

The Contract.

A short while ago, I was chatting with a friend as we were waiting for a dance band to get organized and start playing (a lot later than advertised: it always strikes me as peculiar that musicians, of all people, never seem to keep to time). Michael is a mathematician-engineer who has worked all of his life in the commercial sector, mainly in aerospace. Our conversation was about the experiences of new recruits to project-management. Michael told me a lot about the changing practices in his own world and then, aware that academic research can also be described in the language of projects and teams, asked me about what a new team leader would experience when taking his or her first such job in a university. I described something about the training and mentorship systems at the University of Edinburgh, but then caused complete astonishment at my description of how resources flow. The open-mouthed, raised eyebrows, 'you are joking, yes?' reception my description received pulled me up short, because I have always worked in the charity and academic sectors and had therefore taken our systems so for granted that it had never occurred to me that they may seem odd from the outside.

The thing that caused such surprise was that when universities employ a research leaders (ie a first-time 'lecturer' or an 'independent research fellow', at least in UK language), they provide a salary, space, maybe a small grant for essential equipment, but nothing else. As I remember the then Professor of Anatomy, the much-missed Matt Kaufman, telling me when he showed me to my office, "we pay your salary: the lights work, the phone works, the gravity works – for anything else, you will have to raise your own grant income". This was not strictly true – the university had already promised an £18,000 grant for basic lab equipment (which is far more expensive than you probably think) – but, in terms of money to pay a research team or to pay for reagents and services, it was accurate. This is what caused my friend such incredulity – that someone would be taken on to run a hopefully internationally significant research project without any resources to do so. In his world, the project is decided on and resources allocated long before the position to run the team is even advertised. Why, he asked, would anyone take on the kind of position I had described?

The most compelling reason, to me anyway, is freedom. As Michael said, in his world the higher echelons of the company decide on what projects should be done and, if they change their minds, a project can be cancelled without much warning. In the world of academic research, the flip side of what may seem to be an insane contract, in which people are taken on without the resources to do

their jobs, is that they have freedom to choose whatever project they please. Well, not quite absolute freedom – at least some of the work of a research group needs to have some kind of fit to the core mission of a department or faculty (eg something relevant to medicine, or to economics or whatever) but, as long as that criterion is satisfied, additional side-projects can be followed without restriction as long as they remain within the law. As long as a faculty member has managed to gain enough external resources to fund a project, they can carry on almost completely safe from the risk that some high-level committee might cancel it (wholesale closure of departments is the only real risk; in a thriving university of the type to be recruiting new people, this risk is very low).

This system, as mad as it may seem from the outside, is therefore an important foundation for academic freedom. That freedom, usually expressed in terms of someone's right to write or speak on any subject without being silenced, is the most sacred tenet of university life. It is tempered by the need to stay within the law, and the need to express ideas in an appropriately scholarly way: in free democracies, these amount to almost the same thing, because laws against racism and hate crimes tend to be drafted with academic freedom in mind, and they are not written to suppress objective, unemotional, evidence-based analysis of societal issues.

I explained this, but felt that, in the limited time we had before the band got their act together and the dancing started, I had painted too rosy and idyllic picture. I'll try to expand a little here, and give more balance.

I have just written above that the right to run any (legal) research project is an important foundation of academic freedom. That it true, but 'right' is not the same as 'ability'. At least in the experimental sciences, research projects require money. A lot of money – quarter of a million pounds over three years would be typical. At a minimum, this pays for apparatus, chemicals, time on shared facilities, animals (if relevant to the project), disposal costs etc. For all but the smallest scale projects, it is also needed to pay for staff (technicians, post-docs etc.) to do the bulk of the actual work, partly because there is usually much to be done and partly because faculty members do not have time to do it all themselves. We have to teach, and we also have to spend significant amounts of time raising the money. The ability of a faculty member to conduct a research project therefore depends on their ability to convince an external funder (eg a government research council, a medical charity, an industrial collaborator or a rich direct donor) that the project is worth doing. More than that, actually – that the project is worth doing and that is it even more worth doing than most of the rival

projects also being considered in that grant round. Competition between good ideas means that the average national success rate for applicants to UK research councils is about 15% (though I am pleased to say that my lab's own, and that of many other labs in this building, hovers around 50%. I know one senior person in Physics who had a 20-year record of approvals unbroken by any rejections until he got his first this year).

Funders have their own agendas. At a top level, these can be obvious – Cancer Research UK is going to fund cancer projects, for example, and it would be a stupid place to send a project centred on Alzheimer's disease. But, even within a funder that is dedicated to a particular subject, the committees that make decisions, and their external advisors, may have strong biases about what makes a good project. Frustratingly, these committees (and I have sat on some myself, so these comments are not just sniping from the sidelines) are usually composed of researchers who have strong track records over previous decades. This creates the classic problem that the generals of the army are the people who know how to win the *previous* war. They can be resistant to new ways of thinking and even new topics. This acts to restrict the scope of range of ideas that are likely to be funded, and in turn restricts the range of project actually pursued by academics and therefore, in a real way, acts as a limit on academic freedom.

How, then, do faculty members who care about the freedom to work on anything cope with these restrictions? (Again, I am writing of experimental sciences, where money is essential). There are two common approaches. One is to try to convince the funders, again and again, that the idea is worthwhile. Some people do succeed in this, but often one needs to have half-done a project to get enough evidence that it is worth starting. The other approach is to compromise: to do some work that is exactly in line with funders' priorities, and to use it to bring enough resources to a lab that small-scale work on other unfundable ideas can still proceed. I do this a lot, generally offering these projects to PhD students, because they will learn so much from them and, if they succeed, the students have a great CV point that they were founders of something new. Is this a misuse of funders' money? That's a grey area. For some things, it is no drain at all: when we buy a smallest-on-sale pot of an enzyme from the main grant, and the main grant needs to use 20% of it, and it has a shelf life of a month, then using the other 80% for something else is no waste. But not all reagents are like that and even modest PhD projects do use real resources from the grants to which they are most closely allied. My main defence for the practice is that, so many times over the years, the 'unfundable' work of the PhD led to data and publications that allowed me to make a much stronger

case to mainstream funders for resources for a large-scale follow-up, which was fundable and indeed funded.

Finding these compromises between the 'real' mission and the fundable has a long history in all creative fields. Composers and artists often had to perform work to please their sponsors in order to make ends meet and allow them to do their 'real' work as well. Authors too. Sometimes, indeed, work for the sponsor has over time become better known than the 'real' work. The example of Anaïs Nin comes to mind – she is known much more in the public mind for some mildly pornographic short stories she wrote on commission from a wealthy aficionado of such material than for her more literary contributions and her chronicles of the creative set of her time.

The 'fund it yourself' method of resource allocation used by universities contributes to another odd difference between the academic and commercial worlds. With the possible exception of people who work in the core management structures, universities have no equivalent of the 'good company man' (or woman). The loyalty of an employee of, say, IBM tends to be to IBM and a rival company would be seen as the opposition. The loyalty of, say, a physiologist tends to be to the global community of physiologists, made visible and tangible (within limits!) in conferences of physiological societies, and also through specialist research journals and textbooks. Other physiology departments are not generally seen as rivals (even if a few very specific people in the world are seen as such, in a crowded field). In general, if academics see anyone as 'the opposition' it is the bureaucratic structure of their own university and of funding agencies. Indeed for the more mobile type of academic, who moves from institute to institute around the world, working 'with' the same international set of people is a long-term fixture whereas the university that actually pays the person's salary is a temporary convenience (sometimes, inconvenience). Scholarly ideals are similarly disembodied, and work at the level of a placeless concept and not in bricks and mortar. This is not unique to academic life. The author and apologist CS Lewis wrote of how Christians (should) feel a much stronger allegiance to the Church (with a capital C), something their religion views as universal and eternal, than to the particular physical church (small c) building in which they happen to worship. So not only do we have a peculiar contract but, even if the answer to the detailed, legal question is clear on paper, there is an internal ambiguity in most academics' minds about the community with whom our most meaningful contract has been made.

Michael and I have each worked only in one type of setting. I'll make a point, over the next months,

of speaking to people who have moved between commerce and academia, to explore these points further. If something more comes out of the conversations, I'll make it the topic of a later blog.

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