

The scientific method of cutting down fruit trees

We are living in a financial crisis and there is less money for research and at the same time structural money for research has been converted into soft money. Often a prerequisite for getting grant money is 'valorisation'. A commercial partner has to be involved and also invests some money. One of the unintended side effects of that is that you can not do research that might result in real budget cuts, because no company is going to invest in that. But that is not the point here.

What also happened as a by-effect is that the research horizon has been shrinking to American proportions of 4 years or less. Money is applied for for a PhD student or a post-doc. Every project has to be completed in at most 4 years and a PhD student has to finish a thesis in that period. Universities often demand that a thesis has 2 or more chapters that were published in peer reviewed journals (preferable high impact journals). So your results better be positive, or publishing becomes much more difficult. Apart from this being totally contrary to the whole concept of research, it results in doubtful tactics to achieve those goals (see 'salami publishing' and [*Harvest Time by Gilles Tran*](#)



and it also increases the burden for reviewers. Who don't have the time to do a decent job and thus a lot of papers of doubtful quality are produced. Aside, someone estimated that in Medicine, given the number of journals, in the order of a million papers need to be written and reviewed each year to fill them all. But that is not the point here.

What I do want to discuss here are the more devastating consequences. One consequence is what I call 'fast science'. Simple template research that you know will produce at least two publons. 'Me too' research and minor variations on a theme. With the added benefit that because many others are doing almost the same, it is relevant for them as well. A paper will almost guaranteed be cited and it is thus suitable for a high impact journal. The problem with fast science is that it does not produce anything unexpected. You get facts, and that is what you pay for, but you don't get any insight. That is one of the reasons why I call it fast science. Just as with fast food, it is nutritional deficient, we know it is bad for us, but we still buy it, because we don't have the money to buy something good.

The standard nutritional metaphor to sell such research projects to the industry is that we see low hanging fruit. Only, because everybody is doing that, most of that low hanging fruit is actually gone now. The trees can be bend a little so more fruit comes within reach, but in the end the fruit trees need to be cut to reach the remaining fruit, whether that fruit is ripe or not. This is exactly what we are doing nowadays, politicians and managers are forcing us to cannibalise whole research groups to be able to afford more PhD students. We used to have research groups where people with different skills worked together for many years, all with one common goal of understanding a complex phenomenon. This is incompatible with short term projects and whenever members from such a group leave they are not replaced. Or at best by a temporary person, preferably yet another

PhD student. This does not only affect the scientists, but also supporting staff. The implicit ideal is a university where we have only groups led by a professor with a huge publication list, consisting mainly of the collected publications of current and former PhD students. All other members of the group are PhD students and perhaps a post-doc. They have to do all the work, including things that would previously have been done by supporting staff members. So that is either done badly or projects are designed to not need them. Typical signs of projects to fit this sort of research are that they don't require any knowledge beyond MSc level and that it does not matter for the group that the gained experience is lost after completion of the project. It is also a system where the richer get richer and the poor will never advance. Money is granted to the professor based on the length of his publication list and how much money he has already received (perhaps I should write his/her and he/she, but this system itself is not totally gender insensitive anymore).

Many people understand that the system is broken, but several factors make it hard to change. One huge problem is that the 'top-scientists' benefit from this system. Which is why they are the 'top-scientists' in the first place. Politicians then ask advice from these top-scientists. That advice is unlikely to be to look further than the simple numerical 'measures of quality' that they happen to score high on. Another problem is that any university or country that starts replanting the fruit trees will suffer a big penalty. It takes years before a tree gets the first good fruit, all that time you still have to spend money looking after them. And because research is international, you are not even sure you will be the one that harvests the results.