the CEIC July, 2007.

IMU on the Web #20

The Web, Math Encyclopedias, Peer Review

What to say? I had promised myself to write for you about ... but I haven't done the work and ... just now surfing a mathematical topic on the web I was sadly reminded of the ability of the web to present misguided material as if it were the advice of careful pundits. It is a truism that good writing means rewriting and rewriting again; somehow, that's not encouraged by the web. The unevenness of the quality of pages presented as parts of web math encyclopedias startles me; I don't think that was as true of their paper predecessors. I cannot help but believe that traditionally published material was much better moderated and edited; it also had the advantage, generally, of being commissioned from honest-to-goodness authorities.

Mind you, Springer's Encyclopaedia of Mathematics once was Kluwer's ISBN 1402006098 and is well worth consulting (notwithstanding an unfortunate conversion to html). Indeed my rant above is unfair: it's a well known phenomenon that pithy summaries of material one knows well always seem poorly done (unless, perhaps, you've written them yourself), while summaries of unfamiliar fields seem works of genius; until growing familiarity grows your contempt.

Googling "Math Encyclopedias" is a fine way to while away a few hours.

More, it's clear to me that it's the lack of editing of the web that pains me. In fairness, I could comment similarly on several of the newer print journals (and some old ones) that have come my way. Peer review once did contribute to the editing of articles. There are evident pressures leading to less such contribution now and, plainly, journals promising --- and delivering --- near instant publication will also tend to deliver less editorial moderation.

A Great Stride Forward

Yet, I also keep on being happily surprised by the web. Specifically, I happened to google the phrase "four squares in arithmetic progression" and was provided with a large collection of relevant sample pages from scanned books. I owned several of the books and was thus readily able to check a reference ... This new opportunity to search the full text of books is marvellous and adds significant value to any math book collection.

Alf van der Poorten (alfATmaths.usyd.edu.au), member of the CEIC, May 25, 2007.

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IMU on the Web #19

Papers and Books on the Internet

Media massaging is not the same as media messaging

An amusing article in Nature, placed on line on January 24, 2007 and corrected on January 25, suggests that academic journal publishers may choose to fight the widespread moves to require publicly funded research to be openly available. I was particularly exercised by the boxed aside quoting a spokesperson as advising that publishers should issue retaliatory sound bites, misquoted as "Media massaging is not the same as intellectual debate", and quickly corrected to the original "Media messaging ... ". My take: this is all just for show. There's little evidence that preprint publication in open archives or on university websites inhibits authors' desire for formal journal publication or the demand of readers for the imprimatur of peer review. More, recall "The devil you don't know" mentioned at IMU on the Web #5, where Joseph J. Esposito explains why open access publishing is more likely a boon than a bane for traditional publishers.

By happenstance, I was also recently alerted to remarks of Klaus Peters (of A. K. Peters Ltd.) providing an instructive reminder of the services that publishers can and do offer us. The principal content of this IMU on the Web is those remarks turned by Klaus into a useful essay:

Textbooks on the Internet

Several mathematics publishers now choose to make selected titles freely available on the Internet while, in parallel as it were, continuing to provide print copies for traditional sale. Motivation for such Ã¢Â€Âœgenerosity Ã¢Â€Â may vary from author pressure to the belief, partly supported by experience, that such availability may well promote sales. This is particularly true if the prices of such books remain reasonable, thereby reducing the incentive for replacing a nicely printed and bound copy with a bunch of loose or stapled pages.

Online books, in addition to electronic versions put on the Internet by publishers or by authors with the publisherÃ¢Â€Â™s consent, include volumes published first and only on the Web, on occasion because of the belief that the writing of textbooks and making them freely available on the Web is an idea whose time has come.

Let me comment affirmatively on the remark in the above-referenced link that "college mathematics textbooks attempt to be all things to all people and, as a result, are much too big and expensive.Ã¢Â€Â I believe that this is mostly the result of the misguided editorial policy of adding every reviewer's wish list to the next edition of a textbook without critically evaluating manuscripts on their merits. Another factor is the markup of prices by college bookstores, a practice that is now effectively countered by online stores like Amazon.

However, I am much more concerned with the often-encountered misconception that the cost of books is largely a function of the bad old days, now past, when books Ã¢Â€Âœwere rather expensive to produce and distribute.Ã¢Â€Â Not! At any rate, certainly not quite! A substantial portion of the cost in producing books arises from the editorial process of critical evaluation. While this is often done with invaluable help from the scientific community, it still requires substantial work from highly qualified in-house editors. Subsequently, there is developmental and copy editing, again, performed by experienced, well-educated, and well-paid specialists. That such effort is appreciated shows in the following quotes: "I am indebted to N.N. whose judicious and thoughtful editing of the manuscript greatly improved its readability." and Ã¢Â€ÂœI would like to especially thank [the publishers] for encouraging me to write the first edition of this book, for

their great skill in bringing a book to fruition and for their dedication to making their books the best they can be. In addition to finding many errors in formulas and language in the second edition, they put in many weeks of extremely long hours in the home stretch of the process.Ã¢ Â€Â Further, books need to be designed to optimize their readability. This includes the treatment of illustrations and producing a reader-friendly layout.

While I believe that everybody has the right to place books (and, for that matter, articles) on the Internet, I am concerned that the elimination of valuable filters (editorial) and value-added features (design and production) will erode the quality of available material (both for teaching and research). The argument that everybody is free to choose from the material made available is not convincing considering the many criteria going into the selection of teaching material. As a publisher, I have argued with instructors who suggested reprinting outdated editions instead of using substantially revised edition that were longer and slightly higher priced.

The role of publishers has changed over the centuries, from medieval scribes to entrepreneurial owners of printing equipment to content-driven scientific societies and marketing-savvy distributors. The word for publisher (ÃƒÂ©diteur, Verlag, uitgever) in different languages emphasizes these different roles, and, speaking as a scientific/technical publisher, I believe that all of these functions have to be balanced to allow the publisher to be a true servant of the scientific community.

With the growing sophistication of Information Technology, this balance will change, and at this point, we are rapidly moving towards electronic forms of distribution. I would like to caution everybody involved in this discussion to keep all functions of a publisher in mind lest we destroy the publishing enterprise as a whole. The most endangered because least visible part, in my mind, is the editorial function in which publishers and the scientific community work well together to ensure the quality and usefulness of the material being published.

Klaus Peters
Publisher
A K Peters, Ltd.

Alf van der Poorten (alfATmaths.usyd.edu.au), member of the CEIC, March 25, 2007.

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IMU on the Web #18

Start-up journals, Proper and improper use of e-mail

Cost and quantity

Found a new product you really like? Well you had better buy it, and tell your friends to buy it too; and to tell their friends. If it has only a few sales it'll disappear. And even if it survives as a niche product, it certainly will not be able to do that at just its introductory price.

Exactly this principle applies, with bells on, to a new journal of which you truly approve. Tell your library, and tell your friends to tell their libraries. The more subscriptions a journal obtains, and holds to, the cheaper it can continue to be. And, in the case of a new journal, put your money where your mouth is and, pour encourager les autres, submit your best work to it.

These remarks are not quite unprovoked. Google the Wikipedia entry "Topology (Journal)" for a possible context and note the 'diatribe' below.

A diatribe

I quote from a more lengthy statement to protect the guilty and the innocent.

"Mathematicians are used to start-up journals that are free or very cheap. The fact is that many of those journals are heavily subsidised and take an individual philanthropist to support them during the first few years. Eventually, the journal owners recognise that they have to get some income to survive."

"The sales side is difficult; lots of people call for a move to cheaper journals but very few libraries actually make the move. For this to change, people have to become more active and, rather than complaining about the high prices, they each need to do something positive to change things. Not everyone can start up a journal, but everyone can actively support the cheaper journals through lobbying their library committees and checking that their librarians are really getting the best deals."

The bottom line is that a new journal eventually has to return a least a small income in order for it to survive. In that context we had all better remember that not-for-profit mathematical societies are not "not-for-profit" in the sense they must (or could possibly afford to) make a loss on each of their activities, but in the sense that profit made in some activities is ploughed back to support other mathematical activities.

See the announcement by the LMS of its new journal, the "Journal of Topology"; also recall the CEIC's statement on journal pricing and the commentary thereon.

Don't send that e-mail!

E-mail is great for asking a straightforward question, and all the better for answering it with a "yes", or a "no". It's a miserably bad medium for conveying a nuanced complicated message because writers tend not to reread or edit messages they're about to send and readers often do little more than briefly scan their mail. As his e-gripe of the month, my CEIC colleague Jon Borwein writes in extenso (also in WORD) about the benefits and dangers of 'immediate text modalities' (ITMs).

By the way, I noticed that I somehow have difficulty in writing "email" and, somewhat clumsily, usually write "e-mail". However, I never write "e-namel".

Alf van der Poorten (alfATmaths.usyd.edu.au), member of the CEIC, January 27, 2007.

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IMU on the Web #17

Versioning, Measuring, and Baseball

Versioning

Mathematical research depends on a body of research literature that has reliable content and assured persistence.

In its 2004 Best Practice Statement on versioning the CEIC warned that online publication can lead to severe problems in citation, because the posted paper can be updated continuously until it bears

little resemblance to the original ... . The arXiv has long understood this issue; note its careful policy.

Math Reviews summarises relevant principles adopted by the American Mathematical Society, warning in particular that "if a journal currently indexed by Mathematical Reviews does not adopt these best practice standards, coverage of that journal will cease and the editors of the journal will be informed. Coverage will be resumed only when the journal agrees to these basic standards of scholarship."

Measuring Mathematicians and Measuring Journals

"Not everything that can be counted counts, and not everything that counts can be counted" is the wise remark opening John Ewing's recent article 'Measuring Journals', *Notices Amer. Math. Soc.* October 2006, Volume 53, Number 9. The CEIC will discuss impact factors and citation metrics at its forthcoming meeting. In the meantime readers might profitably study John Ewing'sÃ‚Â Ã‚Â Ã‚Â fine article; and consider recent innovations at MathSciNet, providing author and journal citation counts. [Do not try this at home! Subscription required]

Baseball and Quantum Physics

Umpire: *"Some is balls and some is strikes, but until I calls 'em they ain't nothing."*

Alf van der Poorten (alfATmaths.usyd.edu.au), member of the CEIC, November 25, 2006.

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IMU on the Web #16

The 15th General Assembly of the IMU

Members of the CEIC: John Ewing, Martin Groetschel, Peter Michor and Alf van der Poorten, provided a detailed report to the GA of the IMU at Santiago de Compostella, emphasising both the failures and successes of the first eight years of the activities of the Committee: View in PDF (and set the Reader to 'Full Screen').

Although the Committee is charged by the Executive Committee to advise on all matters of Information and Communication, an overriding motive behind the formation of the CEIC at Dresden, 1998 was, and remains, the ever increasing cost of academic journals. At the GA, I had to remind delegates that useful statements on that matter may be found at www.math.union/CEIC/News/IMUonWeb.shtml#CEIC1 and the embedded link there to www.math.union/CEIC/Publications/Recommendations/Journalprices.shtml .

The GA formally endorsed the CEIC statement "Digital Mathematical Library: a vision for the Future" and adopted the CEIC recommendation "Some Best Practices for Retrodigitsation", declaring it did so "with the ultimate goal of creating an enduring network of digital mathematical literature"; see the links at www.math.union/CEIC/Publications/.

What is MathML. Why should we care?

No doubt it's some mathematicalization of the "ht" in html; that seems worth caring about. An information article "The present and future of MathML", written by CEIC member David Morrison, is currently in preparation and will soon be available on the CEIC pages.

Alf van der Poorten (alfATmaths.usyd.edu.au), member of the CEIC.

IMU on the Web #15

The Federated World Directory of Mathematicians (FWDM)

Once, long ago, one could check whether a person was an acknowledged mathematician by looking her up in the World Directory of Mathematicians. But the WDM is no more, a victim of costs and of the coming of the electronic age. In retaliation, the CEIC now provides a search engine, the FWDM, capable of searching, simultaneously, all those Math Society membership lists that have made themselves appropriately available. As a bonus, the FWDM also provides links to Google and Google Scholar entries.

Fourteen months ago (IMU on the Web #7) Alf mentioned the 'first steps towards constructing' a Federated World Directory of Mathematicians. Those steps became strides and by now have reached their goal. Readers should check their personal details and, more important, urge their national societies to make their membership lists accessible to the FWDM.

One caveat: search engines can be unexpectedly stupid and stubborn. It may be wiser to look for 'Alf*' rather than for 'Alf' and then to refine one's search only if that leads to too many hits. 'Borwein' on the other hand offers no such problems.

More details of the FWDM

Federated searching *connotes any system that provides a common user interface for searching and retrieving information across heterogeneous datasets over the Internet.*

Background In 1998 the CEIC was asked to explore the feasibility of an electronic World Directory of Mathematicians to replace the traditional hard copy. The CEIC concluded that, while desirable, intellectual property and privacy issues in different countries made this impossible for the 2002 edition of the WDM. With the emergence of better Internet search tools, in 2003 we decided it was then realistic to build a federated directory, as defined above. This provides a rapid and simple search over existing online databases with no additional work for the user. Since 2004 a prototype federated search engine (http://www.mathunion.org/fwdm/) has been designed and tested. As of August 2006, the CEIC feels it is ready for general use by the mathematical community.

The Current Version searches (in parallel) through the following directories:

> Combined Membership List (CML), Canadian Mathematical Society (CMS), Deutsche Mathematiker-Vereinigung MathNet directories (MathNet), French Mathematical Society (SMF), the Australian National Committee for Mathematics (NCMS), the Austrian Mathematical Society (OeMG), and the Portuguese Directory of Mathematicians (PDM)

and over the Electronic World Directory of Mathematicians which is maintained by the IMU and which any individual mathematician can join. For each individual search result, the FWDM also returns links to Google and Google Scholar, for that individual, as a fallback if no results are found.

Future plans are to add societies that are able to provide their membership in a machine-accessible fashion. It is also intended to add various enhancements allowing one to find specific information---such as preprints---about mathematicians.

Alf van der Poorten (alf AT maths.usyd.edu.au), Member of the CEIC.
Jonathan Borwein (jborwein AT cs.dal.ca), Chair of the CEIC. (July 13, 2006)

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IMU on the Web #14

How is a small academic journal to survive?

How is a small academic journal to survive? The only way may well seem to be to ask a professional publisher to provide valuable marketing and essential bundling. The CEIC offers brief but useful advice to Society Councils and Editorial Teams:

Choosing someone else to publish your journal

Thinking of using someone else to publish your journal? There are often good reasons to do so, but remember that journals exist to serve the mathematics community. You should protect the journal that someone else gave to you, so that you can give it to someone else in the future. Journals are long-time affairs that live long before and long after a particular set of editors. They communicate the work of past generations to the present, and they are meant to communicate our work to future generations as well.

If you are thinking of using someone else to publish your journal, remember that you have a responsibility to ensure that it continues to serve mathematics in the future. In particular:

- **Be sure that you, and not the publisher, own the intellectual property rights to the articles. If you allow authors to keep copyright, be sure that you, and not the publisher, have the rights to publish the material (in all formats) in the future. You can extend these rights to the publisher, but you should own them.**
- **Be sure that you, and not the publisher, own the title of the journal. This is crucial if you sever your relationship and take your journal to another publisher.**
- **Be sure that you own the subscription list. In today's world, subscription journals depend on renewals, not on new subscriptions. If you don't own your subscription list, moving your journal to a new publisher in the future means securing all new subscriptions, which may limit your options.**
- **Insist that your publisher secure the names of all end users of your journal as part of the subscription list. Many subscriptions are done through agents, who collect subscriptions for many journals from many institutions and then pass on to the publisher. Publishers can fulfill the subscriptions by sending quantities of the journal to the agents, who send them on the end users. Agents will often want to keep the end user information confidential. Insist that they do not (for electronic subscriptions, this doesn't make sense in any case). This is a vital part of your subscription list.**
- **Sign an agreement that is limited in time, giving both you and the publisher a sensibly long period in which to establish a good relationship, but also forcing the two partners to renegotiate the relationship periodically in order to ensure that it meets the needs of both parties.**

These are all steps that the publisher may resist, but they are important to maintain control of the journal for the community. They are in many ways more important than the particular financial arrangements made between you and the publisher.

April 2006, CEIC

(PDF version of **Choosing someone else to publish your journal** .)

e-Gripe of the Month

e-Life brings good reasons to moan and complain about nast-e experiences and regrettable practices. I and the CEIC invite you to submit your favourite complaints and wise advice. Felicitous examples will be plagiarised and will feature as e-gripe of the month (notwithstanding that this column only appears bimonthly). For non-anglophones I add the explanation that a 'gripe' can be a firmly held objection or complaint (of course, in Australia we make wine from gripes).

e-Gripe of the Month. This first complaint is pre-e. I say: *It can only be mindlessness that leads many of us to prepare our overheads in letter rather than landscape mode.*

I note that (a) the glass plate of an overhead projector is square; and (b) it's no mistake that computer displays have greater width than depth.

Use overheads in landscape mode. That avoids having to use the top and bottom of the display area where images often are dim and distorted; or slip off the wall screen. Landscape also forces us to have fewer lines on our slides. That's good: The more a slide contains, the less information it conveys.

It's a crime not to write overheads in at least 17pt or so (magnify the area of each letter by at least 2; 10pt PlainTeX \magstep3, \Large or \LARGE in LaTeX). Usefully, the length of an A4 sheet of paper is precisely 1.414... times its width. Magnifying a 12pt line from vertical to landscape mode provides exactly the minimum advisable point size.

Warning for Young Players: North American overhead projectors are not quite as wide (no doubt to accord with the principle whereby a US pint, respectively US gallon, is only 80% of a true pint, or gallon). In landscape, keep ample left and right margins --- lest you have to use your overheads in the US or Canada.

e-Comment of the Month. Impatient audience member to speaker still fiddling with her computer: *Are you just going to give a powerpoint presentation; or do you have something worthwhile to say?*

Alf van der Poorten (alf AT maths.usyd.edu.au), Member of the CEIC.

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IMU on the Web #13

Some Future Columns

It's quite a bit easier to make a list of tasks to be done than actually to do them. In that spirit, I mention several IMU on the Web items I or my CEIC colleagues will write about --- one of these days.

1. **Versioning: It is easy to change, even completely to delete, an electronic document. Clear rules in the spirit of the fine ones applied by the arXiv, seehttp://arxiv.org/help/versions, must be adopted and rigorously observed by electronic journals if our research literature is to remain well-defined.**
2. **MATHML: What is it? Why? See www.w3.org/Math/.**
3. **The NUMDAM experience: The high standards adopted, the quality, and the volume of output of Cellule Mathdoc at Grenoble make NUMDAM a model numÃƒÂ©risation=retrodigitisation effort. See www.numdam.org/.**
4. **Citations, impact factors, and other questionable statistics :see [below](#) for some preliminary remarks.**
5. **How is a small academic journal to survive? Best practice on stewardship of small society publications and for publishers of individual journals.**
6. **The World Digital Mathematics Library: see www.math.union/WDMLand the NIST DLMF athttp://dlmf.nist.gov/.**

There'll be more of this list next time I forget to write or to solicit suitable items.

Alf van der Poorten, (alf AT maths.usyd.edu.au) Member of the CEIC.

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IMU on the Web #12

Personal Collected Works

Several years ago now, the CEIC made the following call to mathematicians:

> **"Mathematics ages slowly. Access to older literature is important for most mathematicians, and yet much of the older literature is likely to remain unavailable in electronic form in the immediate future. Mathematicians can change that by taking collective action.**
> **Whenever legally and technically possible, mathematicians are encouraged to scan their old (pre-TeX) papers and post them on their homepages, making their "collected work" readily available to all. This relatively small effort on the part of every mathematician will provide enormous benefit to the entire community."**

This proposal was endorsed by the IMU ([Recommendation](#)). However, few of us have endorsed it by our actions. Truth is, it's too much trouble.

What can you do? (1) Put a list of your publications on your website. (2) Link each publication to its review in the Zentralblatt and in Math. Reviews. (3) Add a link to an available final preprint. (4) Put such preprints on the arXiv, or some equivalent permanent site. (5) Scan pre-TeX papers and add links to those scans.

That's in order of effective difficulty as I see it. Even just the first step may be helpful.

Why should you do it? (a) It pays to advertise. (b) It's a good deed. (c) It pays to advertise.

Have I done it? Well, sort of partly four years ago when I happened to be paying a student assistant who had nothing better to do for me (and, no, I haven't updated it since, but I have put some recent papers on the arXiv). My fellow CEIC member Martin Groetschel plainly has strong continuing assistance; google him.

Alf van der Poorten (alf AT math.mq.edu.au) Member of the CEIC

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IMU on the Web #11

Citation Indices

Under the title **["The Number That's Devouring Science"](#)**, Richard Monastersky writes in **[The Chronicle of Higher Education](#)** of October 14, 2005 that the impact factor, once a simple way to rank scientific journals, has become an unyielding yardstick for hiring, tenure, and grants. Among associated articles, **["Inside the Impact Factor"](#)** points out that the measurement is biased against slower moving fields, like mathematics, in which papers often cite literature that is many years old. Any citation beyond two years old does not enter into the impact-factor calculation.

There is a growing tendency for funding agencies and promotions committees to attempt to quantify research activity. One way that this is done is by adding numbers of citations (this can be done by a bureaucrat). Such a measurement is likely to penalise mathematical scientists vis à vis experimental scientists.

Igor Podlubny, "A note on comparison of scientific impact expressed by the number of citations in different fields of science" points to the importance of normalization factors. He suggests that after proper normalization 250 citations in mathematics is equal to about 19500 citations in clinical medicine, or 4750 citations in physics. The paper appears in "Scientometrics", Vol. 64 (2005), 95–99; a journal published by Springer and Akademiai Kiado (Hungary). The published article is at DOI: 10.1007/s11192-005-0240-0, and the original text can be found on the [arXiv](#).

One should of course recognise that within, say, physics there is huge variation in the truly appropriate weights (if there truly is such a thing at all) because different parts of physics have different publication and citation cultures. More, surely one cannot rely on all authors in a multi-author paper having contributed equally (or even at all). Worse, all citations are not equal: as far as my personal satisfaction goes, I give most weight to a result or idea of mine being used in some part of mathematics far from my own, or to my work being mentioned in some survey or thesis as having helped to initiate recent advances (albeit that the thesis and survey are not even noted by the ISI). Compare that to being cited in some obvious and near pointless extension or generalisation of a result (especially when, for clarity, you explicitly omitted that generalisation from your paper). My take: quality of performance cannot be reduced to the kind of simple science that comprises social science. Mind you, I will agree that one can quantify lack of performance: the number associated with nothing does describe it fully.

The opinions and rudeness are mine, but I supply this material, and the following old story, courtesy of my colleague Michael Cowling, President of the AustMS. He writes: "I was once contacted by an Irish university and asked to provide a reference for an application there. At this time, before the plague of citation counting, the bureaucrats had a better way to quantify appointability. The referees were all asked to fill in a form, which contained a table, in which we were supposed to list the candidates five best papers, with columns labelled "Title of Work", "Journal", "First Page Number", "Last Page Number", and "Office Use Only". There was also a box under the five "Office Use Only" numbers. This was shortly after pocket calculators became widely available at reasonable prices, so I presume that the

clerks were equipped with these; how else would they have been able to multiply all those numbers together?"

Alf van der Poorten
Wednesday, Nov 30 2005 & 23:18:27 PST

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IMU on the Web #10

The WDML and the Reference Web

Imagine you publish a mathematical journal (your local Mathematical Society very likely does and, surely, you accept some responsibility for that MS's actions). It seems the in thing to produce electronic versions of journals, and more, to go back and retrodigitize pre-TeX issues. Worse your past TeX issues [or, gf that you allowed it, issues produced by some gfs word-processor] are expected to be internally hyperlinked; particularly their bibliography. Worse yet, apparently you should attach appropriate 'metadata', whatever that is. Why should you bother?

It's a costly effort. There are very few of your customers (most likely, customer libraries) that can contemplate paying for your efforts. Offering more and better (i.e. threatening them with extra cost) is more likely to have you cancelled than thanked. Why should you bother?

I alluded to expected standards in my previous IMU on the Web **remarks**. I give an opinion on 'why we might bother to bother' both there [I have not had a great deal of response to the request for comment on the **CEIC draft best practices statement**].

Although I am a member of the CEIC of the IMU, the opinions incidentally expressed above (or in the recommended links) are not necessarily the views of any being let alone of any organization.

Why we Might Bother to Digitize

First, it's a good deed; our community may benefit from it. Second, most of us are kind of proud of our work: we want it to look better; we want it to be admired by as many others as practicable; we want to show it off. Third, there may be a buck in it for us.

Let's forget about benevolence or boastfulness, but let's expand on that third motive: cupidity.

We should well know that academic libraries are under severe financial strain. The likelihood of a university being able to, let alone choosing to spend an extra dollar on mathematics is slight. Rightly or wrongly, mathematicians notoriously believe themselves oppressed and poor, so they personally are not likely to add funds to the system. Coding and cryptographic pretenses aside, it's hard to see where an immediate profit might come from.

That's the first hand. On the other hand, one might try to take the longer term view. Given the lack of funds available to academic libraries and, frankly, the amount of time left to us even to think about looking at the literature, we had better take account of the criteria used for rating our journals — that is, the reasons, other than despair, we might use to publish in

some given journal; how a library might be convinced to maintain its subscription; just why a journal retains its reputation for being good.

Ultimately, a journal has to be read and cited: for that to happen, mathematicians need ready and easy access to its articles. Therefore, making one's journal readily available in an attractive form plainly is a useful, probably a vital, long term investment.

The principle that if something is available for free then no one will pay for it seems compellingly true; but of course it is not. Computer shareware provides an interesting counterexample. Just so, there is at least anecdotal evidence that some libraries will choose to pay a subscription for journals that nominally are openly available.

However, let me stick to the software example. Sometimes a lite version — fully functional but with missing frills (bells, but no whistles) is supplied free without placing any obligation on the user. The idea of course is that many users ultimately will feel they should contribute financially; or that, after sampling 80%, users will think they need to have access to 100% of the product. In that spirit, some journal publishers have chosen to make their articles electronically available for the first six months or, say, one year of publication (sometimes, indeed, before actual paper publication occurs). Some publishers, sadly too few, have acknowledged the principle endorsed by the Quadrennial Assembly of the International Mathematical Union in Shanghai, 2002, that after five years — a long enough period for publishers to have been properly compensated for their publishing efforts — journal articles should be electronically available at no greater a cost than polite acknowledgment. Notice here that the five year 'moving wall' is much longer than the one year spoken of in the medical sciences; that acknowledges the experience of mathematics papers having a rather longer half-life.

By the way, there are clichés to the effect that "if something is worth doing then it is worth doing badly" (often accompanied by: "the perfect is the enemy of the good"). I recommend instead to try: if something is worth doing then it is worth partly doing it — in the hope of completing it later. That's not the same as doing it poorly so that any later attempt at improvement means starting all over again. In that context, digitization needs only to be of a quality that might allow later extraction of additional information (keywords, bibliography, ultimately complete OCR) without necessarily requiring that extraction at this time. Metadata must be sufficient as to provide at least a fixed URL and links to the review journals.

But why should a publisher risk foregoing even the small extra profits it might have been able to gouge from us readers (more likely: from our employers)?

The Reference Web

Suppose that "iteration of references" were readily accessible to us because all electronically available material follows the specification that the bibliography of every electronic article be linked to the literature. Universal linking is enabled via the links to the full articles provided by the review mechanisms of the Zentralblatt (incorporating the former Jahrbuch) and Math. Reviews. Universal adoption of the five year moving wall principle would mean that once led to an article five or more years old we would find that all its references are fully accessible. Clearly, the pressure also to have access to the more current issues of widely cited journals could only increase, thus strongly encouraging new and maintained subscription.

But the scenario just sketched is as yet far from reality, except perhaps in those few research and resource rich universities that have continued to afford near universal subscription to the research journals. My guess is that until there is, say, an 80% likelihood that any paper one wants to look at (and that is old enough to have business being freely available) actually can be viewed at the cost only of a click or two the reference web will not yet exist.

In this context, those publishers that have decided against the moving wall principle are not just excising themselves from the reference web but frustrate its potential existence.

Alf van der Poorten
Wednesday, Nov 30 2005 & 22:20:54 PST

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IMU on the Web #9

Best Practice for Retrodigitisation

The World Digital Mathematics Library initiative (see #8) envisions our freely navigating the mathematics research literature with clickable citations readily allowing us to 'iterate references'. But there remain obstructions to realizing that dream. First, all but the quite recent literature was not in electronic form. Second, almost all but the very old literature belongs to its copyright owners.

However, worldwide noncommercial retrodigitization initiatives making their work freely available (see the draft vision statement and a brief listing of major projects at WDML) have dealt with chunks of the old literature. Moreover, many publishers have chosen to digitize their back journals (less happily, but understandably, they see a need next to recover the costs of such endeavours).

In order to assist and promote the digitisation efforts the CEIC has prepared a draft best practices statement on digitisation; comment is invited.

At its Quadrennial Assembly in Shanghai, 2002, the International Mathematical Union adopted the following notion: that publishers be asked to contribute to building the strands of the citation web by agreeing that electronic materials more than five years old be seamlessly accessible without financial impediment. Although this 'moving wall' principle has only been sporadically embraced it presents our best hope for building the citation web.

The opinions incidentally expressed above are not necessarily the views of any person let alone of any organisation.

Alf van der Poorten.
Monday, Jul 25 2005 @ 20:56:47 PDT

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IMU on the Web #8

The World Digital Mathematics Library

In mid-April, the MSRI at Berkeley held a workshop on digitizing the mathematical literature. A model instance of what "retronumerisation" (that's franglais) can create is instanced by the work at Grenoble.

The IMU's vision of a World Digital Mathematics Library is partly encapsulated by the draft WDML statement immediately below. I hope soon to be able to use IMU on the Web to provide you with the agreed endorsed IMU statement better summarising the goals of the project.

Draft Preliminary Statement on the WDML

For scientists, the value of creating this web of scholarship is evident: A vast collection of the past mathematical literature will become available, at least in principle, to scholars in every part of the world. And because mathematicians depend crucially on past scholarship for their present work, this collection of material will be an indispensable tool, now and in the future.

1. **For some publishers, a substantial portion consists of all material more than 5 years old. The term "substantial portion" may mean something different for each publisher. On the other hand, it is the older literature that should be made freely accessible, and it should be large enough to be valuable to the mathematics community.**
2. **The reviewing journals have made a commitment to add and to maintain links to original articles, providing a mechanism for linking from one article to the next that can be updated over time.**

But this project is valuable for publishers of mathematics journals as well. The system of journals is under stress at the moment from many causes — rising costs that outstrip rising library budgets, demands to invest in new technology for electronic products, and increased competition from journal substitutes, which even in the experimental stage weaken the system. Publishers are justifiably worried about the future of their journals. Addressing these worries requires more than hand-wringing. Publishers must add value to their journals in order to protect them, and this means doing more than merely adding new "features" (most of which are seldom used). Each journal is part of a larger system — a system of interconnected scholarship on which future generations of scholars rely. The most effective way to add value to an individual journal is to add value to the entire system by making the system even more connected and even more reliable. This is a key purpose of the MSRI project. By digitizing large collections of journals and connecting them to each other (and the present mathematical literature), we connect more than a century of mathematical literature in a way no one could have imagined a century ago. We create a stable web of mathematics — a web that mathematicians can navigate far more easily than ever before, and that mathematicians will quickly come to view as a critical resource for all their work.

If all this new material is only available to a few mathematicians, however, it adds little value to the system. The past literature must be accessible not just in principle but in fact. When one publisher makes older articles freely accessible, all other publishers (of current journals connected to those articles) benefit. If every publisher makes a substantial portion of the past literature freely accessible, every current journal becomes more valuable. The goal is to add as much value as possible to current journals, without eliminating incentives to support them through subscriptions. Publishers must work together to balance value and incentives in this way. Creating a stable, reliable, and connected body of mathematical scholarship benefits every part of the research community — publishers, libraries, and the scholars themselves.

When we want to do it: As soon as possible. There is urgency in moving forward because we need to protect the system of mathematical literature that has grown over the past centuries. Creating a stable environment before that system weakens is critically important. We have an opportunity now to begin that task.

The greatest inhibition to the vision of retrodigitizing all the old literature sadly is that of copyright. In that context, the **AAUP letter** makes fascinating reading. Where do you (as likely both writer and reader) stand on these matters?

The greatest benefit of digitization is ready immediate access; see the interesting news in Nature at **www.nature.com/nature/focus/accessdebate/17.html** — and, no: because of copyright reasons I cannot guarantee that this URL is a lasting one.

Alf van der Poorten.
Tuesday, May 24 2004 @ 23:03:21 PDT

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IMU on the Web #7

Desperately Seeking a Mathematician
(A Federated World Directory of Mathematicians)

It's not all that hard to find *a* mathematician: I imagine that most readers of this item need only look in a mirror. More usefully, in the good old days one could locate virtually any particular mathematician in a fine book, updated quadrennially, the World Directory of Mathematicians.

But the WDM will *not* be compiled and printed in 2006; it has fallen fate to, well, "economic and practical considerations". What to do?

It seems pretty obvious what to do. Just create an Electronic WDM. Sadly, that can't be done. First, such a directory would be in severe breach of many national privacy laws. Second, it anyhow could not *just* be done — it's an astonishingly labour intensive matter to create and, much worse, to maintain such lists.

Happily, it seems there may be an effective solution …

Of course, nowadays, it's often enough to google the needed mathematician: in fact, doing that works astonishingly often. Sadly, it also fails irritatingly frequently. Why might it fail? Your mathematician may have a name shared with several celebrities so that the first 2731 hits of her name refer to a soccer player and a pop singer. Worse, your mathematician may be one of the 71% of adults unable to set the timer on his VCR — and not be competent to maintain a web presence (the technical phrase is: he may be "electronically challenged" — no digital dreams for him: just electronic nightmares). What to do?

Fortunately, there are quite a few well maintained lists of mathematicians: namely, lists of paid up members of the world's many mathematical sciences societies. So the trick might be, somehow, to become able to search these all at once.

The CEIC has taken some first steps towards constructing such a search engine. The Federated World Directory of Mathematicians is envisaged as eventually providing one-step access to the sum of currently maintained lists of mathematicians. It will rely both on such

lists being well maintained by the various mathematics societies and on those lists being made available to federated search by the FWDM search engine.

The present **EWDM**, possibly in revised form, will allow mathematicians who are not members of Societies with electronically accessible lists to be found by way of the FWDM.

In summary, the FWDM will use the work of many others and will depend on their goodwill and co-operation.

Now go to the **CEIC website** and click on **FWDM** (www.mathunion.org/fwdm/index.shtml) to read more about the FWDM; or try out the **prototype engine**. Useful comment and advice to AlfvdP with subject "FWDM Prototype" [to avoid my spam-filter] will be appreciated and may be acted upon.

Alf van der Poorten
Sunday, Mar 20 2005 @ 14:38:49 PST

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IMU on the Web #6

Advice to Referees of Submissions to High Primes and Misdemeanours

General

A paper should add to the state of the art.

- Useful survey, insightful explanation, and instructive speculation will be gladly entertained.
- One recommends publication enthusiastically if one enjoys reading the contribution and feels oneself a better and wiser person for the effort.
- A relatively self-contained paper with useful or elegant hints reminding the reader of the well-known background is more likely to enthuse the reader than is a paper fiercely presuming that everything well known is known widely.
- The quality of papers published in an edited volume/conference proceeding should be that of papers published in reputable fairly respected journals.
- The style of papers published in an edited volume/conference proceeding should be more friendly to the reader than that of typical papers published in academic journals.
- There is a nominal limitation on the size of the eventual volume so more is not necessarily better.

Policy

The three objects of peer review are

1. to produce a referee's report so as to justify the allegation that the paper has indeed been peer refereed ***** (and which can be sent, or can readily be edited so as to be suitable for sending, to the authors)
2. to give wise advice and provide helpful mentoring to the authors so as to ameliorate [improve] the submitted paper
3. to give an opinion on whether the paper does indeed add to the state of the art and is indeed sufficiently enjoyable reading etc.

Things to Do

1. to act on the policy by writing a brief critical review of the paper
2. to do this promptly (and certainly to take no more than a fortnight [that's 10 working days for US English speakers] to do it)
3. to send your report to Alf van der Poorten and to Andreas Stein.

We have come to realise that it would have been better to have sent the present advice to prospective authors (rather than just to their referees) and will do that in our respective next lives.

High Primes and Misdemeanours is Fields Institute Communication 41, published by the American Mathematical Society, 2004.

* In this spirit, the purpose of holding a formal committee meeting is to justify the creation of an agenda for the event and to cause the production of minutes of the meeting.

Alf van der Poorten and Andreas Stein.
Thursday, Jan 13 2005 @ 12:14:55 PST

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IMU on the Web #5

"Your Research. Your Choice."
The Devil You Don't Know
Guide for the Perplexed

Not Quite Free for You

Under the slogan, 'Your Research. Your Choice': "Springer Open Choice gives you the power to choose how you want your research published. As an author-focused publishing company, Springer believes that authors should have the right to determine what publication model best meets their needs."

Readers will find it interesting to google the phrase 'Springer Open Choice' and then to read the details of Springer's offer to allow you to publish your research in a Springer journal in the traditional manner, yet to have their published article "available free to anyone, anywhere in the world". Of course, asking for your article to become freely available (sans subscription) comes at a cost to you as author (or to your institution or funding agency) – to compensate Springer for the value it has added to your article ["costs are involved in every step of the publication process, from peer-review to printing and hosting the final paper on dedicated servers"]. Springer has set its opening Open Choice fee at $3000 USD per article.

"If making the published version of your article freely available is your most important publication concern, then Springer Open Choice is the solution for you. Springer Open Choice makes the final, published version of the article available for free directly from SpringerLink. You still receive all the benefits of publication with Springer (see "Details" for a full listing), including print distribution, and your work will be available for free from Springer to anyone, anywhere in the world."

Mind you, as do most publishers nowadays, Springer does anyhow permit authors to 'publish' and retain a copy of their preprint on their institutional website (and, presumably, at such sites as the arXiv); preferably with link to the published article at Springer-Link. Bare feet are free, but Gucci running shoes come at a price.

The devil you don't know:

Joseph Esposito agrees that OA is a panacea: for the publishers! Of course it is a boon for publishers to be able to replace cash-strapped institutional customers with vanity publishing for a near unlimited number of authors. "Samuel Johnson was simply wrong when he famously said that no one but a blockhead ever wrote except for money. The truth is that recognition is the greater motivator. An entrepreneur making these observations would likely conclude that authors [will] make good customers for services that lead to recognition."

Readers will undoubtedly get pleasure from glancing at the fine essay: "The devil you don't know: The unexpected future of Open Access publishing" by Joseph J. Esposito, First Monday, volume 9, number 8 (August 2004).

Guide for the perplexed (Open access in the UK)

In IMU ON THE WEB 3 (IMU-Net 6) I commented on a UK parliamentary report "Scientific publication: Free for all?" A recent "Guide for the Perplexed" (by Steven Harnad) suggests that the core of the report is to mandate self-archiving:

- **"This Report recommends that all UK higher education institutions establish institutional repositories on which their published output can be stored and from which it can be read, free of charge, online. It also recommends that Research Councils and other Government funders mandate their funded researchers to deposit a copy of all of their articles in this way."**

Alf van der Poorten.
Thursday, November 18 2004 @ 07:21:11 PST

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IMU on the Web #4

The Electronic Life of a Mathematician

and, An Example of Non-optimal Practice

How do *you* go about finding preprints and articles on the web? You do use LaTeX in writing your articles, don't you? Do you maintain a useful homepage?

Peter Michor (CEIC) explains below how *he* uses internet facilities to ease his life as a mathematician.

An apology: Last issue, IMU on the Web referred readers to a fine article in the Chronicle of Higher Education (Chronicle Review, February 20, 2004), entirely forgetting that the URL provided becomes inaccessible to non-subscribers a little while after first publication. This oversight was not an example of best practice.

Using Electronic Information Technologies Efficiently in Your Daily Life as a Mathematician

1. **Finding Preprints and Articles**

   The major review journals, Math. Reviews (MathSciNet) and Zentralblatt Math., are the unique sensible places to locate formally published material. Both require an institutional or personal subscription if you need their full power. Without subscription, Zentralblatt Math will respond to an enquiry with up to three detailed responses, including abstracts; note that the Zentralblatt now includes the Jahrbuch. Nonsubscibers should also go the the the Jahrbuch project, currently providing free full access to the Jahrbuch ueber die Fortschritte der Mathematik 1868-1942: try 'Riemann, B.' [or 'Eisenstein, G.' — that's not the film director]. The AMS freely provides MRef for one article at a time supply of bibliographic details — including BibTeX, the de rigueur way to guarantee accurate citation.

   [Note that it's a very good thing to accompany citations with their ZB and MR identification numbers, thereby providing immediate clickable links to reviews and other details.]

   By the way, Math. Reviews (MathSciNet) provides an interesting author index: there are now 238 distinguishable mathematical authors named 'Schmidt'.

   [There are just two 'Michors' (one being a parent of the other). Authors careless enough to use different versions of their name are, ideally anyhow, identified as the one person. Peter Michor has three variants; that sloppy AJvdP has eight!]

   For preprints, go first to the arXiv at its UC Davis front-end. Look at the preprint list in your field of interest. Download and print articles of interest to you. The front-end also contains detailed explanations of how to register as an author at the arXiv and of how to upload your TeXed papers.

   With your opus on the arXiv you can travel and have access to your work (without having to carry offprints with you). Don't post offprints to your friends. Send them the arXiv URL of your paper.

   Math-Net has a substantial preprint index, and there is a useful list of additional preprint servers at the AMS.

   EMIS has a sizable number of freely available full text electronic journals (EMIS has over 40 mirrors world-wide).

   [The World Digital Mathematics Library is a massive project with the goal of digitising/retrodigitising all of the mathematical literature. Ulf Rehmann's fine listing, EMIS, and the CEIC are among many places providing access to retrodigitised items.]

2. **How to Prepare Your Papers (Of Course Using LaTeX)**

   Mathematics is unique in having an accepted uniform authoring tool. The vast majority of mathematical papers are written in LaTeX. Make that all the more true [your PlainTeX amd AMSTeX skills will perfect your LaTex-2e]. One day, no doubt real soon now, there will be translation tools to obtain the long awaited MathML from LaTeX [perhaps not quite all that soon].

3. **Your Homepage**

   Put all your articles (in ps and pdf) on your homepage, Much better yet, put them there as a collections of links to the arXiv. A search of the arXiv will create the html-file!. You, and all the more your homepage, are ephemeral; mirrored depositories such as the arXiv are somewhat less so.

   It is not just vanity to advertise your opus; it's a valuable service to your colleagues; and an excellent way to communicate. Help to enlarge the amount of freely available mathematical literature on the web.

   See the EWDM for a list of homepages; register your homepage.

Peter Michor (CEIC) [and some editorial remarks by AJvdP (CEIC)]
Friday, September 17 2004 @ 14:40:20 ADT

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IMU on the Web #3

The EMANI-WDML Stockholm Workshop

For basics on the WDML read "The Digital Mathematics Library" (by Allyn Jackson) and the report of the original DML.

In very brief — there will eventually be a proceedings published as a SLNC — let me allude to a small sample of the talks given at Stockholm (these are rough notes only). My overall summary: there are lots of clever energetic people doing interesting things.

1. **At SGA one finds discussion of the project to digitise the work of Grothendieck. Tim Dokchitser spoke on "From Scan to LaTeX source" describing his techniques for scanning and recognising the typescript of SGA (Séminaire Géometrie Algébrique). Given uniform fonts (or typescript as in the case of SGA) and not too complex a variety of mathematical constructs Tim's recognition program can be trained to attain 99.9% accuracy in translating to LaTeX. The necessary training of the program is worthwhile if several thousand pages scanned at say 600 dpi and in the same type are involved.**
2. **Speakers from Spain and Italy described local digitisation projects.**
   1. **In Spain, there is a massive project with the goal of digitising the 100,000 pages or so of all Spanish mathematical journals, an effort much assisted by the unification of Spanish mathematics brought about by the formation of a national committee collaborating to stage ICM 2006 (to be held in Madrid). Collaborations with Latin-America will expand this project; a joint meeting was held in 2003. A powerpoint version of the Estocolmo presentation is available.**
   2. **At Sistema Informativo Nazionale per la Matematica one finds links to digitised journals and current projects. Of particular general interest is the project to digitise "ancient" materials.**
3. **Bernd Wegner: By involving librarians and scholars in the long-range strategic planning for its electronic publishing processes Springer is taking a pioneering role. In the future, EMANI may expand to include related scientific disciplines and to cooperate with more publishers. EMANI (the electronic mathematical archiving network initiative) is a joint enterprise inter alia involving Springer-Verlag, etc; EMIS, SUB-Göttingen, Cornell University Library, Tsinghua University Library,**

Cellule Mathdoc (NUNDAM) to support the long term digital preservation of the mathematical literature. For EMANI's goals see **www.emani.org/aims.htm**. Content includes 27 journals in ERAM, 19 journals in Cornell University's Project Euclid, ….

4. Katharina Habermann (SUB Goettingen) described Vi Fa Math, a project for a virtual mathematical library … in co-operation with Duisberg-Essen. Gertraud Griepke, Director of Springer-Link, detailed the technical principles underlying this massive project involving 600,000 documents, 2500 e-books, … with goal of being "the logbook of science".

5. Susan Hezlet spoke about open access (see my remarks **below**). In passing, she provided instructive estimates on the publication costs of Wellcome Trust journals:

refereeing	22%
editorial/typesetting	33%
subscription management	7%
production/distribution	23%
sales marketing	13%
promotion to authors	2%

    In summary: e-only free publication still would cost some 70%. Susan estimated cost per article at BPS 1700.

6. I have a note that Wolfgang Lenski uttered the sentence: "A conceptual ontology is still missing and must not get an ad hoc solution."

Open Access?

[Personal off-the-cuff comments by AJvdP; these remarks are not endorsed by anything or anyone]

One should be aware that the recent UK parliamentary report (House of Commons Committee on Science and Technology) "Scientific publication: Free for all?" is only that, the report of a parliamentary committee. Incidental opinion that came my way from British sources during the recent European Congress (ECM4, Stockholm) suggested strongly that a financial analysis reveals that the UK would be an all up financial loser if the *author pays/reader does not* model were universally adopted. It seems unlikely therefore that any UK government will strongly encourage the model.

On the other hand, some believe, quite wrongly I'm sure, that an author-pays/reader-does-not model might well be a saviour of small scientific publication efforts. My personal take on the matter is that a universal author pays model would be 'the saviour of scientific publication' only in so far as it would radically decrease the amount of material formally published. The trouble is that it would likely decrease the already too small amount of worthy material.

See **initial comments** on the **report**.

Alf van der Poorten.
Wednesday, July 28 2004 @ 14:18:38 ADT

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The second offering is from the organizers of a recent workshop on **Enhancing the Searching of Mathematics**.

IMU on the Web #2

Advancing the Searching of Mathematics on the World Wide Web

It would be delightful to be able to search for mathematics on the web as easily as we can now search for ordinary text, but, unfortunately, the representations of mathematics there creates formidable obstacles. There are, however, several initiatives under way which may substantially improve the situation.

One such initiative involves the use of federated search engines, that is, engines doing their searching by sending queries to various (perhaps heterogeneous) repositories. Although the data at a given repository may be kept in any format internally, there must be a common interface externally for sending, receiving and answering queries. The Open Archive Initiative (OAI) [1] provides a protocol for metadata harvesting. The adoption of these protocols can assist search engines to bring forth more complete answers to enquiries.

Over the past decade LaTeX has become the lingua mathematica for the presentation of mathematical research. Although some searching of mathematics is done by looking for TeX snippets [2], the language is really not well suited for this purpose. MathML [3] is a language by design more precise in its mathematical descriptions, and, as such, is more appropriate for successful mathematical searching. Using MathML is the best approach available at this time. In order to use the TeX files accumulated in many databases, it is necessary to develop a TeX to MathML translator. This is a far from trivial task.

For older documents not available in TeX format, one has to scan documents to make them available on the web. Newer formats such as djvu (deja vu) [4] being scanned, but also have metadata that may be searched.

We are at the beginning of a new era in the searching of mathematics on the web. Careful decisions made cooperatively now can save us much grief later. On April 26-27, 2004, a conference entitled "Enhancing the Searching of Mathematics" was held at the Institute for Mathematics and Its Applications at the University of Minnesota with the specific purpose to laying the firm groundwork necessary. There is a web page with many conclusions that resulted from this conference [5]. Further background material and recommendations can be found there.

References

[1] www.oaforum.org/tutorial/
[2] www.jstor.org
[3] www.w3.org/Math/
[4] djvu.sourceforge.net
[5] www.ima.umn.edu/complex/spring/math-searching.html

Thursday, May 13 2004 @ 10:46 AM EDT

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IMU on the Web #1

What can you do about Journal Prices?

The IMU Committee on Electronic Information and Communication (CEIC) made a series of recommendations in its Best Practices document several years ago. The advice was aimed at many groups – mathematicians, librarians, and publishers – and it covered many topics, ranging from versioning papers to archiving journals. The Best Practices document can be found in our Publications Section.

One of the recommendations (#8) concerned the problem of escalating journal prices. The specific advice was straight-forward:

> ***"When deciding where to submit a paper an author may choose to be aware of a journal's standing and impact, but an author also should take account of a journal's price…. In addition, one might consider a journal's price and policies when considering whether to referee or serve on an editorial board."***

While this is straight-forward and sound advice, the consequences of specific actions may be complicated and controversial. For example, creating new journals with low prices may (temporarily) stretch library budgets even further. This is especially true if many of the library's journals are included in a bundle. Is it a good idea to increase the stress on the journals system by creating new journals? What can individual mathematicians do to effect real change?

The CEIC recently added a Web page on *Recommendation #8* with remarks that discuss the actions one can take to reduce journal prices. For all mathematicians, the most important action is to stay informed. The new Web page provides additional discussion of Journal Pricing.

Thursday, March 25 2004 @ 00:46 AM ADT

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