

Scientific fraud as an industry

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Until recently, the existence of scientific fraud has been related to the misbehaviour of single researchers or research groups, cutting the corners to achieve recognition, grants and academic power. *Circa* 2014, however, the scientific community became aware of a florid Chinese market connected to the sale of authorship in international scientific papers, mainly powered by researchers struggling to publish something at whatever cost. After discovering the so-called “Chinese papermills”, it has been widely assumed that the main problem caused by them laid in the misattribution of papers to authors which did not contribute. Nevertheless, some relevant aspects of the phenomenon had so far escaped investigation. In particular, one might wonder whether:

- 1) the business of ghost-writing and scientific authorship selling are limited to Chinese papermills or are also based in Western countries;
- 2) the leaking of papermills papers into scientific journals is limited to low-quality and predatory journals;
- 3) in light of their relatively low cost, the papers produced by papermills are genuine or contain fabricated, falsified or plagiarized data;
- 4) papers and data fabrication and selling are limited to biomedical disciplines;
- 5) the overall impact of papermills fraudulent scientific papers over the scientific record is significant or not.

After a thorough investigation of the phenomenon, it was clear to me that the main assumption of scientific fraud as an ethical or even criminal misbehavior, restricted to the scientific community, is far from complete. The reality is that, after scientific papers became a career commodity and a status symbol (with bibliometrics raised from the position of an obscure academic discipline to the level of a research evaluation instrument) both in Western and Eastern countries a new market was born for scientific fraud, one which will potentially inundate the scientific record with fraudulent data, will erode the shares of legitimate publishers and journals and ultimately may lead to a drastic loss of reliability of scientific journals. This market is dominated by digital companies outside the Academia, which is reduced to the role of customer, instead of the main actor, in the production of fraudulent papers; moreover, the size of this market starts to rival those of more respectful research-connected ones.

To face this threat, a new model is needed: one in which scientific publishers will invest in quality checks, institutions and governments will abandon purely bibliometric evaluations and scientists will compete for the better idea, not for fragile mountains of papers.