

SHORT COMMUNICATION

On Scientific Publications

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I collect cartoons. There is one by Nick Downes that I clipped a few years ago that shows a professor being told (as a thug is getting ready to shoot him): "Surely you were aware when you accepted the position, Professor, that it was "publish or perish". You see, "publish or perish" is used in academic circles to mean that if you do not publish (papers) you do not get tenure or you do not get promoted; in other words, you do not get recognition. These days, the number and quality of one's publications is taken as a measure of one's productivity, of one's worth. It even matters in which journals one publishes. There is an insistence, for example, that publications be "peer-reviewed", i.e., judged worthy of publication by others in the field: non-"peer-reviewed" publications do not count as much. In the Philippines, it is a big plus to publish in international journals. In fact, some institutions even give monetary rewards for publishing in international journals. (In marked contrast, the National Academy of Science and Technology (NAST) Philippines, bless its collective soul, yearly gives awards to outstanding scientific papers published in local journals).

Not all scientific results are of international interest. For example, the association of gastrointestinal disorders with the amount of rainfall (probably a fictitious association) in the town of Puling (a fictitious town) in the province of Bugat (a fictitious province) in the Philippines, would be of little interest to the rest of the world and will most probably not be accepted for publication in an international journal. However, that finding would be of great interest to the inhabitants of Puling and other towns in the Philippines and will almost surely be a feature article in the Puling Bugat Journal of Science (a fictitious journal). How do we decide what is a worthy publication and what is not?

One publication is often cited as one that has made a tremendous impact on the lives of billions and that has been reprinted and quoted innumerable times, but which was never "peer-reviewed" nor published in an international journal - the Bible.

Scientists publish their experiments and experiences for a purpose, although that purpose has changed over the years. Originally, scientists published their data, the analysis of those data, and their theories based on their results, so as to share with their colleagues (the other scientists in the world) the knowledge that they had gained from their experiments. Like other endeavors, science builds on previous work - the more work had been done and the more findings are made available to the public, the easier it would be for others in the field to know which new path to take, what else needs to be done, what mistakes to avoid, etc. Further, if we knew what

others are doing, we would not waste our time and resources by duplicating their work. Collaborations may even get started by the sharing of ideas and experiences. The sharing of knowledge is not only through publications. Results and hypotheses are often shared during personal visits to other labs, at meetings, through letters, even in phone conversations. It is all in the spirit of sharing - of cooperation.

That was the norm when I started doing science in the mid-1960s, although I soon learned that not everyone played fair - there was some competition and results were kept secret. But by and large, sharing was the prevailing attitude.

It is very different now. With the start of biotech companies in the mid-1980s, secrecy became more and more prevalent. You cannot blame the companies. They exist for corporate profits. How could they possibly compete if they disclose their trade secrets?

There was a meeting held in the late 1980s in which a representative from a biotech company discussed at length their results on a molecule they were working on, but would not name the molecule! The moderator, a scientist of the old school, led the audience in a round of hissing. That was how the science community felt about secrecy at the time. That has changed. Nowadays, many (most?) scientists keep their findings secret until their commercial value has been assessed and secured (through patents). Scientists have gone corporate! As Howard Schachman wrote in a recent article, scientists nowadays have a new creed: "patent and prosper".

More and more, the spirit of sharing, of cooperation, is being replaced by competition. Even "peer review" of publications sometimes suffers. Remember that your "peers", those who would be passing judgment on your papers, are the other scientists in your field, i.e., your competitors! So, one hears stories of papers whose publication had been "hindered". And, of course, your competitors get to find out from your manuscripts what you are up to and what your latest findings are. One can only hope that those instances are rare.

Personally, I prefer a system in which all papers are published. Science is self-correcting. If you keep publishing results that are wrong or experiments that were sloppily done, people will stop paying attention to your work. And there are few things worse that could happen to a scientist, or to anyone for that matter, than to be ignored by one's peers. All self-respecting scientists will publish only "good" papers.

In my opinion, every scientific experience should be made known to everyone, including - and especially - experiments that went wrong or that were extremely difficult to perform

(but not sloppy work). We learn from our mistakes; we can learn from the mistakes of others, too.

In a dissenting opinion, Dr. Giselle Concepcion, who read an early version of this article, points out that there still has to be some form of review. "While expert scientists can discern what is good or bad science, that may not be true of students. Bad science could be damaging to our youth", she correctly states. "Self-correcting science, learning from one's or others' mistakes, like natural selection and evolution, will be wasteful and will take too much time," she adds. I guess I have to agree. But I still think that every scientific experiment, data, interpretation, theory, hypothesis, etc., provided it is not fraudulent or incompetently done, should be made available to others.

Every piece of knowledge is important. There is a university in the US whose library plans to get a copy of every written piece of work in history. There is a church denomination that is currently compiling the genealogy of every man and woman on Earth. There is a continuing effort to catalog every plant and animal species in the world. On the occasion of his 250th birthday, musicians in his native Austria played every note that Mozart had ever written. The key word in all of these efforts is "every". And these are almost surely not the only endeavors in which every bit of data on a given subject is being collected. I am certain that soon every scientific paper, even the ones published in the Puling Bugat Journal of Science, will be accessible through the Internet.

When that happens, the original purpose of publishing scientific findings will be achieved. When that happens, there will be no distinction between an international publication and a local one. But until then, here in our country, a measure of a scientist's worth, his productivity, is the number of his (or her) international publications.

To be productive in science, one has to be creative. But being creative is often not enough. One may be very creative, but he (or she) would have a hard time producing publishable results if he (or she) is saddled with loads of teaching and administrative responsibilities - a situation in which most scientists in the Philippines find themselves. Further, it would be difficult to produce if one does not have the funds, the equipment and other necessities to do the work.

Clearly, most scientists in the Philippines are at a great disadvantage. We are not lacking in creativity, but we usually do not have the resources to accomplish what we are capable of doing. We may have ideas that are of international importance and which can compare with those of the best scientists in the world (just look at how well many Filipinos abroad are faring), but we here (with some notable exceptions) simply cannot work on those ideas and compete with the rest of the world because of lack of resources. But there are lots of important problems - local problems - for which we do not have to compete with the rest of the world. And we can publish our results in local journals. Those of us who work on local problems are doing the country a lot of good. Of course, we do not get much recognition from those who insist that we publish in international journals.

Maybe we can make our local journals internationally "visible" and thus be included in international indices (the sign of international recognition). That may not be too difficult to achieve. If we could convince our more productive local scientists and our compatriots abroad, who are able to produce internationally competitive results, to publish seminal papers or review papers in local journals and afterwards cite those (local) papers in their other (international) publications, then the international community will become aware of our local science and our local journals.