How Does Scientific Publishing Work?

The SIAM J. Scientific Computing (SISC) as an example

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The talk refers to the status of SISC during my tenure as editor in chief from 2005-2010. Not all data have been updated since.
Why Scientific Journals (1)?

- Quick(?) dissemination of new results from current research with “quality control”
  - International distribution
  - English vs. other languages

- Where to publish
  - research journal
  - conference proceedings
  - magazine
  - review journal
  - monograph
  - web publication
  - technical report

- What should go where (criteria)
  - scientific reputation (related to quality control)
  - type of work
  - expected readership
  - quickness of publication
Why Scientific Journals (2)?

- Quality control
  - Review process
    - journals have usually the most rigorous reviews
  - Rejection rate
    - it may be quite difficult to get a paper published
  - Time from submission to publication
  - Value of journal publication varies with discipline
    - in CS some conferences that are very competitive (e.g. Supercomputing, SigGraph) and therefore prestigious

- Are journal publications (per year) a measure of productivity of a scientist?

- Publication type
  - as hard copy
  - electronically

- Commercial Aspects
  - most publishers are commercial, that is they are profit oriented
  - exceptions: non profit e.g. “university press” and “society” publications
What is SIAM?

- [http://www.siam.org](http://www.siam.org)

Applied mathematics, in partnership with computational science, is essential in solving many real-world problems. Through our publications, research, and community, the mission of SIAM is to build cooperation between mathematics and the worlds of science and technology.

SIAM’s goals are to

- Advance the application of mathematics and computational science to engineering, industry, science, and society
- Promote research that will lead to effective new mathematical and computational methods and techniques for science, engineering, industry, and society
- Provide media for the exchange of information and ideas among mathematicians, engineers, and scientists
SIAM Journals

new: SIAM J. Imaging Science
soon: SIAM J. Comp. Finance
and: SIAM Undergrad. Research Online
SIAM Journals

- SIAM is non-profit, but run by professional staff
  - profit from journals is used e.g. to sponsor other activities, e.g. conferences
  - 16 Journals
  - several book series
  - runs several conferences (from CS&E to Imaging Science)

- Cost for SISC, annual subscription, hard copy
  - SIAM individual member: $ 108,-
  - Library: $ 795,-
  - electronic only: somewhat cheaper, access also to older articles (1997-) included while subscription is valid, but access is lost completely when subscription is terminated.
  - price for single article (electronic): $ 23,-
  - For comparison: Numerische Mathematik from Springer-Verlag (a commercial publisher) is roughly comparable to SISC in quality and volume. It costs typically $ 3000. Some commercial publishers charge even higher prices. Check e.g. [http://www.mathematik.uni-bielefeld.de/~rehmann/BIB/AMS/Publisher.html](http://www.mathematik.uni-bielefeld.de/~rehmann/BIB/AMS/Publisher.html).

"There has been a lot of discussion about this ..."

Elsevier as a publisher is especially criticized for its pricing policy and this has even led to a boycott - e.g. TUM’s math department members have decided to refuse to publish, referee, or work as editor for Elsevier journals.
### SIAM Journals Impact Factor

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SISC impact factor for 2006 and beyond:

- 1.824 ranked #6 out of 150 in 2007,
Publications as Metric

There is a trend that the
- number of publications
- and their impact factor
are being used to measure scientific quality/productivity of individuals or research groups - this can be a problem!

Publish or Perish!

The number of publications (per researcher) is at best comparable within the same discipline
- a difficult theoretical paper may represent years of work
- a paper reporting experimental results from a student may be written in a week
- or the other way round ...

The impact factors are at best comparable within same discipline and same type of journal
- different disciplines have different publishing/citation styles
- even in the same field, a “review” journal or magazine will be different from a “research” journal
- manipulations of the citation factor are possible
  - How?
The index is based on the distribution of citations received by a given researcher's publications.

A scientist has index $h$ if $h$ of his $N_p$ papers have at least $h$ citations each, and the other $(N_p - h)$ papers have at most $h$ citations each.

Thus, a scholar with an index of $h$ has published $h$ papers with at least $h$ citations each.
Editorial Policy

see http://www.siam.org/journals/sisc/policy.php

The purpose of the SIAM Journal on Scientific Computing is to advance computational methods for solving scientific and engineering problems.

SISC papers are classified into three categories:

1. Methods and Algorithms for Scientific Computing. Papers in this category may include theoretical analysis, provided that the relevance to applications in science and engineering is demonstrated. They should contain meaningful computational results and theoretical results or strong heuristics supporting the performance of new algorithms.

2. Computational Methods in Science and Engineering. Papers in this section will typically describe novel methodologies for solving a specific problem in computational science or engineering. They should contain enough information about the application to orient other computational scientists but should omit details of interest mainly to the applications specialist.

3. Software and High-Performance Computing. Papers in this category should concern the novel design and development of computational methods and high-quality software, parallel algorithms, high-performance computing issues, new architectures, data analysis, or visualization. The primary focus should be on computational methods that have potentially large impact for an important class of scientific or engineering problems.
The author (or team of authors) prepares a manuscript
  - following journal style
  - keeping the editorial policy in mind
  - most commonly using LaTeX and using the SISC style files
  - see “instructions for authors” http://www.siam.org/journals/sisc/authors.php
  - e.g. keeping in mind that papers are usually produced in black-and-white
  - and submits it electronically through the web site

The SIAM staff checks for formal consistency, assigns a manuscript number, and passes the manuscript to the editor-in-chief

The editor-in-chief scans the manuscript and
  - either rejects it immediately (about 10-20%)
  - or assigns it to an associate editor (including himself)
The Referee Process (2)
from the manuscript to the publication

The **associate editor** checks the paper and either
- declines to handle the manuscript (returning it to the editor-in-chief), or
- rejects the manuscript immediately, or
- accepts the paper immediately (has not occurred in the past 5 years)
- or assigns 2-6 **anonymous referees**

The **referees** should be experts in the special field of the manuscript. They must consent to provide a report in 2(-4) months time. They read the manuscript and write independent reports
- to assess the quality of the paper
- to give the author guidelines on how to improve the paper
- additionally they may make a recommendation to the editor on how to proceed with the paper
- and return the report and recommendations to the associate editor

The referee process up to here typically takes 4-6 months. It is the major source of delays when reports are not returned in time. Good referees tend to be busy people!
Referee guidelines: A specific recommendation for acceptance or rejection should be *excluded* from the report. The following checkpoints are suggested for consideration:

- Is the paper consistent with editorial objectives?
- Is the work correct and original or of wide appeal?
- Is its presentation clear and well organized?
- Is the notation well conceived and consistent?
- How does the paper relate to current literature?
- Are the references complete, relevant, and accurate?
- Does the title accurately characterize the paper?
- Does the abstract properly summarize the paper without being too vague?
- Does the introduction relate the paper to contemporary work and explain the purpose of the paper?
The associate editor reads the reports and the recommendations and re-checks the paper.

Based on this he/she decides:

- to accept the paper unchanged (almost never), or
- to accept subject to minor revisions (seldom), or
- to return the paper for major revisions (often), or
- to reject the paper (often), or
- decides that further reports/and or evaluation is necessary

and writes a letter to the author with his/her decision.

In case of revisions, the author(s) will then have to rewrite the paper and return the revised paper to the associate editor - usually with a separate letter explaining the modifications they have done to the paper.

- in case of major revisions, the revised manuscript will be subjected to the same procedure again - usually with same referees
- in case of minor revisions the associate editor may decide to accept the paper directly if he/she is satisfied with the revision.

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Scientific Publishing  LSS - U.Rüde
The Referee Process (4)
from the manuscript to the publication

- Papers often cycle several times through the review/revision process
  - it is not uncommon that a paper remains under review for much longer than a year - and still be eventually rejected

- The anonymous “peer referee” process is the core to scientific integrity and quality. Referees are expected to - and often do - spend many days, if not weeks, reading a paper.
  - It is absolutely essential that the authors will not know who the referees were
  - Referee instructions for SISC: http://www.siam.org/journals/sisc/referees.php
  - There are evaluation forms, but effectively each paper is treated individually

- Once a paper is accepted it is sent to production:
  - a production editor reads the manuscript word by word, making editorial corrections (spelling, wording, punctuation, checking that references are bibliographically correct, etc.)
  - the author receives the galley proofs for a final check
  - the paper is published electronically in the online version
  - about 12 months later the paper appears in the hardcopy version.
The Referee Process (summary)

- Referees always stay anonymous
  - authors will inevitably try to guess who the (nasty) referees were (and sometimes will try to get “revenge”)
  - Therefore we must
    - avoid hidden information e.g. of the form (“This version of pdf-writer was licensed by ...”) and
    - referees should avoid indirect pointers to themselves: (“The authors should cite the core results in the earlier articles .....”)

- In case of a rejection, a SISC associate editor may choose to stay anonymous, but usually the associate editor will explain his/her decision to the author in person.

- SISC is administrated via a web-based system/data base with different access rights (administrative staff, editor-in-chief, associate editor, referee, author)

- There are quite different editorial models:
  - team of editors-in-chief (rather than a single individual)
  - associate editors always stay anonymous (and are usually also referees)
  - papers are submitted through individual editors (rather than centrally)
Typical editorial decisions

Rejection letter:

Your manuscript xxxx though interesting, is not suitable for publication in the journal. I'm sorry that I have to reject it for publication. Nonetheless, all your work on behalf of SISC is much appreciated. I hope you will consider the journal for future submissions.

Major revision needed:

Your manuscript xxx has completed this round of review. The two reports are attached and the third one is at the end of this email.

As you will see from the reports, the main concern of all the referees is the mathematical rigor.

In addition, I have the other concern that also makes the manuscript in its current form not suitable for SISC. Due to the specific SISC mission/rules, the relevance of the proposed algorithms to practical applications should be explicitly shown. This point is not even touched in the introduction. To make the manuscript suitable for SISC, I would suggest (in addition to the referees comments), as minimum, to add (1) a paragraph to the Introduction discussing possible applications, for which the proposed algorithms can be useful, together with the corresponding references; (2) to take one of such applications and add the illustrative example to Section 6. Please look for nontrivial examples. Let me stress again that this is the specific SISC requirement.

I think that the topic of the manuscript and the approach are interesting. Though I can't accept the manuscript for publication at this time, I am proposing you to revise (effectively rewrite) the manuscript following the suggestions outlined. Please take into account all the comments with great care. The revised manuscript will go through thorough review again.
SISC Statistics

- Annually
  - 350+x new submissions
  - 6 issues of ~800 pages printed
  - median ~120 days to reach an initial decision

SISC Decision Tracking: Jan 2005 - Jun 2005 (Original Submissions Only)

- 600+x submissions from 57+x countries since Jan 2005-Jan 2007
  - USA (30%), China, Germany, UK, France, Netherlands, Canada, Spain, India, ...

- 5. Rejected without Review (29%)
- 6. Withdrawn (5%)
Plagiarized Article:

Plagiarized from

Contents of the Sreenivas-Srinivas paper are taken from the preprint server Optimization Online. Specifically, the abstracts are identical. The text of the Sreenivas-Srinivas paper is essentially a subset of that of the longer Luedtke-Ahmed preprint. The reference lists contains exactly the same references with the same order and numbering.

SIAM wrote to the publisher, Research India Publications, notifying them of the plagiarism. SIAM has never received a response from the publisher.

SIAM contacted Clyde Martin, Editor-in-Chief of IJSS. Martin responded, saying that he himself was unable to contact the journal publishers. He provided SIAM with a copy of an email dated 27 April 2007 from M. Sreenivas to him, submitting an abstract to the journal, but the abstract and title were different from the one under consideration. Martin had no further information on how the paper was published. He submitted his resignation as editor but received no response.

Several other papers by M. Sreenivas and T. Srinivas were plagiarized from other sources.

Tips for Authors (1)

- Be prepared that publishing a paper
  - can take a long time
  - and can be (very) frustrating

- Avoid easy mistakes - formalities
  - read the editorial policy and take it serious
  - read the author guidelines and take them serious
  - have someone proofread your paper (ideally a native English speaker)
  - run a spell checker (!)
  - make sure your abstract is „perfect“
  - make sure that in particular your introduction and the conclusions are in excellent shape
  - make sure your bibliography is formally 100% correct (page numbers, publishers, etc)
  - Make sure that (also in the bibliography and in your cover letter) that you spell people’s names correctly

- Be aware that editors and referees are working on a honorary basis (also for commercial publishers)
  - they will not be happy to write your paper for you!
  - avoid wasting their (and your) time
Tips for Authors (2)

Check out the journal
- take the time to browse through a number of samples of the journal
  - who publishes there
  - what is the style
  - what are the contents
  - who are the editors
- how long does it take for typical articles from submission to printing

Do you cite any
- papers from that journal
- editors from that journal
- if not - why do you think it is the right journal? The scope of a journal is defined by who is an editor and who publishes there.

Write a short (<1/2 page!) but informative cover letter
- why the paper is being submitted to exactly that journal
- suggest about three editors who will be competent to handle your paper
  - if possible, make sure that these three are cited in your manuscript
- suggest about three referees, ideally from the authors who have already published in the journal
  - if possible, make sure that they are cited in your paper
- if necessary, give exact guidelines who should be excluded as referee/editor
Conclusions

- Types of scientific publications
- Commercial aspects of publishing
- SIAM
- SISC
  - editorial model
  - publishing statistics
- Author guidelines
Thanks for your attention!