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It's all about trust...

In 1932 the banks in the United States were in real bad shape! The 1929 crash of the stock market, the lack of boundaries between traditional loan and savings banks on one hand and banking with a rather speculative character on the other, plus the resulting massive unemployment and reduction in industrial productivity had rolled over society. Savings had been withdrawn from banks and stashed in old socks and mattresses. The election of Franklin D. Roosevelt made a difference: after a compulsory bank holiday of eight days and a rallying fireside radio talk, he explained the important role of regular banking in simple phrasing and reestablished the trust of the general public. The next day, the public emptied their stash and deposited the money back in their bank accounts. Passing the Glass-Steagall act[1] in 1933 and establishing the FDIC ruling did the rest.

What can we learn from these events as scientists? A century ago, science at large was a field enjoying high esteem. Some of our fellow scientists had a close-to-rock-star status, just think of Marie Curie and Albert Einstein. When did we lose this revered status and end up in discussions where our sacred scientific integrity is juggled around by the public? Creation versus evolution is one subject, global warming is another that should be without any doubt. Both are subjects that are essential for our human future. This distrust of science is detrimental for future developments, for instance in the fields of biochemical and genetic engineering.

Scientific integrity is at the basis of public trust. We cannot compromise on this cornerstone of science. Still we see it happening, again and again. We see scientists yielding to the enormous pressure of publishing, afraid to fall off the straight wire and perish in the funding circus. We write too much, we read too little. Counting publications is easier than really evaluating a proposal.

With Franklin Roosevelt we have seen that reestablishing trust is the most important step for changing public opinion on essential topics. How can we do this in physics in particular and science in general? First we have to deflate our egos. Is a student well served by being part of a highly successful team? In many cases the answer is no. Second we have to rethink our own role in understanding, discussing, and thus checking the output of our research. Ranking 30-something research proposals in four hours is not the best way to understand the basics. We capture the sound bites; we rank the status of the team, and take a look at the list of publications. We are not proud of this approach, we rarely talk about it, but we all do it in this way.

After 42 years in academia I still believe in a really high degree of scientific integrity in the scientific community. I have been member of the university's committee on scientific integrity and relished its excellent role as a watchdog. I have learned that scientific integrity can be hurt by our non-ideal, evolutional human nature. Lack of scientific integrity is not the work of 'bad guys' but the result of the too important role of our monkey brain with its alpha-male behaviour.

The essential elements for keeping science in check are day-to-day openness in the lab, absence of unconditional respect for your advisor, an open department where students are free to voice their concerns when necessary, and no prejudice in handling cases where students and advisors disagree. Let us admit that students do all the work and thus are highly knowledgeable about what is going on. Infamous cases in The Netherlands – not in physics – have shown that a biased analysis and/or manipulation of data by the advisor *himself* were at the basis of scientific fraud.

So much about avoiding fraud, but how do we promote trust in the final result of solid scientific integrity? Who is our Franklin Roosevelt? The answer lies in eloquence, the forgotten art of expressing complex things in simple terms. We all know the Nobel Prize winner who loses out on his audience after three minutes. Eloquence lies in maturity and is well learned in passionate teaching. Even a single well-spoken president of the Academy of Sciences can make a pronounced difference, as we have experienced in The Netherlands. Investing in excellent teaching is a two-sided sword: well-trained students and the required outreach to the general public.

Can we wish for more?

[1] http://en.wikipedia.org/wiki/Glass–Steagall_Legislation