

Thoughts on academic publishing

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May 5, 2019
(Minor edits: May 19, 2019)

This is an informal essay on academic publishing, which has recently become important in Indian academia at large. I will first describe some reasons why the problem has become so difficult, and then suggest some positive strategies that may ease things a little. Only a little, though: much easing may not be possible.

Why publish research papers?

In a more innocent time (say, several decades ago), typical professors from typical universities published when they had something new and interesting to share with others. The main job was teaching, and publishing was an extra. It was an answer to an inner search for something more.

Publishing eventually became linked to PhD theses. You sent your PhD work to the editor of a journal, and the editor asked a couple of knowledgeable colleagues to review it, and the reviewers said the paper seemed good, and then your work got published. It was a quality check, and also a record of work done so that dishonest candidates in other universities would hesitate to plagiarize your thesis and submit your work as their own. It was a simple and practical system, as long as volumes were low.

Today things are different. Today almost every faculty member in almost every university is under pressure to publish research papers. People who know the system may agree that the main question today is not “What have you written in your papers?” but rather “How *many* papers have you written?” Publication is not an incidental consequence of research. Publication is the goal itself.

The wave has come to India a bit late, but it definitely has arrived. In universities where professors were earlier not under pressure to publish, assistant professors are now required to do so. If they do not publish, they may get fired; or, if not fired, then denied promotions and made to feel low in many small ways.

Why?

Today every university wants to be in the top 20 or 200 (or whatever) in rankings, and so *everybody* is required to be *excellent*, and so what if such a thing is obviously impossible? Work harder, and smile as you do it so that everyone can see how excited you are about your research.

Of course, there is no point in complaining. Foot soldiers cannot advise generals. The question before us is this: *What should faculty members do, if they do want to publish?*

I do not have guaranteed answers. But I have a reasonable publishing record, and I have thought about this issue a bit. Based on that, here is what I understand about the game.

It really is difficult to publish good papers in good journals

Well, obviously. Otherwise you would not be reading this.

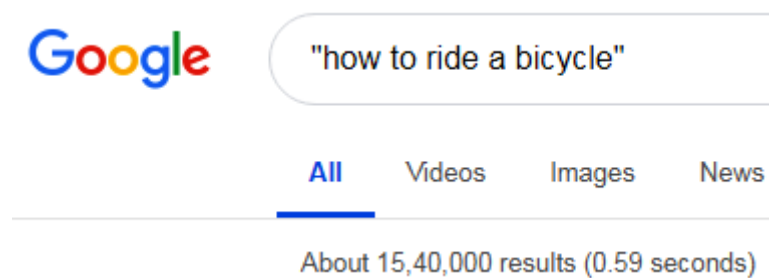
To begin with, it is difficult to just *write* good papers. Not impossible, of course. Many people can learn it, if they are willing to work at it. After writing, publishing has further challenges.

To write a good paper, you must understand and solve a problem; you must understand the context of the problem and know who cares about it; you must know who has done which related work; and you must be able to show that what you have done is new, interesting, nontrivial, and ideally useful to somebody. Once you have these pieces, you can begin writing. Your understanding of the work may be multidimensional (parallel), but your presentation must be one-dimensional (sequential). You cannot bore your readers with too much detail, nor mystify or annoy them with too little. You cannot jump back and forth in your narrative. You must start with a broad view, indicate the general scope, and then narrow things down to your specific work, present the specific background, outline your contribution, give enough details that someone can in principle reproduce the work, state your conclusions or findings, relate to other things as appropriate, and widen your view as the reader emerges from the tunnel of your narrative into the open world once more.

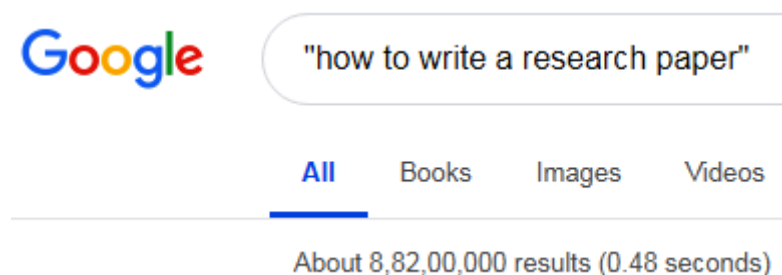
Many people who have written flowery essays in school, and got good grades for them, tend to underestimate the difficulty of academic writing. Academic writing requires patience, focus, and many rounds of exhausting editing. People whose language skills (English, say) are poor have an even harder time.

Typical readers may, at this point, think I am humblebragging. I think I am not.

Consider riding a bicycle, for contrast. It is slightly hard, but most young people who try do succeed. That suggests to me that it is not too hard. With that as context, consider the results of two google searches, as given below. One was for “how to ride a bicycle” (note the quotes), and one was for “how to write a research paper”.



Apparently 15.4 lakh people have something to say about this. Compare with writing a research paper:



8.8 crores! I believe that there are so many pages about writing research papers because there are many people who need to learn, who wish to learn, or who are tired of trying to teach others *how to write a research paper*. If you have not published a few academic research papers in good journals, then I humbly suggest that you do not know how hard it is.

Okay, then. Let us take as given that it is hard to write and publish a good paper. The bad news is, things have been *getting more difficult* recently. There are many journals of poor quality, and publishing there will do us

more harm than good. There are relatively too few journals of good quality. Those good journals attract too many would-be authors. Demand for respectable journal space vastly exceeds supply.

I believe more good journals are coming, but the overall volume now is perhaps too large to keep track of. There is a cacophony in academia, as tens of thousands of authors worldwide compete to announce their “research results” which, truth be told, few may be interested in. Journal editors, flooded with submissions, are forced to reject most of them after a cursory examination, saving careful review for only a small proportion of articles received. A fellow academic, the editor of a good journal in mechanical engineering, told me that 80 percent of the submissions to his journal are rejected at the editor’s desk. I think that in management subjects, for good journals, the competition for space is harsher.

Some glimpses from Scopus

Scopus is a scientific research database. I will provide some glimpses of data from there. Numbers provide context that words cannot.

I choose a random topic: “engine vibration”. Here is a snip from the Scopus search result. The database has 1157 papers which contain “engine vibration” in the title, abstract, or keywords.

Scopus

1,157 document results

TITLE-ABS-KEY ("engine vibration")

Edit Save Set alert Set feed

Scopus readily gives us the year-wise breakup as well, for “engine vibration”.

Filter by year				
<input type="checkbox"/> 2019	(17) >	<input type="checkbox"/> 2002	(12) >	<input type="checkbox"/> 1986
<input type="checkbox"/> 2018	(68) >	<input type="checkbox"/> 2001	(17) >	<input type="checkbox"/> 1985
<input type="checkbox"/> 2017	(77) >	<input type="checkbox"/> 2000	(10) >	<input type="checkbox"/> 1984
<input type="checkbox"/> 2016	(44) >	<input type="checkbox"/> 1999	(16) >	<input type="checkbox"/> 1983
<input type="checkbox"/> 2015	(42) >	<input type="checkbox"/> 1998	(2) >	<input type="checkbox"/> 1982
<input type="checkbox"/> 2014	(52) >	<input type="checkbox"/> 1997	(13) >	<input type="checkbox"/> 1981
<input type="checkbox"/> 2013	(82) >	<input type="checkbox"/> 1996	(6) >	<input type="checkbox"/> 1980
<input type="checkbox"/> 2012	(58) >	<input type="checkbox"/> 1995	(14) >	<input type="checkbox"/> 1979
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<input type="checkbox"/> 2006	(44) >	<input type="checkbox"/> 1989	(15) >	<input type="checkbox"/> 1973
<input type="checkbox"/> 2005	(33) >	<input type="checkbox"/> 1988	(13) >	<input type="checkbox"/> 1972
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			(19) >	<input type="checkbox"/> 1969
			(11) >	<input type="checkbox"/> 1967
			(13) >	<input type="checkbox"/> 1965
			(17) >	<input type="checkbox"/> 1964
			(13) >	<input type="checkbox"/> 1963
			(6) >	<input type="checkbox"/> 1962
			(8) >	<input type="checkbox"/> 1956
			(3) >	<input type="checkbox"/> 1954
			(2) >	<input type="checkbox"/> 1950
			(5) >	<input type="checkbox"/> 1943
			(7) >	<input type="checkbox"/> 1932
			(4) >	<input type="checkbox"/> 1930
			(8) >	<input type="checkbox"/> 1925
			(4) >	<input type="checkbox"/> 1917
			(7) >	<input type="checkbox"/> 1917

It is interesting to note that a total of 31 papers are available from the years 1917 through 1970, while the year 2005 alone had 33 papers; and the last two years (2017 and 2018) offer 145 papers. That’s one paper every five days. As a mechanical engineering professor with a reasonable background and a notionally relaxed job, I have to admit that papers on engine vibration are being published faster than I can meaningfully read them. And if I read only those, which would take all my disposable time, then someone interested in ball bearings or

metal forming or milling operations or fatigue design or tire slip or shock absorbers or artillery dynamics or robotic manipulators or haptics would find me poorly informed about current trends.

Luckily, I do not need to read all those papers on engine vibration to know something useful about the topic. Most of those papers are not worth reading: they merely constitute a rankings-induced torrent of forgettable mediocrity.

Many papers today serve only two goals:

1. To be published.
2. To lead the way to more papers with the same two goals.

The reader may wonder if “engine vibration” is a newly emerging hot area. Of course not. Given directly below are results for “hotel management”. And below that are results for “leather processing”.

Filter by year ✕

<input type="checkbox"/> 2019	(24) >	<input type="checkbox"/> 2007	(16) >	<input type="checkbox"/> 1995	(5) >	<input type="checkbox"/> 1983	(1) >
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Filter by year ✕

<input type="checkbox"/> 2019	(15) >	<input type="checkbox"/> 2008	(25) >	<input type="checkbox"/> 1998	(4) >	<input type="checkbox"/> 1986	(2) >
<input type="checkbox"/> 2018	(33) >	<input type="checkbox"/> 2007	(17) >	<input type="checkbox"/> 1997	(2) >	<input type="checkbox"/> 1984	(4) >
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In somewhat stark contrast, depicted below is a genuinely hot area: “deep learning”.

Filter by year ✕

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<input type="checkbox"/> 2019	(6,256) >	<input type="checkbox"/> 2009	(102) >	<input type="checkbox"/> 1999	(13) >		
<input type="checkbox"/> 2018	(16,112) >	<input type="checkbox"/> 2008	(91) >	<input type="checkbox"/> 1998	(10) >		
<input type="checkbox"/> 2017	(7,521) >	<input type="checkbox"/> 2007	(69) >	<input type="checkbox"/> 1997	(7) >		
<input type="checkbox"/> 2016	(2,963) >	<input type="checkbox"/> 2006	(60) >	<input type="checkbox"/> 1996	(11) >		
<input type="checkbox"/> 2015	(1,321) >	<input type="checkbox"/> 2005	(51) >	<input type="checkbox"/> 1995	(5) >		
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<input type="checkbox"/> 2013	(330) >	<input type="checkbox"/> 2003	(21) >	<input type="checkbox"/> 1992	(1) >		
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<input type="checkbox"/> 2011	(156) >	<input type="checkbox"/> 2001	(15) >	<input type="checkbox"/> 1989	(2) >		

I can only shake my head in wonder. I cannot believe there are so many people who have meaningful research to report on *any* topic, far less one where *human* learning is deemphasized. Note how the numbers are roughly doubling since 2013, with 35 super-prescient papers of 2020 already published in May, 2019.

I personally think this is the sort of joke where nobody is laughing. Most people in this area are dead serious. I have met some of them, looked into their eyes, and seen a certainty that I was never able to find in myself. Enough data. It is clear, I hope, that all topics are crowded, and almost all journals are inundated. And some topics are much hotter than others.

Things that may help you publish

One cannot just do some work on some arbitrary topic, write a paper, send it to a journal and have it rejected, and then send it to another and not hear back for months and *then* have it rejected, and then start on other work and other papers while still sending the first paper to yet other journals, and then send the new paper to some other journals ... That sort of extended negative experience, where all the power lies behind a screen of anonymity that you cannot cross, can crush your soul.

Here are some suggestions. Some are idealistic, some are practical, and hopefully all are constructive.

1. Be prepared for a long struggle.

If you know it will be a long road, then you can conserve your energy. Don't put too much of your life force into any one paper. Expect initial disappointments as you learn the game. Have faith.

Work hard, but do not expect quick fruit. If you think this is depressing, recall the *Bhagavad Gita*, which calmly tells you not to expect any fruit at all!

Psychological preparedness will serve you well.

2. Improve your writing.

This is a good thing, regardless of how the rest of your publishing effort goes.

Write, and edit, and revise. Think carefully about what you really want to say. Examine your structure, and sequence, and flow. Read articles on writing. Read good research papers in your field. Take a random sample of several published papers, and assess *their* writing. Which ones are easy to follow, have a clear message, and inspire trust? How does that correlate with how popular the papers are (how much they are cited, for example)? Is there something in the *writing style* that you could learn?

Get help. Request some friends to skim your paper and see if they got your main message: can they tell you what the paper's primary contribution is? Request others to read more slowly and see if the flow is good, if the line of argument *sounds* convincing, etc., etc.

It is hard going, but after some time you will sense your own improvement. Your thinking, which drives your writing, will become clearer and better.

3. Watch and learn.

Whenever you get a chance, watch talks given by good people who regularly publish good work. The topics they emphasize; the phrases they use; the sequence they present their ideas in; the way they handle questions; the discussion they offer at the end of their talk.

Watching them talk will add to your understanding of the person and the process when you read their papers later.

It is a matter of culture. There is more to writing than facts and grammar.

4. Identify a market.

By this I mean: identify a group that you want to associate with, and which is likely to let you do so.

The large world of academic research is not one amorphous mass. Groups that work on one area may know little about the work done in other areas. Like the six blind men and the elephant, even one application area may have different groups with different approaches and philosophies.

Groups may form around topics of research, or around people that go to certain conferences each year, or around people from a certain part of the world.

You have a marketing challenge on your hands. You need to find a group that will accept your work. If they publish your work in their journal, it means (though it sounds bad when I say it plainly) that some space will be taken by *you* in their journals: space that they may want, because they need to publish too.

If you sound like an outsider, then you may not be allowed in unless you are clearly superior to them, in *their opinion*. If you know academics, you know that this is nearly impossible.

5. Start humbly.

If you are a newcomer, then do not try to be different or original or impressive right in the beginning.

Let not your first paper dismissively claim that you have a new and better way to do what they have been doing for years!

First demonstrate that you have acquired the technical skills that they use; show that you know their work; find a logical and meaningful extension of the work being done by that group in general; do that work competently; acknowledge the context provided by them; submit for publication; and if rejected, study the reviews and see if there is something you can improve.

Sometimes a reviewer complains about one thing when the real reason is lack of clarity in another part of the paper. Think hard about what you can do to help the next reviewer see your point of view more easily and in a more positive light.

The first few papers are the hardest to publish.

6. Choose an acceptable journal.

Be realistic in your assessment of your chances. In the beginning, avoid highly selective or prestigious journals. If you have no publications or very few of them, do not worry about journal impact factors.

There are very many capable people trying to publish. Some of them are connected to, or mentored by, well known or influential people; some have access to special equipment or data; some are probably smarter and harder working than you are. Such people will preferentially fill a significant portion of the desirable space. You are competing for a spot in the remaining space, which has shrunk lately. That's life.

The key question is this. What is the criterion used by your institution to decide whether a journal is acceptable or not? Some institutions want you to publish in journals that appear on a list called the Science Citation Index ("SCI Journals"):

<http://mjl.clarivate.com/cgi-bin/jrnlst/jlresults.cgi?PC=K>

There are 3736 journals on that list. There are other lists for the management area, or the social sciences.

Do some homework. Look at journals, use databases, find a semi-coherent group of people that publish in some set of journals, on a topic that you like and understand, and on which you are prepared to work for a while.

7. Consider joining a bandwagon.

When I joined academia, things were easier. I worked on reasonably popular topics based on my whims, and did not need to join a bandwagon.

But perhaps you are young, and your job is on the line. If so, consider this: A subject where *thousands* of papers are being written every year might have *hundreds* of journals publishing them, *hundreds* of groups along with *thousands* of individuals working on them, and you could probably join that torrent for a while and perhaps get a few papers of your own published while you wait to discover your inner soul's true academic calling.

I admit I am not good at this. I started when things were easier, and today I have the luxury of not having my job on the line. I also have the *great privilege* of being able to choose what I will work on¹. Maybe my experience and accumulated skill help a little too. And so I am getting by, although things have tightened.

But we cannot be players and referees in the same match. Our employers insist that we must all be excellent; that excellence can be measured; and that the most appropriate measurement is the number of publications in journals from a certain list.

If you are young, with your job on the line, then you are a player and not a referee.

Let me wring my hands on the sidelines. My advice to you is to join a bandwagon and save your job.

8. Network.

Travel to conferences, meet people, discuss their work with them, tell them what you are doing, take their advice, write to them later.

Develop contacts, nurture friendships.

Direct or indirect benefits will probably result. If they remember you, and an editor asks them to review your paper, they may agree. If something confuses them, they may give you the benefit of doubt rather than rejecting your paper outright.

9. Collaborate if possible.

If you can do some collaborative work with somebody who is experienced and has published a fair amount, then your initial entry into a field may be easier. Of course this may be hard to do.

The problem is that you need to be able to offer something to the collaborator. Your labor, skill, and persistence; or access to special data that the collaborator may like to use; or domain knowledge you have which requires the collaborator's skill to round off and complete the work.

For the first possibility, you are basically offering your services as a postdoctoral scholar or something similar. There is a hierarchy, and you are lower in it.

For the second possibility, imagine that you work in a hospital and have patient data; or work in a mining department with a special project and have data from mines where the public does not have access; or

¹ I am truly grateful for this.

have contacts in a government department from where you have detailed development or education or health data that has policy implications, etc. That makes you an attractive collaborator for some people.

For the third possibility, imagine that you are an expert on manufacturing special ceramics and have access to a special lab, but you need someone who uses such ceramics in some kind of unconventional biological implants; or you have a history of working with a state transport corporation and have a specific optimization problem that requires solution.

If you cannot think of something to offer, do not lose heart. Look around you locally, at how people live, build homes, catch fish, farm, take loans, educate children, ventilate kitchens, paint rooftops, cook food, etc. The possibilities are sometimes limited only by your imagination.

Final comments

I have written this article assuming that the reader is a young academic, in a teaching job which requires publications, and finding it difficult to publish.

To such an academic, I would offer a few final suggestions.

If you like your typical workday, contribute unselfishly to your department, have cordial relations with your colleagues, treat your students well, and teach competently, then you are already better off than many people, because life is hard. There is already a place for you in your institution. Perhaps they may not promote you on a fast cycle, like some others who may be publishing more successfully. But perhaps they will give you an extra year or two to put some publications on the table, so that they can then promote you.

If that happens, try to remember that academics are individual people. You and your colleagues are not in the same race. Or perhaps you are in the same race, but only if *you* think so. Otherwise, your stories are different although you work in the same place.

There are reasons why teaching is sometimes called a “noble” profession. It is not because the act of teaching makes you noble. It is not because your research makes you a better person. It is, I think, because you can try to have a positive influence on a generation of young people, who go out and do good things, and affect others in a positive way, who then affect others in a positive way ... *That goal* of an outward positive ripple of gentle influence is surely noble.

And so, even as you bow to the realities of a practical world and try to publish some research, try not to lose sight of the satisfaction of a teaching job well done; of an idea properly understood; of a classroom question clearly answered.

Things are harder than they used to be, but it is still a good job. I personally don't know what I would do without it.