

How Faked Research damages the economy¹

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Britain became rich on research, first in the agricultural revolution then the industrial revolution. In the global economy it can stay rich only by being top in research. Today, though, its competitive edge is vanishing because researchers are faking their results. And government policy encourages this.

Faked research is not just a waste of the time of the researcher who fakes; it wastes other people's time. One faked paper meant that top researchers wasted 470 person years trying to build on its results. Faked medical research kills people. Faked psychological research by Burt skewed British educational policy for decades. Faked product research bankrupts firms. Faked economic research destroys economies.

Worse still, when faking is common, we mistrust all research. If an exciting paper is published, we know that there is perhaps a one in ten chance that it is faked, so it is too risky and expensive to act on it. We have to wait until other researchers replicate it again and again – and they too may fake. This means that the good paper is worth perhaps one fifth of what it should be. And that 80% of the money spent on research is wasted.

There are a few nutters who fake for fame, and a few compulsive criminals, but most faking is done by normal people, people who would protest if they were given too much change in a shop. They do it because they are under strong financial pressures to fake, and under strong social pressures from their colleagues. And because it is perfectly safe. All because of government policy.

Government has a “Publish or Perish” Research Assessment Exercise (RAE) which gives money to those university departments and research organizations whose staff publish most in the top journals. The departments want, above all, to

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survive, so they put strong pressure on staff to publish. The organizations often organize the faking: Peter Wilmhurst reported cases where senior colleagues show new researchers new tricks to get away with dishonesty. And, of course, the directors have been known to order juniors to fake results for them.

Departments also get RAE points for the funding they raise, however badly they use it, which puts pressure on them to fake in another way. They vet publications to suppress any results that may offend potential funders – you cannot expect to get government research funding or consultancies if your staff have a reputation for speaking the truth.

And if someone exposes faking, the department is under financial pressure to cover it up. It does not then have to withdraw the faked papers, and their RAE scores. It does not have to pay back research funding. It does not suffer reduced credibility which would mean that staff found it difficult to publish in the top journals. And it does not have to carry out expensive investigations.

And this puts pressure on the researchers. The people who publish most get promotion and a lower teaching load, and are headhunted for top jobs. Those researchers who are scrupulously honest in their own work are under pressure to turn a blind eye to faking by their organizations, and by their colleagues. They also have to face the fact that the best researcher in the world will find that her research budget halves or vanishes entirely if the department as a whole gets a poor RAE score, no matter how she performs herself.

When faking is highly profitable, socially acceptable and risk free, it is inevitable that people fake. The Chinese Minister of Science and Technology said that ‘scientific fraud and misconduct had done great harm to Chinese scientific progress.’ He acted. He reduced the financial pressure to cheat by relaxing the ‘Publish or Perish’ system and he increased the risk by setting up an independent watchdog to catch the crooks. The Nordic countries and Germany have made research faking a crime. The USA has set up an Office of Research Integrity with powers to investigate and prosecute. Britain has set up a quango with no powers, covering only medical research.

How common is faking?

How common is faking? Medical research is surely the area where there is least faking, because faking there obviously kills people and ruins lives. However much there is in medicine, there must be far more elsewhere.

Paradoxically, nearly all the faking that is exposed is in medicine. This is because faking is usually exposed by a whistleblower in the organization, and medical researchers are particularly vulnerable. They work in teams which may include GPs, nurses and lab technicians, who are not under the same financial pressures, and who may be squeamish about killing babies. Medical research is also much easier to check than other research to check, as it is relatively routine with clear and accepted protocols, standard experimental techniques and standard ways of keeping records. Some of the highest profile scandals have been exposed by this way, the cases of Eric Poelman, John Darsee and Ranjit Chandra.

All too often lots of people in the organization know what is going on, but nobody dares blow the whistle. Robert Slutsky was exposed after he published 137 articles in seven years. His colleagues in different parts of the university knew about this for some years, but their main concern was whether they would be tainted when he was finally exposed.

Most potential whistleblowers keep their mouths shut, so most fraud is never detected. Whistleblowers lose their jobs, their careers, their marriages. Top researchers who blow the whistle on colleagues find that they can no longer get grants, that their papers are not accepted for publication and that they are not shortlisted for top jobs. Terrible stories were told to the US Congressional investigation, not just by the victims, but by the Presidents of famous universities.

The system of peer review is very poor at exposing faking. The referees read through a paper once or twice and, if the contents are new and interesting, recommend it for publication. They do not have the time or the interest to check the raw data, redo the statistical calculations, check the references or cross check for plausibility. Even so, one to two percent of the papers submitted to medical journals are so crudely faked that this is spotted at once, before publication. So how many are missed?

The Committee on Publication Ethics, set up by the editors of medical journals, says that the amount of faking that is exposed is the tip of the iceberg.

Most of the cases that are exposed are of researchers who are producing very large numbers of research papers, perhaps as many as 100 over a year or 250 over

10 years. This does not mean that most fakers publish a lot, and we can ignore people who publish a couple of papers a year: it means only that serial fakers are more likely to be caught. People get suspicious if someone publishes a paper every eight days, each covering research that is supposed to have taken months, if not years. They then look at some of his papers. They wonder how the researcher can have found hundreds of people with a rare disease in his home town, and then found hundreds more with another rare disease. Once suspicions are aroused, it is easy to find discrepancies. The faker cannot remember what he said about his imaginary experiment a year ago, so he makes up new data. Or he cannot be bothered to invent data and analyse them, so he invents the results of the analysis, producing impossible statistical correlations. Or he just takes the graphs produced for one paper, changes the labels, and presents them as results of another study of another disease. Luk Van Parijs was fired from MIT after it was noticed that two papers on T cells in the immune system produced almost identical data, even though they were supposed to come from different cells of different mice. All of which means that you are perfectly safe if you fake intelligently, and you fake only a couple of papers a year.

And even then, most cases that are reported, whether by whistleblower or by a journal editor, are covered up by the university. Howard Schachman said, “I have been a whistleblower on cheating cases in the University of California and I can assure you that I found it extremely frustrating as a professor of 40 years’ standing to have to deal with the university’s attempts to protect the individuals and prevent the cases from appearing in the press.”

Peter Wilmhurst, one of the few people who forces action on faking, says, ‘Some cases of research fraud in Britain have been dealt with only a decade after they became common knowledge.’ St Georges Hospital only took action in the Malcolm Pearce scandal when Horizon and the Daily Mail started investigating and exposure was inevitable. Stephen Lock, a former editor of the BMJ showed that employees and colleagues have frequently buried the accusation.

In Sweden allegations of misconduct against Christopher Gillberg were not properly investigated. The University refused to investigate, then refused to refer it to the Swedish Research Council for investigation, then it refused to supply the data for checking in spite of repeated court decisions – five in all. The researcher and the Rector of Gothenburg University were convicted of a criminal offence, but by then

Gillberg's co workers had destroyed the data. The Swedish Government has strengthened the law.

Many other cases were presented in evidence to the US Congress.

Universities also drag their feet in the hope that the crook will move to another job or retire, so they can say, 'Not our problem.' Richard Smith, a former editor of the BMJ asked a hospital to investigate possible faking by one of its employees. The hospital said that the employee had left, and it was not their problem: they would only investigate if the BMJ paid all their costs. But it is their problem: they are responsible for any research done by their employees. They are responsible to people who believe future research because of the researcher's long list of publications. They are responsible to the next employers, who take on the crooks on the basis of glowing references. The next employers unwittingly take on a responsibility themselves, responsibility for past work as well as work done in the new job. They gain all the prestige their shining new professor has gained from his past work, and they are using that prestige to get research grants, students and a higher RAE score.

They also delay as long as possible so they can say, 'But it happened so long ago that we cannot possibly investigate it now.' Again deeply dishonest. The faked papers continue to be cited and used to distort, years after they were written. In some areas of research they continue to kill people.

Penalties for faking

Occasionally, very occasionally, someone is caught faking in circumstances where the university has to take action. There are few penalties. Universities often buy off the criminals, giving them money and glowing references – anything to avoid publicity, expensive investigations and litigation. Interestingly, crooks are more likely to threaten litigation than the universities.

Only if there is a major scandal is the person likely to lose their job rather than being told to be more careful next time. In one of the best known cases of multiple faking, John Darsee was allowed to continue working at Harvard even when he had been exposed.

In the USA, there may be a prosecution, but even then the penalty is likely to be that the criminal cannot apply for Federal research grants for three or four years.

More often there is no action at all. The BMJ has published two very depressing papers on how they checked on suspect papers by two different researchers. It was a long, expensive, time-consuming exercise – it took 13 years to take any action in one case. Eventually there was no satisfactory outcome: the researchers refused to withdraw their papers and the journal could only publish a brief “expression of concern. The researchers were able to drag things out by refusing to provide their raw data for checking when required, and refusing to cooperate.

Dr Ranjit Chandra of Memorial University of Newfoundland produced a string of research papers supporting Nestle’s claims that one of its formulas could reduce infants’ risks of developing allergies, to the great benefit of Nestle. In 1985 his research nurse, Marilyn Harvey, who had managed to recruit only a handful of allergy prone babies for study in the small city of St Johns was shocked to find that he had published papers based on 288 babies. In fact, he had done studies for three different companies claiming 700 different babies. She blew the whistle. A university investigation confirmed the misconduct in 1994. They did nothing because Chandra accused the investigators of bias and threatened to sue. The BMJ suspected fraud on some of his later papers and approached the University of Newfoundland but they did not do a thorough review. When several journals pinned him down and exposed him in 2005, he took early retirement. The university does not wish to go through 200 papers to determine which should be withdrawn. The Canadian Institutes of Health Research have not been able to get the raw data from the research, so they cannot check. The US Office of Research Integrity would not investigate Chandra’s papers published in US journals because he was a Canadian Resident. So we will never know. All that has happened is that one paper was withdrawn. And the evidence is that papers that are withdrawn continue to be cited even after retraction, so they continue to do their harm. Chandra continues to speak at international conferences and to publish papers.

Things change when important people stand to lose money.

In the 1980s and 1990s US health insurers were hit by a craze for a therapy against breast cancer (HDC/AMBT), even though it was very expensive (\$100,000

per treatment), painful and had a high mortality rate. US state legislators passed laws compelling health insurers to fund it. The insurers investigated in 1999 and found that the only evidence that it worked came from research from one South African researcher, Dr Werner Bezwoda, who resigned, admitting that he had “committed a serious breach of scientific honesty and integrity.”

Hwang Woo-suk’s breakthrough on stem cell cloning in South Korea was had such enormous economic potential that it took only months before the faking was proved.

Big pharmaceutical companies make billions if a new drug hits the market. There is a big pressure on them to fake results, to show that a drug is more effective than its competitors. There is a big pressure on them to suppress some results, trials that were inconclusive or produced unfavourable results, for instance. There is a big pressure on them to suppress results that show that their new drug causes heart attacks. They may just suppress unfavourable results or they may design the experiments so that they do not observe unfavourable results – not observing any side effects like heart attacks or suicide that occurred more than two weeks after people stopped taking the drug for instance. Or they may get their PR people to write the papers for the University researchers who did the work. But they do get angry when the GPs or other researchers they employ decide to do their own faking, inventing patients with the disease, pretending that they had consented, and had been treated, and inventing lab reports on the results. – this sort of amateurish faking can lead to investigations that expose their own, far more professional, faking. So they prosecute.

Outside medicine

There are very few publicized examples of faking outside medicine, usually when someone has offended a powerful lobby. Michael Bellesiles of Emory University produced a book showing that gun ownership was not widespread in the early years of the United States. This annoyed the gun lobby, who went through all his research over the years, word by word, to pick up any errors, and indeed they found them. He lost his job. Ward Churchill of Colorado said something politically incorrect about 9 11, so people went through everything he had ever written with a fine tooth comb. They found a lot to complain about and he was fired. In this case the University had ignored previous complaints over the years.

In my own subject, economics, academics seldom write about the sort of real world economics that is my bread and butter. It is expensive and time-consuming to get the information needed, and it is not possible to churn out the papers at the rate needed to get a good RAE score. Economic theory capable of analysing the complexities of the real world is also extraordinarily difficult. Most academics choose to write about a simplified imaginary world. They start with a few assumptions and then they rapidly build an economic model to show how things might work in this fairyland. The results cannot be applied to a complex real world of course because most of the key facts have been assumed away, but the papers are easy to produce, and they fill most of the 'top' journals. The papers do not produce predictions which can be tested against reality, and they cannot be checked for internal consistency. All that can be said is that some do not follow logically from their assumptions, which means that the writers are no more perfect than the rest of us. When I am churning out economic theory, I often have brilliant insights, earth shattering findings. It occasionally takes me as long as three days to find out why I was wrong. But I know that only a handful of people, people who happen to be working on models very similar to mine, would ever find my mistakes. I know that they are not likely to read my paper, and if they do, they are unlikely to write a critical comment. In the 10,000 to 1 event that they do, I can ignore it, or laugh it off with a suitably academic sneer, or write a rejoinder suggesting it was an alternative analytical approach. And I know that nobody would ever believe that this was deliberate faking. So the temptation to fake is enormous and the risk is zero.

This means that academic economists are distinctly casual about their facts ('but they were simplified for exposition, dear boy) and that they never do anything about allegations of faking, though two Nobel Prize winners have been accused of faking. The honourable exception is

Kentucky

It is only fair to note that this started off as an investigation into the relatively innocuous sins of plagiarism and academic bullying, and the faking was discovered later

How to get away with faking

To get away with faking therefore

1. Don't publish more than one or two faked papers a year – enough for the RAE.
2. Tell them what they want to believe. People only check if you challenge their preconceived ideas.
3. Produce evidence to support what other people have said.
4. Don't come up with amazing new results which will get hundreds of people trying to replicate, or which will get big business investing. Hendrik Schon's work at Bell Labs on molecular-scale transistors would have had enormous effects throughout computing.
5. Do a long term study. If you are reporting on the long term impact of a disease on a selected group of people, it is prohibitively expensive to replicate it, and by the time their study is complete you will have had so many promotions that you are fireproof.
6. Ask senior and respected people to be co-authors, and thank anyone important who you may have talked to vaguely on the subject. Include the top people in your subject and the top people internationally. They will be delighted to get another publication without doing any work for it. And nobody will dare accuse them of faking.
7. Ask potential whistle-blowers to be co-authors.
8. If someone asks you for your raw data, say the dog ate it.

What can we do about it?

In the past attempts have been made to appeal to people's better nature, to build up a culture of honesty and to exhort institutions to change their practices.

There is a quicker and more effective way – to make faking uneconomic. Forget about the few fame nutters and compulsive criminals, and concentrate on normal people.

Immediate action costs nothing. Government should say loud and clear that

- since dishonesty is inevitable, a system that does not actively tackle dishonesty is itself dishonest.
- all research institutions have people faking. The good institutions find the crooks and expose them.
- Government will not give research funding to organizations which cannot show that they have acted firmly on all allegations and suspicions of faking. Having codes of practice and regulations is meaningless by itself.
- they will not give research funding to departments that employ people who have faked. This means that criminals will be fired. And this means jobs for the thousands of brilliant, honest, researchers who spend all their lives writing research bids, bids that are unsuccessful because the money goes to people who have a string of faked publications.
- any whistleblower will have her salary paid until retirement by the employer of the criminal.
- any whistleblower will have the right to see her allegations investigated, and to present her case to the investigation.

The economic pressure will force the research organizations to take action. They can recover the costs by suing the criminals for the cost of the investigation, their salary over the past few years and anything else that a good lawyer can invent. Loss of the university's reputation is no longer a problem.

And this means that the risks and costs of faking are too great for the individual.

In the longer period Government can pass legislation to make faking a crime, and being an accessory – covering it up – an even bigger crime. It should also recognize that the cost to a journal or a small research organization of investigating faking and going through all the HR hoops can be prohibitive for them, though the

benefits to the nation as a whole are enormous. There is a case for a national investigating organization with powers of investigation. But no case for another toothless quango.