Online journal for the popularization of mathematics: a case study

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"Images des Mathématiques" (IdM) online is the successor of a paper journal published by the French National Center for Scientific Research (CNRS) which had a printed circulation of 5,000 copies. Today, "Images des Mathématiques" is an online magazine aimed at the general public.

"Images des Mathématiques" receives about 50 000 visitors per month. The number of visits has doubled since the journal's debut in January 2009. However, these visitors represent only a small part the potential readership of the journal.

This article reviews the strengths, weaknesses and opportunities for "Images des Mathématiques".

An strong organization built on a fragile foundation

"Images des Mathématiques" is a collaborative website. One-hundred eighty authors have already contributed articles since the online journal started operating in January 2009. For quality control, "Images des Mathématiques" mirrors the peer-review system of scientific journals: more than one hundred fifty volunteers review the articles and provide feedback to improve them before publication.

Half of the 30-people editorial team is composed by the editorial board and the rest are «section managers». Almost all are researchers and academics in mathematics and are scattered throughout the French territory. Jointly they coordinate the journal's content. The editorial board meets physically once a year to assess the year's outcomes and determine future directions.

In total, the authors, reviewers and editorial team comprise a network of over 300 people. The ability to access the editorial space anytime, anywhere, allows authors to optimize their time to participate in the site. This flexibility lets a busy and geographically scattered team to produce continually content.

A copy editor manages the publishing process. She draws from a permanent pool of about a dozen articles and publishes on a continuous-flow basis. The web format offers her great flexibility of operation.

Readers also benefit from this continuous-flow: they can find new material almost daily on the website, matching the common practice of reading in multiple sessions (which would also be the case with a printed journal).

The system is well oiled. For over two years the rate of publication has been maintained; new members replace those who leave the network, and new ideas emerge. The organizational model of the journal is strong. But a good organization is not enough and the future is uncertain.

Currently, the journal has no legal status. Its survival depends only on funds allocated by the CNRS and on individual efforts by members of the editorial network. As with many fragile structures, the fuel could end up missing: firstly, the general revision of public policies (RGPP) conducted in France since 2007 results in budget cuts for the CNRS, which impact on the financial support of the magazine. Secondly, members of the editorial board, as enthusiastic as they are, may tire of not seeing their

effort acknowledged: unless the mission of "dissemination of scientific and technical culture" is included in the statutes for French researchers and lecturers, the time invested in these activities is not taken into account as part of their service and does not advance their careers.

The 2011 meeting of the editorial board of "Images des Mathématiques" will be an opportunity to review strategic options : should the journal seek other institutional partners or become open to advertising? What legal foundations can be put in place to allow "Images des Mathématiques" to conduct its activities more visibly and effectively?

Interact! Go ahead! Get Started!

Online distribution provides great opportunities in terms of interaction with readers, since they can publish their opinions about the articles after registering in the site; indeed, some articles have resulted in real debates.

However, it must be noted that these interactions are limited: comments are mostly made by mathematicians and the ensuing discussions sometimes become quite sophisticated and specialized. Only a few comments come from laypeople, even if only to ask a question. Thus the goal of interactivity with the public is still difficult to achieve.

One of the tools to help achieve this goal is shared with paper journals: mail from readers. "Images des Mathématiques" presently includes a section which publishes letters from readers who want to express general opinions or wish to share their own experience around mathematics. Contributions are still few (about one per month since this section's debut), but they allow non-mathematicians to participate in the discussions. Furthermore, their publication encourages those readers who hesitate to write.

Traveling on "Images des Mathématiques": highway or labyrinth?

Beyond the advantages already mentioned, IdM's site offers common services for searching data (by text, keywords, authors, topics, dates, articles' level of difficulty...), in addition to menu-driven navigation.

Paradoxically, a survey conducted in 2010 showed that many readers do not understand the site structure and are overlooking many of the site's search features. Access to articles is mainly via search engines, from the RSS feeds generated by the site and from referrals from other sites. The wealth of content and the multiple navigation modes seem to confuse the reader and may be handicaps compared to the organizational simplicity of a paper magazine, as some experts point out [1].

To solve this problem, the editorial board reflects on ways to better use web tools to improve the navigation on the site. Some ideas have already been implemented in 2010. The IdM's editorial board relies on the results of many expert discussions on «Web ergonomics»[3], especially those about the online press [4]. The possibilities are numerous: links between articles on the same subject, creation of virtual folders, improving «search engine optimization» results, tag clouds... One of the interesting tools to implement is the associated dictionary that many popularization magazines use. This allows for example, to add pop-up definitions of terms (a «lexicon layer») on the articles (the «text layer») [2].

In conclusion ... After two years, "Images des mathématiques" is an undeniable success, although its sustainability is not guaranteed. To carry out such a project, the recipe is simple: take a few motivated individuals, heat for a few weeks to get a smooth stock of ideas, add plenty of enthusiasm and hundreds of working hours. It's ready! In short, mathematicians of all countries start blogging!

Bibliography Réf. [1] Mônica, Macedo-Rouet, Jean-François Rouet : "Vulgarisation scientifique : les revues en ligne", pp. 61-68, Hermès n° 39, 2004.
http://documents.irevues.inist.fr/bitstream/handle/2042/9464/

[2] Sandrine Reboul-Touré : "Ecrire la vulgarisation scientifique", colloque Sciences, médias et société, ENS Lyon, 15-17 juin 2004. http://sciences-medias.ens-lyon.fr/article.php3?id_article=65

[3] "Principes à suivre pour un site web de qualité : ergonomie, compatibilité, accessibilité". http://www.alsacreations.com/article/lire/544-Principes-a-suivre-pour-un -site-web-de-qualite-Ergonomie-Compatibilite-Accessibilite.html

[4] Benoît Drouillat : "Benchmark Presse en Ligne", L'Observatoire des Médias ; http://www.observatoiredesmedias.com/2009/04/21/un-benchmark-de-la- presse-en-ligne/

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