Report of the Ad Hoc Committee on the Future of the Transactions

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I. BACKGROUND

The 2006 report of the ad hoc committee (headed by Alexander Vardy) on the growth of the IEEE Transactions on Information Theory predicted exponential growth in the size of the Transactions. Indeed, during the past five years the page count of the Transactions grew by almost 50% (see pages 6-28 of 2012 EiC report for full report on growth). As a result, a decision was made in the Board of Governors meeting in Saint Petersburg, Russia, in August 2011 to appoint an ad hoc committee to revisit the fast growth issue in the wider context of the future of the Transactions. The committee was formed in October 2011. The committee has conducted over 25 interviews (Section III and Appendix A) and collected data on over 12 journals in cognate fields (Section IV and Appendices B and C). In addition the committee held six conference calls and had one face-to-face meeting at the 2012 ISIT meeting at MIT. Based on these interviews, the collected journal information, and many ideas that committee members and others put forth, the committee makes several recommendations and discussion points for the Board of Governors to consider (Section V).

II. COMMITTEE CHARGE

The IT Transactions is the premier publication in the field of information theory and ranks among the top IEEE publications in terms of the number of citations and eigenfactor. However, the size of the Transactions has been steadily growing in recent years, which raises the questions of whether this growth can be managed, and whether it is hurting quality. Furthermore, the Transactions has not been attracting the best papers in closely related fields, such as cryptography, complexity, learning, quantum information, and network science.

The charge of the committee is to investigate these issues and make recommendations based on its findings. Some particular questions are:

1. Has this growth indeed hurt quality compared to an absolute standard or top journals in cognate fields (e.g., computer science, statistics, operations research, mathematics, and physics)?
2. How have leading journals in these cognate fields managed size and growth?
3. Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?
4. In general, how is the Transactions viewed by its readership broadly defined?
5. What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?

III. INTERVIEW RESPONSE SUMMARY

1. Has the growth of T-IT hurt quality compared to an absolute standard or top journals in cognate fields (e.g., computer science, statistics, operations research, mathematics, and physics)?
   Some people said “yes,” some said “no.” If there was a consensus, it was that T-IT still publishes the best papers in its Shannon information theory and coding, but that the “average quality” has slipped a bit, due to the inclusion of more average papers, particularly in the traditional core areas of the journal.
   One respondent commented, “I have the impression that for some of the topics more central in the IT Transactions, the average quality of the papers is not as high, with many more incremental papers being published.” However, another respondent remarked: “I think average quality is not a crucial metric because journals are nowadays searched, not browsed.”
   Extremal responses: “The IT Transactions is a scholarly journal of the highest quality” (respondent’s field: communications).
   “My understanding is that the quality of an average paper in IEEE-IT has never been very high. In particular it always lagged the quality in top journals in adjacent areas” (respondent’s field: theoretical computer science).

2. How have leading journals in these cognate fields managed size and growth?
   Respondents mentioned the following measures: page limits, spin-off of new journals, more fast-rejects, use of on-line supplements, go all-electronic.

3. Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?
   Most respondents replied that browsability is not an issue because “journals are nowadays searched, not browsed.” Those who cared about browsability said that it had suffered.
Remarkably, few comments were made about timeliness; apparently not much of an issue.

4. In general, how is T-IT viewed by its readership broadly defined?

Respondents said more or less unanimously that the T-IT was viewed as the best journal in its field, and as more prestigious than any other IEEE journal.

More nuanced comments: T-IT is the most mathematical of the IEEE journals (except possibly T-AC); it is more concerned with technical virtuosity than with impact; the quality of papers ranges widely, and therefore it does not give the “quality stamp” that other journals and conferences do (respondent’s field: theoretical CS).

5. What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?

Measures suggested (in addition to those mentioned under Q2 above): raise minimum acceptance threshold; reject “incremental” papers; reduce the T-IT impact factor (joke); in cognate fields, publish only papers that have a clear relation to information theory; avoid special issues. There was little or no sentiment for splitting the Transactions, spinning off new journals, or narrowing the scope.

A number of respondents commented that it would be helpful to clarify the scope of T-IT, which is not always clear to those in neighboring fields.

Several respondents commented that IT does not have a mechanism for pointing out its best papers, either in T-IT or the ISIT. Other fields have highly selective journals or conferences. It was felt that there should be some means of highlighting the papers that “everyone should read.”

Two respondents suggested starting a magazine along the lines of the Signal Processing Magazine.

Several people mentioned that the quality of editors and reviewers is all-important; probably others felt that this goes without saying.

IV. JOURNAL INFORMATION SUMMARY


Among these journals, except for the relatively new (all-electronic) JMLR and the IEEE-TWC, none has experienced as rapid a growth in the number of pages published as the IEEE Transactions on Information Theory, whose page-count has grown by around 11% (just under 0.5 dB) per year over the past decade or so.

As expected, the organizational structure and editorial policies vary widely among these journals, although all of these journals generally assign associate editors who handle the review process for individual submissions. In some cases, e.g., AAP and MOR, the identity of specific AEs handling the paper is withheld from the authors. Some journals impose page charges on papers exceeding a certain length, or discourage longer papers. Some journals, e.g., IEEE-ToN, have agreements with related conferences to fast-track top papers into the journal, or they devote a special issue to top conferences, e.g., SIAM-JC. Most journals appear to allow submission of expanded or revised conference papers, although some, e.g., AAS, discourage this practice.

Some journals, e.g., IEEE-TAC and IEEE-TWC, maintain a hierarchical editorial board, with several “area editors” sitting between the associate editors and the editor-in-chief. Given the rapid growth rate of T-IT, this policy is one that should be carefully considered for T-IT.

The physics community publishes a vast literature, including that published by the American Physical Society, whose journals include PRL and PR-A–E. The goals of the latter journals are to be a dependable and leading resource for results covering a wide range of the field, organized by area (A–E). The Physical Review Letters on the other hand, features short, important papers from all branches of physics. This journal is widely read, and is regarded as one of the most prestigious journals in any scientific discipline. This organizational structure, which combines a highly visible, prestigious journal containing short papers announcing major results, together with a series of top-quality archival journals, might be an appealing one for other disciplines to emulate, including information science (broadly defined).

Another particularly interesting publishing model is represented by the Journal of Machine Learning Research. Formed in 2000 by the former editorial board of Kluwer’s Machine Learning Journal, JMLR is a free on-line journal that is completely open access. The journal has a large staff of associate editors, and also separate large editorial and advisory boards, with many top people. The journal claims to make “a commitment to rigorous yet rapid reviewing”, with final versions of papers published electronically immediately upon receipt. Interestingly, JMLR has also attracted print publishers (formerly MIT Press, now Microtome Publishing). In addition to publishing papers, JMLR also maintains an archive of open-source software for machine learning. The JMLR model is an attractive one for many scientific disciplines, though it is unlikely to find favor with...
(and is likely to put pressure on) publishers such as IEEE who derive substantial revenue from paper dissemination (in print or on-line).

V. RECOMMENDATIONS OF THE COMMITTEE

A. Managing growth

Although the historical growth rate of 11% (0.5 dB) per year has continued over the past decade, growth beyond 2012 seems difficult to project. Special factors contributing to the more than 8000 pages in 2011 included two special issues, reduction of the queue of extremely old papers, and the relatively higher acceptance rates of prior years. The number of papers submitted per year is now only about 12% greater than in 2005, and paper lengths have gone up only about 20%. Since the acceptance rate in the past two years has decreased from 55% to less than 40%, the number of pages may not increase for the next couple of years. However, it must be expected that exponential growth will eventually resume.

1) Splitting T-IT. The committee does not see any advantages to splitting the IT Transactions.
2) Fast-reject rate. Under the current EiC, the fast-reject rate has risen to about 30%. The committee believes that this is about the right level.
3) Rejecting incremental papers. The committee recommends that minimum standards for significance should be raised, particularly in our traditional core areas. This recommendation is already being implemented by the EiC.
4) Page limits. The committee does not support instituting page limits. However, AEs should take a more active role in ensuring that papers are not too long relative to their content.
5) Special issues. The committee recommends against having special issues, unless there is a very compelling reason.

B. Improving operations

1) Senior Editors. A number of other IEEE Transactions have successfully instituted a cadre of Senior Editors between the EiC and the Associate Editors. The current EiC strongly opposes this practice, on grounds of more difficult quality control and potential loss of “the personal touch.” However, some committee members believe that a move towards a more hierarchical structure is inevitable. The committee recommends raising this possibility again with the next EiC.
2) Blind AE fast reject; general AE blinding. The committee recommends that blinding AE fast rejections should be left to the discretion of the EiC. Implementation of general AE blinding is not recommended.
3) Dividing the ToC into subcategories. Although some questioned the continuing need for this practice, the consensus is that it has some value and should be continued.
4) Reviewer rewards and penalties. This is a contentious issue on which little consensus exists. The committee endorses publishing a list of “good” reviewers every year, with details left to the EiC. The committee had no objection to the proposal by the current EiC and EEB that the EiC have the discretion to hold up publication of papers whose authors have egregiously overdue reviews (already approved by the BoG).
5) IEEE publication costs. The current editing performed by IEEE Publishing is very expensive and of marginal quality. The EiC is currently exploring alternatives.
6) Evolution to all-electronic publication. The committee expects that T-IT will follow the IEEE’s lead in this area.
7) Open access. The committee endorses the arXiv-based approach that the IT Society has taken in recent years, but recommends continued monitoring of developments in this area.
8) Page budget. The committee recommends that the EiC submit his best estimate of the page budget for the current and following year to the ITS officers every three months. The objective is to avoid surprises and hasty short-term corrective actions.

C. Improving visibility

1) Monthly ToC email. The committee recommends that the monthly Table of Contents (ToC) be sent in a “push” email to all IT society members and anyone else who requests it. (The IEEE can do this, for $600/month.)
2) IT Newsletter/magazine. The committee recommends that the BoG set up a committee to study the conversion of the IT Newsletter to on-line form, and potentially its evolution to an on-line magazine.
3) Review/survey/discussion papers. The committee strongly endorses publication of review and “discussion” papers in the IT Transactions, although it recognizes that such papers have historically been hard to obtain.
4) T-IT website. The committee would be happy to see a more active T-IT website, perhaps including discussions of current papers (see below).

D. Highlighting quality

Some interviewees pointed out that the field of information theory has no highly selective means for highlighting its best current contributions, such as conferences like STOC/FOCS, or journals like Science/Nature/Physical Review Letters. The
committee spent considerable time discussing this issue, and a number of ideas were proposed. However, since these ideas generally fall somewhat outside of our main charge and involve tradeoffs between costs and benefits that the BoG is in a better position to make, they are mostly offered by the committee as ideas for further study by the BoG and officers.

1) Highlighting “Editor’s Choice” papers. Some members, including the current EiC, were quite dubious about the logistical and political feasibility of highlighting papers in each issue. A more implementable option may be to publish the list of most-downloaded T-IT papers, which is already compiled by the IEEE.

2) Comments on current papers. The idea would be to solicit “paper reviews,” along the lines of book reviews, which would appear in some ephemeral but timely medium such as the IT Newsletter, the IT website, or an IT blog. Authors could be AEs or reviewers who handled the paper, or any appropriate person.

3) Announce IT Prize Paper Finalists. This would be a formal responsibility of the Awards Committee. The idea here is that without a great deal of additional work the Awards Committee could shine the spotlight on some additional highly meritorious papers.

4) Dividing the T-IT into “Part A” (top) and “Part B” (archival) papers. The aim would be to develop a “top” journal under the long-established T-IT umbrella. However, because of the obvious problems of combining a “top” and “archival” journal in the same structure, no consensus on how to do this could be reached.

5) New, highly selective, interdisciplinary journal in the information sciences. The committee enthusiastically recommends IT Society support of the committee that has been created to explore the feasibility of such a new journal (see prospectus in Appendix D).
APPENDIX A
INTERVIEWS

Interviews by Helmut Bölcskei:
The following interviewee works in signal and image processing, computer vision, learning algorithms, and numerical methods.

1) Has this growth indeed hurt quality compared to an absolute standard or top journals in cognate fields (e.g., computer science, statistics, operations research, mathematics, and physics)?
   Not necessarily. I think that the number of researchers is constantly growing and each is publishing more, so this lead to the growth we see in submissions. The quality is not necessary deteriorating.

2) How have leading journals in these cognate fields managed size and growth?
   Some produce thicker issues, like IEEE-TIT. Others seek new avenues such as Internet publications.

3) Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?
   I am not sure it did. As far as I’m concerned, the issues are small, bearing in mind that in each issue I find an interest in 2-4 papers at the most.

4) In general, how is the Transactions viewed by its readership broadly defined?
   As a journal that publishes high quality and deep theoretical studies.

5) What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?
   Several things: (1) form an editorial board that is impressive with leading and mature scientists; (2) keep fighting to shorten the time from submission to publication, without compromising review quality; (3) Avoid special issues - these typically tend to bring low-quality papers; (4) Insist on having thorough reviews, which in turn would lead to high quality publications.

Additional comments on more specific issues (partly redundant with answers above):
- other journals grow also, not sure as quickly as IT.
- IT is a very high quality journal, only send my best papers with conceptual and theoretical content to IT, more empirical papers go to Trans. SP and ACHA.
- don’t get the hardcopy, thickness of issues not a problem, only look at “sparse representations” category, typically no more than a handful of papers per issue in this area.
- usually I submit a paper to the journal that published the leading references in my submission.
- IT: very different handling times of my papers, sometimes quite good experience.
- my problem: do not really know what is suitable for the journal, recommend to include a mission statement on the journal web page.
- find it annoying if a paper is returned after several months saying that it does not fit the journal.
- categorization of papers is important, i.e., it is good to subdivide the ToC.
- do not really see low quality papers in IT.
- do not increase rejection rate.
- excellent policy to only appoint tenured AEs.
- editorial board reflects quality of journal, need AEs who are willing to stand up to authors and reviewers.
- appoint more senior AEs.

The following interviewee works in stochastic methods, Shannon information theory, coding, and networks.

1) Has this growth indeed hurt quality compared to an absolute standard or top journals in cognate fields (e.g., computer science, statistics, operations research, mathematics, and physics)?
   Growth is not specific to Trans. IT. All fields of science are growing. We see a “productization” of science, in the past science was more aristocratic. Peer review system enables formation of cliques. IT is becoming more clerical, enabled by formation of cliques, we see a lot of epsilonics in Trans. IT papers. But, I see science, in general, and journals as a primordial soup where great ideas eventually crystallize. I do not mind so much the many papers in Trans. IT as long as there are one or two great papers in every issue.
   When talking about size Trans. IT should probably be compared to a group of journals, as Trans. IT is very broad. Overall, however, I do feel that growth has hurt quality.

2) How have leading journals in these cognate fields managed size and growth?
   Create web-based archives that are easily searchable, e.g., a web-based searchable tree structure of the field with survey articles. Cut publishers out of financial loop. Length of papers and size of journals does not matter in electronic age.

3) Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?
   Quality suffered. Timeliness is an issue mostly for junior researchers, senior researchers should not care too much, we have ArXiv and word of mouth. No problem with browsability in electronic age.

4) In general, how is the Transactions viewed by its readership broadly defined?
In IT beyond doubt the very best journal. Industry people hardly read Trans. IT as we are very formalistic and have a lot of math. The networking industry, e.g., follows the corresponding scientific journals more than the communications industry.

Mathematicians: many of our problems are not of so much interest to them, our problems are very specialized. They have a high opinion of our journal and would publish there if they have appropriate results (see e.g. T. Tao).

5) What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?

We are doing OK in attracting top papers in mathematical engineering. Do we really want to attract purely math. papers? Allow for flexibility and diverse topics, need to allow for primordial soup.

The following interviewee works in statistical learning, estimation, and source coding.

1) Has this growth indeed hurt quality compared to an absolute standard or top journals in cognate fields?
   I haven’t noticed any decrease in quality in the areas I am mostly interested in. In fact, most of the best papers in the booming field of compressed sensing appeared in IT Transactions which I was happy to see. However, perhaps the growth within the transactions has been less pronounced in these fields, in spite of the growth of learning theory and related fields.

2) How have leading journals in these cognate fields managed size and growth?
   There is definitely a growing tendency and, in my opinion, some of the leading journals have struggled to maintain the high average quality by not resisting the pressure and publishing more papers.

3) Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?
   Browsability is an issue but apart from that, I think the Transactions manages to be considered as the most reputable journal of information theory that publishes high-quality papers from neighboring fields.

4) What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?
   I think the main direction is correct. It is possible that some reduction in size may be advisable but I don’t have a good idea as of how this cut should be made.

Interviews by Emmanuel Candès:

The following interviewee has a background in coding and mathematics.

1) Has this growth indeed hurt quality compared to an absolute standard or top journals in cognate fields
   Quality is the wrong word.
   We should instead think of representing things along two axes: technical virtuosity and broad impact. It seems that IT corresponds to a narrow rectangle along the first axis. Which rectangular shape would we want?
   The transactions are fortunate to have attracted the first compressed sensing papers. They started a new field of research and this should be the aspiration of the journal.
   Quantum IT: Transactions are boring in this area. There is a capacity theorem in the classical setting and its quantum equivalent sometimes does not even require a change in the proof.
   The subject should grow and develop by discovering new application domains. Too much tendency to become priesthood.
   Best papers should have a broad audience and speak to practitioners. An example is a paper on medical imaging that has some theory.

2) How have leading journals in these cognate fields managed size and growth?
   Journal of AMS: Initial threshold applied by AE. AE asks: “how important is this paper?”
   Signal processing: proliferation of journals + magazine. The magazine is the Signal Processing Magazine (SPM) which picks a theme and then explores a theme. Provides a nice introduction to a subject. Connects theory and practice. Articles are written in an accessible way. SPM is much of a good thing. Overall, signal processing has a differently shaped rectangle.

3) Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?
   As a record, it has an enduring value.
   Not as easy to figure out what is going on.
   Timeline still works. TIT is very functional.

4) In general, how is the Transactions viewed by its readership broadly defined?
   TIT is getting too narrow.
   If one goes back in history, one would find papers in public cryptography that were influential and read by a broad community.
   Diversity of readership is shrinking and this should be a concern.
   Articles are not written with an eye on practitioners, who are less likely to pick up the TIT and browse. This is a loss for the community.
   New applications and new mathematical ideas need to come in.

5) What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?
A better question is: what actions does the IT society need to take to amplify the impact of the activities of its members? Need: development of a communications strategy. Might involve something like SPM. Engage and draw people in. If not, things will get more sterile.

**6) Other comments**

TSP competed more effectively for first wavelet papers.

How do you represent signals? Not a current strength. Outcome: best people do not send their papers.

Detection and estimation: nothing in TIT. Yet boosting, for instance, should be in scope.

There are holes because of Newtonian laws. But we should not forget that Shannon developed models, stripping away anything that was unessential.

The following interviewee works in cognate fields: statistical signal processing, times series analysis, Monte Carlo methods, Markov chains.

1) **Has this growth indeed hurt quality compared to an absolute standard or top journals in cognate fields?**

Standards are all right.

It is difficult to understand the editorial policy. There are papers that should have been published in applied probability or statistics journals that get published in IT.

What is the focus: traditional focus (Shannon theory) seems less important today.

IT seems to attract papers from engineers who do math. Problem comes from other places. E.g. TSP does not like math and this is a problem. TSP should allow more math.

2) **How have leading journals in these cognate fields managed size and growth?**

Bernoulli: papers that contain main results while technical details are in electronic form.

Perhaps half printed + half download (via a very good website) is an alternative?

Difficulty in finding relevant reviewers. Most of the time, reviewers are very young. This increases the role of the AEs.

3) **Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?**

Difficult to understand editorial policy.

Core paper are well reviewed. Border papers are less well reviewed. For instance, a stats paper would be better reviewed by a stats journal.

Best publication in its field.

4) **In general, how is the Transactions viewed by its readership broadly defined?**

Viewed as the best journal in its field. Level is much better than TSP. TSP is okay with ill-formed, even ridiculous math, while IT is not. So the level of iT is better.

IT together with Trans. on Aut and Control are best IEEE publications.

IT catches too many papers. E.g. papers in “mathematical engineering.”

5) **What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?**

Define precisely the scope of the journal. Avoid publishing papers that do not fit the scope: e.g. papers on times series analysis, on the bootstrap and so on.

6) **Other comments**

Should open scope of the journal and form a new editorial policy. It should not be the same scope as AOS or as that of another machine learning journal.

The following interviewee works primarily in mathematical analysis and signal processing.

1) **Has this growth indeed hurt quality compared to an absolute standard or top journals in cognate fields?**

No.

2) **How have leading journals in these cognate fields managed size and growth?**

Does not know. Not an expert at following the literature.

There are journals with a fixed number of pages and keep a certain quality bar. A good example is JAMS. When the topic grows, they revise the number of pages accordingly.

In mathematical physics, there are journals defining themselves very narrowly and this is very dangerous. This drives people away from the field: most notably, women.

This could be a danger for IT: i.e. a field that tries to think of itself as what Shannon said is dangerous. She hopes IT does not become too narrow.

3) **Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?**

N/A

4) **In general, how is the Transactions viewed by its readership broadly defined?**

Viewed as a high quality journal, a bit difficult to read and quite technical.

Is not sure whether this is a journal that welcomes new mathematical ideas.

Very technical papers. Publishes in IT when she wants engineers to see her work.
Mathematicians do not read IT.

5) **What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?**
   
   Fact that there is a committee asking these questions is very positive/important. Has not seen many journals do this.

6) **Other comments**
   
   Hopes future of IT is wider than what is represented in the journal.
   
   Perhaps publication format in which details are published/available separately.

The following interviewee works primarily in statistical signal and image processing and related mathematics.

1) **Has this growth indeed hurt quality compared to an absolute standard or top journals in cognate fields (e.g., computer science, statistics, operations research, mathematics, and physics)?**
   
   Who has the time to read the Transactions? It’s huge! Scope has not really grown. Very little on sampling, continuous time stuff and on compression. Fear that we are running out of problems to look at. Can we afford to only cover error correction and Shannon coding theory?
   
   Whether IT is a subset of CS is open for debate but CS has more growth. T-IT could be an outlet for some kind of Theory of CS but not when it’s so focused on topics that have been belabored a bit too much.

2) **How have leading journals in these cognate fields managed size and growth?**
   
   He is not sure they did. Physicists have established a multitude of journals PRL, Phys Rev ABCD, Phys today and so on. IEEE does not do this.
   
   Perhaps IEEE and ACM should be working together to make something equivalent to Nature and Science. This would bring Appl. Math, Stats, Inf Theory and CS together to make a high visibility and high impact journal.

3) **Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?**
   
   IT has name recognition. Perhaps too big for its own good.

4) **In general, how is the Transactions viewed by its readership broadly defined?**
   
   People think it is harder to get papers published in IT but it may bot be true. Good quality papers but sometimes this is “de l’art pour l’art”
   
   IEEE TSP has a high rejection rate and it’s difficult to publish there but for the wrong reasons.

5) **What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?**
   
   IT does not deal with information sciences.
   
   Things that are IT are not recognized as such: one example is Kumar et al paper on scaling laws for network transmission. Took years to get started on this problem. This is a lost opportunity.
   
   IT people should not view themselves as people sitting at their desk waiting for people to bring work that has been “pre-mache”
   
   Needs to be aggressive in information sciences (applied math, stats, CS and IT) and open scope of journal.

**Interviews by Abbas El Gamal:**

The interviewees mainly work in areas of Shannon information theory.

1) **Has this growth indeed hurt quality compared to an absolute standard or top journals in cognate fields (e.g., computer science, statistics, operations research, mathematics, and physics)?**
   
   Yes when you consider quality of papers. Is the growth due to longer papers or more papers?

2) **How have leading journals in these cognate fields managed size and growth?** Page limit is imposed in most cases.

3) **Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?**
   
   Yes. It is not really very readable anymore. It is also very difficult for new comers to find their way—it is overwhelming.
   
   I don’t really read it when I get it. I read the Newsletter.

4) **In general, how is the Transactions viewed by its readership broadly defined?**

5) **What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?**
   
   Impose page limit or have supplementary material available online (could also be through Arxiv) Empower Associate Editors to reject incremental/boring papers outright in consultation with EIC. The Associate Editor should remain anonymous (rejection through the EIC)

1) **Has this growth indeed hurt quality compared to an absolute standard or top journals in cognate fields (e.g., computer science, statistics, operations research, mathematics, and physics)?**
   
   Yes

2) **How have leading journals in these cognate fields managed size and growth?**
   
   Limiting size, both in terms of the number of papers and length papers (but don’t like hard paper length). Bring short papers back.

3) **Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?**
   
   We’ve become an archive. Transactions not easily browsable. Diluting great papers.
4) In general, how is the Transactions viewed by its readership broadly defined?
   Don’t know

5) What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?
   Limit size, but the details are very tricky. Not in favor of splitting the Transactions.

6) Other comments:
   ISIT papers do not have enough visibility to replace Transactions.
   Physical review letters is a great journal.
   I think average quality is not a crucial metric for a journal because journals are nowadays searched, not browsed. For comparison, it is much more crucial for a conference. A better metric for journals is the fraction of high quality papers (in an area) that it attracts.
   Taking this point of view, IT Transaction is very good in Information Theory since it is a quasi-monopoly for historical reasons.
   On the other hand, it does poorly at attracting excellent papers from related areas (eg cryptography, complexity, learning, and network science). The reason is that IT Transactions is very much tied to the IT Society which has very strong focus on data communication and compression.
   Most of other disciplines have a more competitive publications landscape, with (often) multiple levels of selectivity.
   In particular, they often have a very selective venue that focus strongly on quality and attracts very good publications.

1) Has this growth indeed hurt quality compared to an absolute standard or top journals in cognate fields (e.g., computer science, statistics, operations research, mathematics, and physics)?
   Average quality has gone down. Some papers should not have been accepted. Bad because it hurts the prestige of journal, waste of resources.

2) How have leading journals in these cognate fields managed size and growth?

3) Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?
   Since everything is online, browsability doesn’t matter.

4) In general, how is the Transactions viewed by its readership broadly defined?
   Main venue for IT. Still prestigious among communication engineers.

5) What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?
   Get rid of sectioning, reduce acceptance rate, uniform quality control standards among associate editors, going from ISIT to Trans. because conference papers don’t count, go back to short papers, the journal is too broad in that many papers should go to Trans on comm or wireless, fundamental to information broadly construed, don’t split the Trans, highlighting would be good if it is objective (table of contents + highlights), likes the idea of having a magazine like SP but not to frequent and not thick.

Interviews by **G. David Forney, Jr.**:
The following interviewee is a younger researcher with a background in physics and information theory.
Perception of IT Transactions
- still the highest-quality IEEE journal; threshold much higher than Trans. Comm.
- no problems with browsability; browses on-line; size doesn’t matter
- introductions to papers are much too long and boring. Would like to see problem statement, solution
- papers in 1970s and 1980s T-IT are much more interesting than current. Too many minor, trivial papers now.
- not bothered by long review times. Quality is much more important than time.
- reads articles eclectically. Enjoys algebraic coding and sequence papers.

Ideas
- proposes T-IT Series A and B. Series A would be a small subset of papers, picked by editors, that “everyone” should read.
  - sort of like Phys Rev Letters, but PRL not a model; now publishes 10-12 papers a week
  - for problems with PRL, see http://publish.aps.org/reports/PRLReportRev.pdf
  - Science, Nature not a model; “serious scientists publish in PRL”
  - Annals of Math. might be a model
- Should have a highly selective “Series A” conference too
- proposes incentives for reviewers
  - name top ten reviewers each year?

The following interviewee has a background in mathematics, theoretical CS, information theory, coding.
Perception of IT Transactions

- still the highest-quality IEEE journal; definitely more prestigious than SP Trans.
- no problems with browsability; browses arXiv, on-line; size doesn’t matter
- crypto: all good articles published elsewhere, in crypto journals. Wiretap channel is a curiosity to crypto people.
- quantum information theory: definitely a good place to publish

Ideas

- The split of J. Comb. Theory into Series A and B seems to have worked well
  - graph and matroid theory to Series B
  - Series B may be more prestigious
- Doubts whether IT could convert to the JMLR model
- Should get rid of incremental boring articles
  - particularly in algebraic coding theory
  - used to appear as Correspondence

The following interviewee's background is in signal processing, learning, optimization, and control.

Perception of IT Transactions

- still the highest-quality IEEE journal, from point of view of theoretical depth
- breadth of topics has grown and is of more interest to him now than formerly
- no problems with browsability
- sends his “deepest” papers there; would not send an algorithm paper
- the bar is higher for T-IT than for IEEE Trans. Sig. Proc.
- views as “statistical,” “probabilistic”
- negative: long review process

Ideas

- T-SP successfully hived off Image Processing, a well-defined subarea
  - good reviews quickly
  - smaller community, dedicated
  - quality same as T-IT
- In CS community, the most prestigious papers are conference papers
  - short, rapid availability
- In physics, the most prestigious papers appear in Phys. Rev. Letters
  - short, quick turnaround
- Could split T-IT, but not sure what the benefit would be
- To improve the culture, need a small, committed group

Interviews by Bruce Hajek: (Interviewees work primarily in the area of communication networks, with some wireless communications and information theory aspects)

1) Has this growth indeed hurt quality compared to an absolute standard or top journals in cognate fields (e.g., computer science, statistics, operations research, mathematics, and physics)?

   The quality remains high in the networks area. I think it is because authors know that network theory is not the central focus of the IT Transactions, so unless a networks paper is quite strong it wouldn’t have a chance. I have the impression, however, that for some of the topics more central in the IT Transactions, the average quality of the papers is not as high, with many more incremental papers being published. I see the same thing happening in the IEEE Transactions on Automatic Control; a few high quality networks papers but in some areas more central to mainstream control, the quality on average is much lower. Even though the average quality of papers within central areas for both IT and Trans. AC is lower than for a peripheral area such as networks, the best papers in the central areas are very strong.

2) How have leading journals in these cognate fields managed size and growth?

   Don’t know. I am an AE for JACM. We are expected to accept only two or three papers per year per editor.

3) Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?

   Not that I know of.

4) In general, how is the Transactions viewed by its readership broadly defined?

   It is highly regarded by the theory oriented people working on communication networks.

5) What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?

   No opinion.
1) Has this growth indeed hurt quality compared to an absolute standard or top journals in cognate fields (e.g., computer science, statistics, operations research, mathematics, and physics)?
   No. Quality remains very high. You can trust what you read.
2) How have leading journals in these cognate fields managed size and growth?
   Spawn new journals: Transactions on wireless, on smart grid. IEEE Trans. on Mobile Computing, IEEE Transactions on Smart Grid, IEEE Transactions on Wireless Communications, etc. Impose page limit
3) Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?
   No, I don’t think so. Quality is as high as it was.
4) In general, how is the Transactions viewed by its readership broadly defined?
   I has highest regard from scientific community, including CS, theoretical CS, other associated areas. Even highly regarded by people outside field.
5) What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?
   Would rather not to see it split. Places priority on being a single journal. Larger paper in electronic version.
6) Other comments
   Number of networking papers has been increasing. Strong. More information theorists are dealing with networking issues. Exposure is successful. Delay of Transactions on Networking is worse; the delay for IT is within expectations.

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Interviews by Frank Kschischang:
The following interviewee works in communication systems.

1) How do you view the IT-Transactions? Are there aspects of the Transactions that could be improved? Are there major problems?
   The IT Transactions is a scholarly journal of the highest quality. We must maintain the image of the journal as an example of the quality of research and research publication in Electrical Engineering. Many important (landmark) papers have appeared in the IT-Transactions, and it is well established that the half-life of citation for this journal is extraordinary.
2) The IT-Transactions has been growing. Has this hurt quality, readability, usefulness, “browsability”?
   The field is expanding and there are many young researchers entering the field. I do not feel that quality, readability, usefulness, or “browsability” have been compromised.
3) Which journals compete with the IT-Transactions? How are these journals different from the IT-Transactions?
   In terms of readers who read IT-Transactions as well as other journals, I expect there are readers in common with IEEE Transactions on Communications and IEEE Transactions on Signal Processing. I also expect that the level of mathematical sophistication of readers of these journals is high compared to the “average” reader of IEEE journals.
4) How do you decide which of your papers should be submitted to the IT-Transactions? Do you have any comments about the review process (length of the process, quality of the reviews, etc.)?
This decision is primarily based on, in rank order:

- The mathematical sophistication of the considered paper.
- Where the references of the considered paper appeared.
- Length restrictions of the potential journals for submission.

5) **What actions, if any, should be taken to ensure the future of the Transactions as a leading journal?**

Choose only the finest and most accomplished EiC’s and Associate Editors.

Keep the reviewer pool selective. A rewards A-plus, ... you know the saying.

6) **Are there any other comments (or anecdotes) that you would like to share with the committee?** You understand very well the pressures faced by the IT Transactions, and so any comments and advice that you could give would be very helpful.

*How has T-Comm managed size and growth?*

The quality and reputation of the journal depend in large part on who is selected to be EiC. There have been too many political and “buddy” appointments to the Editorial Boards of ComSoc journals in the recent past. This is being talked about, and confidence in the impartiality of the review and acceptance process is now in question, and in consequence, the quality and reputation of the respective journals.

The following interviewee works in applied algebraic geometry, systems theory, coding theory and cryptography.

1) **How do you view the IT-Transactions? Are there aspects of the Transactions that could be improved? Are there major problems?**

I consider it still the top journal in coding/information theory. I feel however that with the increased size the journal became more uneven. Quite a few papers seem to slip through which probably would not have passed some years back. Of course I imagine that with the high impact factor the journal has a very high number of submissions and a strict quality control is hence difficult.

2) **The IT-Transactions has been growing. Has this hurt quality, readability, usefulness, “browsability”?**

Yes, I believe. (See above).

3) **Which journals compete with the IT-Transactions? How are these journals different from the IT-Transactions?**

The scope of the IT Transactions became very large. As you know I am publishing on the more theoretical side and here the journal competes with several applied Math journals such as Advances in Math Communications (AMC), Applicable Algebra in Engineering (AAECC), Finite Fields and Applications and many more pure algebra journals. On the applied side there are many applied engineering journals which I likely would not consider. In the crypto area there are also excellent alternatives such as Journal of Cryptology.

4) **How do you decide which of your papers should be submitted to the IT-Transactions? Do you have any comments about the review process ?length of the process, quality of the reviews, etc.)?**

It depends how theoretical the paper is. I tend to use IT Transactions or my more applied papers.

5) **What actions, if any, should be taken to ensure the future of the Transactions as a leading journal?**

Because of the large scope I tend to believe that there are no more readers who can appreciate all papers published. 10 years ago the IT Transactions was top in theory. Now there are many papers which I personally do not look at when the thick volume comes every month. What one could contemplate is a split of the journal in IT Transactions (Theory part) and IT Transactions (Applications Part). For the first part I definitively would increase the admissions standards.

The following interviewee works in the area of algorithms and software development frameworks for computer communication networks and secured mobile communication systems.

1) **How do you view the IT-Transactions? Are there aspects of the Transactions that could be improved? Are there major problems?**

IT-Transactions is one of the leading and high quality journal well estimated in the research community. I don’t see major problems with it. Perhaps one suggestion is to try updating the scope of the journal in view of the tremendous that we are seeing nowadays with regards to technologies related to IT. New era of research such as green communication and networking should be included in the journal’s scope of topics.

2) **The IT-Transactions has been growing. Has this hurt quality, readability, usefulness, “browsability”?**

To my viewpoint, no.

3) **Which journals compete with the IT-Transactions? How are these journals different from the IT-Transactions?**

To my knowledge, none of such high quality. I am aware that there are few other journals with other publishers such as Interscience, but with less stringent and rigorous peer review process than IT-Transactions.

4) **How do you decide which of your papers should be submitted to the IT-Transactions? Do you have any comments about the review process (length of the process, quality of the reviews, etc.)?**

Typically, when I can confidently judge the quality of the content of the paper, acknowledging that the paper has significant good results in the topics covered by IT-Transactions. The length of the review process is reasonable, but would be great if fixed to 5 months or so.

5) **What actions, if any, should be taken to ensure the future of the Transactions as a leading journal?**

Ensure that a rigorous review process is kept in place, added to the quality of the manuscript submission.
Interviews by Madhu Sudan:

Madhu Sudan added questions, M1 through M3, to the committee’s questions, C1 through C5. Interviewees work in area of theoretical computer science.

M1. How often do you consult the IEEE transactions?
Sporadically, perhaps once every couple of months: whenever a reference trail leads me there.

M2. How often have you considered publishing papers in the IEEE transactions on IT?
I’ve probably published 4-5 papers there in the last two decades.

M3. What factors encourage you to, or discourage you from, publishing in IEEE-IT?
Topic and audience. (a) If the topic of the paper is primarily in information theory or coding theory. (b) If the paper is in TCS with possible relevance to the IT community, and it’s already had conference exposure in TCS, then it’s natural to send the journal version to Trans IT.

C1. Has this growth indeed hurt quality compared to an absolute standard or top journals in cognate fields (e.g., computer science, statistics, operations research, mathematics, and physics)?
I don’t know.

C2. How have leading journals in these cognate fields managed size and growth?
SICOMP seems to be managing its size fairly well, carrying enough papers to be a focal point for TCS without as far as I know sliding on quality. JACM may face a more difficult challenge: its volume is so small relative to its claimed terrain that it is in danger of being at the center of no-one’s attention. The prestige of publishing in JACM, plus its role in disseminating results to a broad CS audience, will keep it alive, but not necessarily vital. Subjectively, I perceive Trans-IT as being more like SICOMP than JACM in this sense.

C3. Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?
I don’t know, I only look up particular papers of interest to me, I don’t browse the Transactions or any other journal.

The following interviewee is a promising early career researcher.

I am not sure I’d be a good person to answer this questionnaire: I have never submitted a paper to the journal (and would probably consult someone like you before submitting in the future). Thus I did not have a chance to form an independent opinion about it.

M1. How often do you consult the IEEE transactions?
On average about once-twice a month.

M2. How often have you considered publishing papers in the IEEE transactions on IT?
For “pure coding” papers IEEE trans. IT is THE number one option. But I estimate that only 5-10% of my papers are of this nature. Other papers I’d rather send to JACM/SICOMP/Computational Complexity/RSA/Combinatorica.

M3. What factors encourage you to, or discourage you from, publishing in IEEE-IT?
Encourage: 1) IEEE trans. IT is a great journal with high impact factor (though I never checked what this number is nor how this hierarchy emerged, I don’t see any inherent difference in the editorial boards or policies or call-for-papers between these journals and IEEE IT or other journals. But for some sociological and historical reasons it came to be that everybody agrees as to the hierarchy above. How this emerged and how can it be changed is a question that I think is better answered by marketing and business professionals. It’s certainly not just a simple matter of the acceptance ratio of papers hence increasing the number of accepted papers, by itself, is not harmful to a journal’s success.

C2. How have leading journals in these cognate fields managed size and growth?
I don’t know. E.g., I don’t know whether JACM/SICOMP have increased the number of accepted papers per year. I’m sure that Nature/Science have grown significantly, and opened sub-journals (Nature-medicine, nature-genetics, etc.) yet they are still considered the best science publications worldwide.

C3. Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?
I don’t think so. In our digitized age I think a good journal (such as IEEE trans. IT) can and should simply set its goal to accept and publish all work within its scope that it views as sufficiently good.

C4. In general, how is the Transactions viewed by its readership broadly defined?
I can speak only for myself (working in computational complexity): When I’m looking for “pure coding” results then this journal is undoubtedly the top venue, both for historical works and for recent ones. But many important works in theoretical computer science mix coding theory with complexity/cryptography. For such works, computational journals
such as SICOMP and JACM are considered better.

C5. What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?

For “pure coding” works I think nothing needs to be done. If IEEE trans. IT wants to embrace more “computational/cryptographic” coding theory then, for starters, increasing the number/ratio of “coding and complexity” experts would be a good first step. Marketing can then be used to let the complexity community know that IEEE trans. IT wants more of their works published there.

M1. How often do you consult the IEEE transactions?

I don’t consult current/incoming issues regularly as I don’t subscribe to the journal. However, I look up TIT papers on IEEEExplore periodically, say on average about 2-3 time per month.

M2. How often have you considered publishing papers in the IEEE transactions on IT?

Quite regularly, let’s say about once or twice per year on average.

M3. What factors encourage you to, or discourage you from, publishing in IEEE-IT?

Encouraging factors are: (i) it seems to be the prominent place to publish in the information/coding theory community, and so publishing there gives the result the best possible exposure to the IT community (I still don’t know if the results, especially theoretical or algorithmic ones, get the level of exposure they probably should, but this seems to be the best current alternative); (ii) the decision and turn around time is usually quick.

Some discouraging factors (nothing too serious, but still probably worth mentioning): (i) The formatting is plain ugly, in my opinion; (ii) there is a large variance in the quality of papers and the aims of the journal in terms of both aesthetics and scope seem a bit fuzzy to me at times; (iii) the policy w.r.t. previously published conference versions is not very clear and I know of cases where well meaning authors (not me) have gotten not so nice comments back in this regard.

C1. Has this growth indeed hurt quality compared to an absolute standard or top journals in cognate fields (e.g., computer science, statistics, operations research, mathematics, and physics)?

I see more variance than customary in a top quality journal in the quality of the papers published even within a single issue. I am not sure this is solely because of the growth of the scope of the journal, but it may be a factor, as it is harder to be the first-rate publication venue for a broader spectrum of topics unless the topics or the underlying community form a tightly knit unit and have the same aesthetics.

C2. How have leading journals in these cognate fields managed size and growth?

I’m not quite sure, but having flagship journals focusing on sub-fields of the field is something larger disciplines (like Math) seem to have done successfully.

C3. Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?

Hard for me to tell. Normally I look for specific papers rather then browse, so for me the growth doesn’t seem to matter in this regard.

C4. In general, how is the Transactions viewed by its readership broadly defined?

I don’t have an informed opinion/answer for this question.

C5. What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?

The best thing I can say (which is not much) is: Enforce high standards for acceptance, and take it from there.

M1. How often do you consult the IEEE transactions?

I have a habit of going to IEEE-IT web-site and browsing titles in the current issue. I do it once every 2-3 months. Apart from that I naturally often download papers from there on other occasions. I would guess, I download around 25 papers a year.

M2. How often have you considered publishing papers in the IEEE transactions on IT?

I have published 2 papers in IEEE-IT. I have one paper submitted currently.

M3. What factors encourage you to, or discourage you from, publishing in IEEE-IT??

IEEE-IT is essentially the only journal venue for coding theory results that do not fall into the theory of computation. There of course is an option of sending to discrete math/combinatorics journals, however there one addresses quite a different and more narrow audience.

C1. Has this growth indeed hurt quality compared to an absolute standard or top journals in cognate fields (e.g., computer science, statistics, operations research, mathematics, and physics)?

My understanding is that the quality of an average paper in IEEE-IT has never been very high. In particular it always lagged the quality in top journals in adjacent areas.

IEEE-IT has been publishing all reasonable quality results that were coming out if the Information Theory (IT) community. However now, given that the main questions in classical information theory have been arguably resolved, members of the IT community have turned to very broad interpretations of what constitutes information theory. As a result the community became larger and in response IEEE-IT had to expand.

C2. How have leading journals in these cognate fields managed size and growth?
I do not have much experience here. I imagine that some journals would keep publishing the same number of papers despite the growth of the community.

C3. **Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?**
I do not think so. IT community is a collection of sub-communities, and as long as each sub-community has its papers getting in, the journal has value.

C4. **In general, how is the Transactions viewed by its readership broadly defined?**
I cannot speak for the broad IEEE-IT readership. Coding theorists view transactions as their main journal. Publishing there is not very prestigious and does not give a "quality stamp". However it allows one to reliably address other coding theorists as many people keep track of what is being published.

C5. **What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?**
I think a vital question here, is the one regarding the future of the information theory community. If the community survives as a whole IEEE-IT will be a leading journal in the information sciences. If the community falls into totally disconnected sub-communities, I do not see how IEEE-IT may keeps its status.

M1. **How often do you consult the IEEE transactions?**
It depends on what you mean by "consult". I'd say a few times a year, I seek out a particular a paper that has been published in IEEE TIT. On the other hand, I almost never browse IEEE TIT. But, thinking about it, I would be very happy to receive a monthly email with the titles of papers appearing in each issue (with links to abstracts), especially since TIT contains many papers that I wouldn't normally hear about through TCS conferences (but still may be of interest to me).

M2. **How often have you considered publishing papers in the IEEE transactions on IT?**
Every couple of years I “consider” publishing in IEEE TIT (and even “decide” to do so). But in the end, I think I’ve actually submitted only one paper to IEEE TIT in the 14 years that I’ve been doing research. (See answer to M3.)

M3. **What factors encourage you to, or discourage you from, publishing in IEEE-IT?**
The discouraging factor is simply my slowness in getting things done in the absence of deadlines... (Invitations to special issues with hard deadlines seem to be the main thing that forces me to get journal submissions done.) Otherwise, I think of it as quite attractive to publish papers in TIT (particularly when they have appeared in a TCS conference but may be of interest to the IT community.)

C1. **Has this growth indeed hurt quality compared to an absolute standard or top journals in cognate fields (e.g., computer science, statistics, operations research, mathematics, and physics)?**
I don’t know, since I don’t browse the journal (only seek out particular papers).

C2. **How have leading journals in these cognate fields managed size and growth?**
In theoretical computer science, we don’t have a growth problem in journal submissions, but we are struggling with one in conference submissions. For conferences, my view is that the right solution is to spawn a number of specialized conferences, so that the broad flagship conference can continue to highlight a small number of papers of interest to the wider community. Perhaps this is also a good approach for journals.

C3. **Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?**
Not that I’m aware, but if I start browsing TIT (which I would like to do, if I could get a monthly email with titles & abstracts), then having reasonable-sized issues would be important for the browsing to be useful.

C4. **In general, how is the Transactions viewed by its readership broadly defined?**
I still view it as the main place to publish works of interest to the information theory community, perfect for the journal versions of theoretical CS conference papers that are relevant to information theory. For works in information-theoretic cryptography, I am less confident about the quality standard in IEEE TIT. But in both cases, my impressions are based on relatively little information (since I don’t browse the journal).

C5. **What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?**
Difficult for me to say, I didn’t know that there was a problem.

M1. **How often do you consult the IEEE transactions?**
Usually not much as my main field is not coding theory, but I do go there whenever I need to find a ref in coding theory.

M2. **How often have you considered publishing papers in the IEEE transactions on IT?**
Not much. Till now I published one paper and had one paper rejected. There is some probability that in the near future I will submit two more papers to TIT.

M3. **What factors encourage you to, or discourage you from, publishing in IEEE-IT?**
Pros: I want the relevant community to hear about results that although grew up in complexity theory may also be relevant to people in coding theory.
Cons: my experience with the rejected paper was very bad. I received a review that I thought was shameful in that it did not even consider the results of my paper but rather had issues with notations and such.
From the charge, I see that IEEE would like to get papers in complexity theory. I don’t see any chance in the world that
I will send a complexity paper there unless I’ll think that it is very relevant to the IT community and I want them to be exposed to the result (and even in this case I had a very disappointing experience that led me to develop a very negative opinion on the way the journal reacts to papers from outside its immediate community).

C1. Has this growth indeed hurt quality compared to an absolute standard or top journals in cognate fields (e.g., computer science, statistics, operations research, mathematics, and physics)?

I am not aware of a change in level of the journal as I don’t publish there that much and I cannot compare recent volumes to previous ones. Recently I needed some information and found the relevant papers in TIT. I was very surprised by the low levels of those papers (speaking with experts I learned that I did find the relevant papers). I thought that those papers (that were published in TIT) were simple observations on the verge of triviality and I couldn’t think of any scenario where such paper were to be accepted to a leading journal. (my impression was that the papers were accepted because of the “big” names on them)

I think that the level of the papers that I’ve seen is much much below the level of papers in leading journals in CS such as SICOMP, CC and ToC.

C2. How have leading journals in these cognate fields managed size and growth?

I don’t have a good account of the history in this case as well, but I think that the leading CS journals have done a pretty good job of keeping a high level (at least currently they have a high level). Perhaps the cost was more rejections.

C3. Has this growth compromised the value of the Transactions to its readership (e.g., in timeliness or browsability)?

I can’t really say. I don’t “browse” journals anymore but rather just search for relevant papers when I need to. As I wrote above, I don’t think much of the level of the journal. (It has very good papers of course, but, unfortunately, also too many weak papers)

C4. In general, how is the Transactions viewed by its readership broadly defined?

I *know* that this is the leading IT journal, but I don’t think that it is at the same high level as the leading CS journals. In particular, to know that a paper appeared in TIT gives almost no information on its quality. I mainly view it as the place where most results in IT are published.

C5. What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?

I think that it should start insisting on higher standards from accepted papers. If the journal wishes to attract papers from other communities then it should learn how to assess such papers.

Interviews by Alexander Vardy: (Interviewees mainly work in areas of coding theory)

1) Has the growth hurt quality compared to an absolute standard or top journals in cognate fields?

I think the growth is hurting quality, yes. Average quality at any rate, because the Transactions are still getting the best papers in the field. It’s not only that the community has grown, it seems to me that it used to not matter all that much where you publish your papers (to some reasonable extent) but these days, because of all the fuss about bibliometric data, people are deserting other journals and looking at impact factors rather than scope.

Within the microcosm of my experience as author, reviewer, and AE, I do have the subjective feeling that quantity has come at the expense of quality. My impression is that the pool of reviewers (and the even smaller pool of good reviewers) has not grown proportionally to the growth of the number of pages. You can grow the editorial board, but how many reviewers there are that will do a god job is harder to control. If my hunch is true, then the effect on quality is clear: more papers get lower quality reviews, and the overall quality suffers. I’m very curious to find out if there is objective data on this hunch.

Further clarification from the same person: Of course I didn’t mean statistics on quality, which I agree are impossible to obtain. What I meant is an estimate of the size of the pool of reviewers vs the number of pages printed, as a function of time over the last few years. Even that may be hard to obtain (and I’m not even asking for the size of the pool of “good” reviewers, which in my experience is significantly smaller). My gut feeling is that the size of the pool has not increased as steeply as the number of pages, which could explain a reduction in quality, an increase in publication delay time, or both.

2) How have leading journals in these cognate fields managed size and growth?

The Wireless Transactions also seemed to be a big operation - but I think they welcomed it. As EIC I think Vijay [Bhargava] had to monitor the AE’s quite a bit. He seemed a little concerned about goings on between them and the reviewers they chose. He had a remarkable knowledge about who was whose doctoral student and postdoc etc. He seemed to monitor them all very carefully and I think at one time took severe action.

I talked to Vijay and as I suspected, he had interesting comments. He was EIC of the Transactions on Wireless - with some 100 AE’s. They organized them into subareas - each with their own EIC - I guess and area EIC. He felt the only way to ensure quality was for the EIC to monitor the activities of the AE’s by reading the reviews they were getting and the decisions being made. In many cases he decided to “retire” some of them (about 25 I think) because of his concerns about the quality.

It’s perhaps a minor point, but some papers are terribly long, I think that should be reserved for exceptional results.
Some top journals in combinatorics (e.g., Combinatorica) impose a limit on the number of pages. I would envisage it: people that really want to tell the world everything they know on a subject can post the really long version of their paper on arxiv.

3) *Has this growth compromised the value of the Transactions to its readership?*

The one aspect that is easy to comment about, since I’m pretty sure I have enough data to form an opinion: the physics. The size and weight of the recent issues is quite ridiculous. They make the print edition very uncomfortable to use. I almost never read a full article from the full volume: I usually browse through the index and some abstracts, and then print out the articles I’m interested in reading. I haven’t stopped my subscription to the print edition just out of tradition. Maybe the solution is to just stop printing the hardcopy, and let the Transactions be 100% electronic, or, if we are going to continue with the print edition, split volumes in two parts when they exceed a certain page count threshold.

Is the value of Transactions likely to be compromised to its readership? Not all that much I guess, because the groundbreaking papers that everyone wants to read will still be there. The problem probably is the strain on the editorial board, that will find it harder and harder to make informed decisions on submissions, because the refereeing process can sometimes be pretty random.

4) *What actions, if any, need to be taken to ensure the future of the Transactions as a leading journal in the information sciences?*

Maybe something should be done to divide the Transactions’ impact factor by 4, or something, so that people can rush off to some other journals and we can go back to publishing in the Transactions just when we feel we have something to tell the community. (joke).

An option I’m pretty sure you have considered in the past is to permanently split every issue of the Transactions into two (part A and part B), along some subject-matter division line (very roughly source vs channel, although of course it’s much more complicated than that). In the past, I didn’t like this idea too much, but given the current situation, I’m less opposed to it, if only to solve the heft issue.

Also, he was in favor of splitting the Transactions by area. He noted there was no financial gain now since IEEE assigns income on a different model, My own thought is that if it were decided to go that way we have sufficient reputation to sustain two high quality Transactions although I am not sure I would advocate it.

I think one should try to manage the growth somehow. Diversity is valuable and one should not narrow the scope too much I guess, but maybe some topics could be recentered, e.g. only publish cryptography or complexity papers when they have a clear relation to information theory.

There are a couple of directions that have been proposed in the past - and rejected (and I am not in favor of either of them). These might include:

- IT separating from the IEEE - this would not directly impact the issues facing us on size of the Transactions etc but perhaps impact any motivation the IEEE might impart to us on size
- Have separate transactions on information theory/detection/systems and coding theory - many societies publish more than one journal

As I say, I am not in favor at this point for either of these actions although the last one might be more attractive now than in the past. While the breadth of our Transactions is a very attractive feature in some regards, it can be a bit of a curse in others.

Maybe consider encouraging some discussions between small groups (2,3,4) of AEs who are close topic-wise to decide whether a given subject is acceptable or not: the idea is to enable AEs to tell authors ‘sorry, the board thinks this subject is out-of-scope’ rather than to have an AE assume sole responsibility for pissing someone off by telling them ‘I think this is out of scope’. It sounds like more work than they already have, but it could actually save refereeing and reduce the overall work-load. To take an example, the Transactions have published a number of papers on identifying codes, and while I think they are not necessarily uninteresting, they are mostly combinatorics and very little information theory – too little to have their place in the Transactions. But since the Transactions have already published papers on the subject, it’s difficult for an AE to singlehandedly tell an author ‘I think this is off-topic’.

I assume we would like to have a somewhat smaller Transactions (if we would like to remain at the same or larger level we could likely proceed as we have been with some appropriate adjustments). There seem to be a few possibilities to achieve a smaller Transactions.

- Have higher standards—ask AEs to make sure only the best papers are published—to decrease acceptance ratio
- Prune the areas in which we accept papers
- Put a page limit on papers.

I assume the third is off the table - it’s been discussed before. I believe we view ourselves as having a more scientific bent than some of the IEEE societies that do this.

As for having higher standards, at the current levels of paper volume it seems a difficult task to manage such a large number of AE’s and their standards. Ultimately the standards are set by the choice of referees for a paper. For the EIC to monitor the choice of referees (assuming he could even tell who are the good ones) is a tall order. It’s also quite area
dependent. For example, in cryptography it is very difficult to find reviewers - often requiring 10 or 12 approaches to
people. The problem seems to be the area is made of 5 or 6 quite separate almost disjoint communities and publishing
in journals is not their first priority - they have a large set of very good conferences they prefer. Also getting a good
reviewer depends a little on the reputation of the AE in that area - thus the other areas (not covered by an AE’s research)
tends to be difficult to find good reviewers. Coding theory is much easier I have found (I frequently get assigned papers
on coding as well). It seems to be a more coherent research area than crypto. Thus not all areas are the same in terms
of managing reviews etc. Ultimately we would like to develop a culture of excellence but this takes a lot of time and
management.

The option of pruning our areas of interest might be a possibility although it would not be easy or particularly palatable.
The set of areas in which we accept papers has developed over time, evolving to absorb new and appropriate areas and
I think there is probably a consensus that it is fairly stable and accepted. If we want to start to delete areas it might
create problems. Crypto is an interesting example. IT has published several seminal works in crypto yet it is probably not
widely recognized in crypto as being the first journal most cryptographers think of - for those that bother to publish in
journals. Some areas in crypto are quite relevant to our “core” interests and some are not. I recently handled a paper on
Boolean functions - with no detectable application to crypto. I didn’t proceed to reviewing for that paper but many other
papers on Boolean functions might be quite appropriate. Another example: the first paper on pairings in crypto appeared
in IT - the MOV attack on elliptic curve systems. It looked like a very mathematical paper but was very relevant - out
of that paper has grown a whole area of crypto - with its separate conferences etc. Thus pruning requires care.
**Appendix B**

**Journal Policies**

*Annals of Applied Probability* (EiC Barbour via Hajek)
- Goal: top applied probability journal
- No page limits, but longer papers discouraged
- Discourage expanded conference papers
- Open access: free to all IMS members; arXiv is free
- AE’s identity is blind to authors. AE not expected to spend time and effort helping authors; they can always write a report themselves. AEs not expected to be brave.

*Annals of Statistics* (via Candès)
- Goal: top journal in mathematical statistics in the broad sense
- Page limit of 30-34 pages; overage to a supplementary on-line archive
- Discourage expanded conference papers
- Co-editors make final decisions
- Discussion papers welcomed
- Reducing page budget to improve average quality
- No plans for open access

- PRL goal: rapid publication of short reports of important fundamental research
- PR A-E goal: dependable resource
- PRL page limit: 4 pages
- Open access: APS has just started a new free “author-pays” ($1500) journal PR X, like PLoS ONE
- On-line (free) journal, Physics, contains original comments, brief reviews, digests of highlighted papers
- Offers per-article “author-pays” ($1700-2700) open access
- PRL and PR B include Editors’ Suggestions, marked with a special icon
- Free email alerting service
- Outstanding Referee award program

*Journal of the ACM* (EiC Vianu via Sudan)
- Goal: publish best research in all areas of computer science (really, theoretical CS)
- Task force has been set up by ACM to look into policy changes
- Fast-reject: by EiC, by AE, or AE can ask external referee for “quick review,” assuming results correct
- No page limits (average paper 30 pages)
- Encourages “full” versions (25% new material must be added) of conference papers; invites papers from top conferences
- Open access: to be studied by task force

*Journal of the AMS* (Sr. Production Editor Letourneau, via Candès)
- Regrets cannot give a helpful response
- AMS publishes current backlogs of math journals
- Open access: all articles more than five years old are freely available

*Journal of Machine Learning Research* (EiC Saul via Forney)
- Free on-line journal. “It is completely open access and always will be.”
- Fast-reject by either EiC or AE, but not many are.
- Encourages expanded versions of conference papers; expected to be more thorough and complete.

*Mathematics of Operations Research* (Editor Rothblum via Hajek)
- Fast-reject: either Area Editor or AE; close to 50%
- Open access: being studied by INFORMS
- Blind AEs; authors correspond with one of four Area Editors

*SIAM Journal on Computing* (EiC Sudan)
- Goal: top journal in theoretical computer science
- Page limits: none
- Conference paper policies differ in SIAM and TCS communities
- SIAM: publish after revision with a footnote.
- TCS: no revision necessary.
- In practice revision is not enforced, but in most cases there is substantial revision anyway
- Special issues devoted to conferences (FOCS and STOC)
Open access: no plans

_SIAM Journal on Discrete Math_ (EiC Tetali via Vardy)

- Goal: tops in discrete math
- Page limits: none, but higher bar if more than 25 pages
- Welcome journal version of conference papers
- Changes in past 5-10 years:
  - Increased acceptance threshold by rejecting narrow, insignificant papers
  - Diversified AEs
  - Cut acceptance-to-print delays (electronic publication)

_IEEE Transactions on Automatic Control_ (EiC Antsaklis via Hajek)

- Senior Editors (area editors) introduced in 2010, and “it really works well for us”
- Instead of two EiCs (for papers and notes) and AEs-at-large
- 83% of the AEs are non-US
- Fast-reject: AE, SE, EiC all involved
- Page limits: 32 pages. Also page charges for long but not overlong papers.
- Open access: not crazy about IEEE’s direction, haven’t implemented
- Special issues: encourage, but selectively
- AEs communicate directly with authors; “has worked out really well for us”
- I didn’t read the 20-page IEEE review document completely, but it seems very well done.

_IEEE Transactions on Networking_ (EiC Guerin via Hajek)

- Page limits: page charges for more than 10 pages (average 13.5)
- Refer to wiki for more info on policies (I didn’t)
- Fast-track agreements with conferences (SIGCOMM, CoNEXT, IMC, INFOCOM), 1-3 papers each
- Open access: IEEE $3000 policy useless. Trying to work with ACM.
- Performance feedback to AEs
- AEs not blind; only way to scale the system

_IEEE Transactions on Wireless Systems_ (EiC Xiao via Kschischang)

- Co-owned by ComSoc (75%) and SPS
- Recent spinoff of IEEE Wireless Communication Letters, with 23 AEs
- Eight Area Editors
- Fast sub-to-pub due to 23% fast-rejects, close oversight of AEs, quick removal of underperforming AEs
- Editorial Advisory Board handles problem papers, appeals
- EiC Xiao has received more than 25 invitations to co-author already-written papers
### APPENDIX C

#### JOURNAL STATISTICS

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Comments:

† only Associate Editors are counted, not i.e. Assistant Editors or members from the Editorial Board; please note that the various journals are organized differently (see also comment ‡)

‡ for this journal Associate Editors are listed as well as the 'Editorial Board (Divisional Associate Editors)' - what should be counted here? (in addition there are Senior Assistant Editors, Assistant Editors, a Consulting Editor, and Adjunct Associate Editors - refer to comment †)

The acceptance ratio, fast rejection ratio, paper length and the 1st Review are up-to-date and are computed as average over the past 18 month. The first review is obtained after 136 days on average, and after 156 days when excluding fast rejections.
APPENDIX D
A NEW JOURNAL FOR THE INFORMATION SCIENCES?

Current working group: Emmanuel Candés, G. David Forney, Jr., Madhu Sudan, Martin Vetterli

We propose to explore the feasibility of founding a new broad-scope, highly selective, interdisciplinary journal in the information sciences. Our primary motivations are:

- Other fields have journals like Science, Nature or Physical Review Letters (PRL) where the very best work can be highlighted, but we do not.
- Within the information sciences, there is much interest in understanding the principal developments in related fields, but we lack a good means of doing so.

Subject to these objectives, practically everything about this new journal remains to be determined. Some preliminary suggestions:

1) The core scope of the journal would consist of such areas as theoretical computer science, information theory, statistics, signal processing, and other such mathematically-grounded information sciences, broadly interpreted.
2) The title of the journal would probably include the word “information.”
3) The sponsor would preferably be a new nonprofit organization set up for the purpose. Funding requirements would hopefully be modest (see next item), and could come from a variety of sources, including government, industry and universities. We would hope for the endorsement (probably without financial involvement) of societies such as ACM (SIGACT), ITS (IEEE), SPS (IEEE), SIAM, IMS, AMS, INFORMS, .... No one community or supporter should dominate.
4) In this era, an on-line, open-access model along the lines of the Journal of Machine Learning Research (JMLR) is attractive. However, we note that Nature and Science are glossy advertiser- and subscriber-supported magazines. But if an on-line journal were successful, then it should not be hard to find a publisher for a subscriber-supported print version.
5) The journal would include both original research and survey articles. A key decision will be how broad an audience to aim for. As a minimum, articles would be expected to be understandable by readers in related fields.
6) We note that Science, Nature and PRL all require articles to be short (perhaps with supplementary on-line material)—is this the right policy for this journal? Do we expect authors of original research papers to publish the “full” versions of their papers elsewhere?
7) The Board of Reviewing Editors could consist of eminent people across the relevant information sciences, with no fixed term. Review times should be weeks, not months. The number of papers handled by any one editor should be strictly limited.

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1There exists a field called “information science,” which is related to library science; see Wikipedia. Elsevier has recently created a journal called “Information Sciences,” q.v. Also, there exist a “Journal of Information Science” and an “International Journal of Information Sciences and Techniques.” And there is a Japan-based journal whose English-language title is simply “Information.”
2See the JMLR website. Also, for an excellent overview of the (negligible) economics of JMLR, which relies primarily on authors for editing, see http://blogs.law.harvard.edu/pamphlet/2012/03/06/an-efficient-journal.