

When I think of Germany... ..reflections of an American scientist living in Göttingen

„die unbegrenzten Möglichkeiten des Wissens“

When I think of Germany I think of a place where it is still fun to do science! No kidding. This hit me like a brick recently at the end of a hard week of work, Freitag Feierabend! I'm sitting in a nice Göttingen student Kneipe with my wife Liesel (yes that *is* the Liesel from Göttingen!) and in walks one of my colleagues from the Physics faculty, sits down orders a beer and begins telling me about the latest results from a collaboration we had started a few months before. I had been meaning to set up a meeting, but... wonderfully, it just happened. How cool is that? It hit me again, when I met one of my students at the Fitness center, everyone sweating away trying to “get in the zone!” Everyone's wearing earphones (naturally). Come to find out she's streaming the week's lecture from my English language masters course. Göttingen just lives and breathes science and I can't tell you how cool that is for a Professor. Yes I can. It's Way cool!

But it's more than that. Germany has carved out a space for free thinkers and by that I mean (among other things) basic research. Ok, Ok... we also chase the almighty dollar/Euro here, a well-known free-space constrictor for free thinkers. And universities everywhere share some common silliness-es. I guess we all know what those are. But I've got to hand it to you. You've created something special here and you darn well better be clever enough and courageous enough to realize that you've got a good thing going. And build on it.

And let me try to make it as clear as I can what that special thing is that you have created. And you might think I am crazy: I am talking about „die unbegrenzten Möglichkeiten des Wissens“. I still remember the force that attracted me to Science something more than 30 year ago: The realization that a new and above all correct idea could change how we see the world, change even how we think about what is possible and what is not. There really is a process of breaking down borders of what's (perceived to be) possible that explains why we scientists are in love with doing Science. It is my belief that this organic driving force – to seek truth – lives and breathes somewhere deep in the soul of every scientist. It strikes me further as quite a sensible thing, indeed a moral imperative, for a society to feed that living breathing soul of scientific truth seeking. Whether you have done it intentionally or not, the German science system has managed a pretty good job of doing just that.

How have you done it? And how can you build on it? Those are the questions above all questions for the German academic community to think about and discuss. Let me make some observations as an outsider. I see two extraordinary aspects of scientific life in Germany in the year 2013. You might even call this “the new German paradigm”. Actually it is the old German paradigm, but you've spent the last three decades slowly taking it apart trying to “catch up to the US”. Stop that. Your scientific history and culture inspired *us* to build up science. Have the confidence to go your own way. It is a good one.

First, you've managed to de-emphasize money as a driving force for intellectual creativity. In my experience really interesting science (and by extension other forms of creative intellectual activity) is not driven by the profit motive. And real creativity is certainly not fostered by a fear of financial disaster, which as I write this due to the US government shutdown, is a feeling running rampant through the scientific community of my own country. Creativity springs from a belief in unexpected possibilities, not balance sheets and grant reports.

One could write books on this (and probably they have been written – I have not read them). I believe the influence of commerce destroys creativity. You need look no further than the commercialization of art to see this. Trust me. You do not want your scientists to be thinking – “Terminator III”. Terminator-I was not bad but one was surely enough. A film like “das Leben der Anderen” comes from a creative place that is not motivated by profit. In this spirit, my suggestion is that like your greatest film makers, you also want your scientists free to think in directions that others are not, “out in the cold”... Wondering if their ideas will come to fruition or be appreciated. Probing...

where are the new directions? Asking... what has been overlooked? Wondering... what have we neglected? Questioning... what have we taken for granted? And the last thing you want is a crowd mentality, where we follow the heard to the latest “hot new thing”. Brain research, anyone? Maybe a little graphene?

Those strong minds asking the difficult questions are usually looking in unappreciated directions out of a sense of fascination not fashion, with an intellectual confidence that “going it alone” is ok. These free thinkers need to be supported by their peers and protected from those forces that are stronger than the individual. Special things happen when the creative mind believes unexpected things are possible. I state with cautious optimism, Germany is managing this.

Second, you’ve managed to de-emphasize fame as a driving force for intellectual activity. Unlike my country where the only substitute for wealth is fame and usually they come hand in hand, Germany still retains “eine gewisse Bescheidenheit”. Bravo, take a bow. You’re suspicious of “the star” and rightly so. Science, like most important human endeavors is not the work of an individual. Ganz im Gegenteil, it is above all else a community effort – eine Gemeinschaftsarbeit. And when it comes to Gemeinschaftsarbeit it is unavoidable that credit will simply not always go where it is due. Germany is blessed with a vast army of highly-trained, thoughtful, hard-working scientists and technicians who make up Germany’s famous Mittelbau. It is high time that the Mittelbau got a chance to “take a bow”. Where would we so-called “Spitzenforscher” (I hate that word) be without the Mittelbau? I can tell you where... dreaming about a little town in mid-state Kansas named *mediocrity*. Because the truth of the matter is the most to which a scientific director or a Professor can ever aspire, is to possibly inspire his co-workers to accomplish more than they maybe thought they could; leading the charge on “what is *just* possible”, but not forgetting who does the real work.

Summing up, the creative space that I see in Germany is one where a scientist doesn’t have to constantly worry about money and where there is a strong sense of Gemeinschaftsarbeit amongst a collegial cast of many supporting actors, who are fascinated by their work even though they know they will never be rich or be famous. That’s an environment where science can simply be fun. And that’s when great things can happen.

Please don’t misunderstand me. I am not saying everything is friede freude Eierkuchen in good old Germany. The withering Mittelbau, the absence of non-professorial job prospects in research, the funding of universities in poorer Bundesländer are just three of the most serious problems that need immediate attention.

My hope is, however, that German University Presidents and policy makers reading this will stop worrying about how best to reinvent German universities in the likeness of their elite American counterparts. Unless you are Harvard, the US system is in trouble. Today, the University of California receives only 15% of its money from the state of California. The remainder must be covered by overhead from federal grants, private donations (which are far less than most of you imagine) and student tuition, which has sky-rocketed during my lifetime. When I was a bachelor student, I paid 100\$ per semester about the same as students in Göttingen today. By the time I left the US as a senior professor, my students were paying close to 10,000\$ per semester and if you come from out of state (think students from Hessen studying in Lower Saxony) add another 10,000\$. By contrast, your culture values a system affordable to any qualified student. It values education, knowledge, research and innovation. Above all else, it values free thought and the free thinker. The German paradigm is a special one. Treasure it and build on it. If you are a university president, you can start by calling up your Ministerium today and asking them to work with you to begin expanding opportunities for the Mittelbau.