

The social structure of research accountability:

Regimes of worth, claims of representation, and networks of accountability in research

The real accountability issue is not just how public money is spent, but whether science is helping to further sustainable development. Answering this question requires us to consider the interplay between the different ways we value things, the different people who claim the right to attach values, and the different ways they connect to each other.

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In this article I propose an “embedded” perspective on accountability in research. Embeddedness in sociology refers to vital interconnections – with rules, and between persons. Research is embedded in society in multiple ways, and I argue that our best chance to increase accountability is to build on these embeddings. My perspective builds from two ingredients: 1) multiple regimes of worth (logics of evaluation) that might be relevant to measure the value of research, and 2) personal ties that connect research and accountability to broader social networks. The first ingredient is about the *symbolic* embedding of research activities – how the valuation of research is interconnected with typical logics of valuing in other spheres. The second dimension is about the *social* embeddedness of research, the importance of face-to-face ties in accountability. I propose to think in terms of *regimes of worth*, rather than specific evaluation schemes (metrics, forms to fill out, rankings, etc). Regimes of worth are “natural” logics of evaluation that emerge in typical social settings, such as business, politics, science, domestic life and civic movements. Research activities have been embedded into these social settings since their beginnings, so looking at the logics of evaluation in these settings is a natural starting point. This is what I mean by symbolic embeddedness – that research is connected into symbolic structures, coherent discourses about worth, which seem natural to those inside them. Any research activity is exposed to multiple regimes of worth. A researcher’s activity might be measured by how it secures his or her family’s future, and also how it advances product development in a firm, but these pressures rarely affect the same choices at the same level of detail. Then there are situations where multiple regimes are relevant to the same decision in research. In such situations they might create conflicts of interest, weakening accountability, but that is not necessarily the case. Co-existing accountability pressures might also create room for projects that serve the interests of multiple constituencies. A further condition is that evaluation criteria without credible *representation* of connected constituencies are likely to be without effect. Some social actors (and the regimes of worth they promote) have very effective systems of representation, but not all. So if we think research should be accountable to society in general, we should immediately ask the question: Who represents the whole of society towards research in a credible way? And what then is the relevant regime of worth? We cannot avoid the politics of research accountability here. Representation is always plagued by problems of principals and agents that can only be resolved by personal networks of trust. These ties are the most important ingredients of the better-functioning areas of research accountability. Plagiarism, forged data, and doctored findings are relatively rare problems in research and science, due to the personal ties between researchers, which allow for collective monitoring. However, a simple-minded recommendation to encourage networking should be followed by caveats. It also happens that tight networks in pockets of the research community contribute to low quality science (in a “one hand washes the other” fashion). Thus embedded ties present the possibility for accountability, without guaranteeing it. More complete trust increases potential gain from malfeasance, and behind the largest scams there is always a tightly knit group (Granovetter 1985). In general, the social costs of the accountability deficit that results from lack of personal embeddedness far outweigh those of group-produced bad science. And personal network ties that might serve as vehicles of accountability are lacking in critical areas. How many researchers maintain ties to the neighbors of their universities, or civil society representatives of relevant constituencies? Without such links it is hard to imagine that research could become accountable to society in general.

Evaluation

As I said above, research is held accountable by multiple standards of evaluation at the same time. And this is not because evaluation criteria were designed in a faulty and incoherent way by the administrations that oversee research. The reason is that research is embedded in multiple symbolic contexts and regimes of worth.

There is a certain number of recurring evaluation logics when research is held accountable. To identify them, I turn to the sociological literature of critical capacity, and regimes of worth as they were framed by Luc Boltanski and Laurent Thevenot (1999). They used two sources to identify recurring logics of evaluation: their own fieldwork experience, and classical political philosophy. They identified six regimes of worth, which I will discuss in a decreasing order of relevance for research.

Creativity as a measure of worth is probably what we would most closely associate with science and research. Evaluation along this mode is by the novelty of ideas, with emphasis on the intellectual power to create new theories, generating new knowledge. This can be called the *inspired* regime of worth. There are certainly situations (applied research, policy support, consulting) where creativity is only one of many requirements. But creativity necessarily remains one of the dimensions of accountability there as well. Without accountability for creativity, I would not talk about research or science at all.

The second logic of worth from Boltanski and Thevenot is *domestic*, typically relevant in families, kinship groups, and in friendship relations. I think it is also relevant within research communities. Scientists and researchers are connected by relations of trust, and are accountable to each other. This horizontal accountability is probably the most powerful barrier to opportunistic behavior like forging data and findings or plagiarizing ideas. The third dimension, *opinion*, refers to the value of reputation. It is prominent in research, and in the university context it is often a formal dimension of accountability: citation counts. But why is reputation such an important measure of worth in research? One possible answer is that creativity-value is hard to determine, so it is much easier to “follow the crowd”, by assigning value to well-cited articles and going to conference panels where the room is packed. But following the opinion dimension without trying to assess creativity-value is dangerous. It can lead to “bubbles”, similar to a stock exchange, where fashionable ideas are acquired by the herd.

The fourth, *market* regime of worth, is primarily about expected profits. The market dimension is certainly present in applied research, but it is often extended to *all* kinds of research. During the second ELASM Foresight conference, several speakers proposed to evaluate both applied and basic research by the long term expected return. If this return is higher in the European Union than in its competitors, long-term economic growth would be secured. The danger is that conflict between the inspired regime of worth, which applies to basic research, and the market regime is probably the most fundamental clash of evaluations.

The fifth, *industrial* logic of worth is about efficiency, and is also frequently used in evaluation. Funding agencies expect efficiency in data collection and spending in general. Commissioners of applied research expect an efficient use of lab resources. But the industrial logic has even deeper roots in science. Simpler, more efficient theories with the same explanatory power are valued in all disciplines. The logic of the “crucial experiment” – one experiment that tests two theories at the same time – reflects a deep respect for efficiency. Efficient theories and research designs are deeply connected with inspired, creative science.

The final, *civil* regime of worth refers to solidarity with larger groups of society. The civil regime is perhaps difficult to define for science, but there is a growing sense that science should be accountable to society in general. One sign of this trend is that the pharmaceuticals firm Eli Lilly uses the Internet to publish results of its clinical trials.¹

It is easy to demonstrate conflicts between regimes, but when multiple

regimes are at play, the result is not necessarily weakened accountability. In our research on civil society project organisation, we observed a regional NGO that promoted a bicycle route as a response to multiple criteria: It promotes environmental protection, fosters economic growth by attracting tourists, promotes the preservation and display of local culture by connecting villages with diverse traditions, enhances social cohesion by a new transportation facility, and creates new jobs. Entrepreneurship in civil society is based on the ability to manage multiple regimes of worth (Bruszt and Stark 2003), and one strategically chosen project might excel along multiple measures. The same can apply to research.

Relations of accountability

The statement “I am accountable” is meaningless if one cannot answer the question: “To whom are you accountable?” The answer presupposes *accountability relations*. A further question is whether accountability relations remain abstract, such as the relationship between researchers and society, or become embedded, like relations between researchers and managers. I propose that accountability can only be secured through embedded relations. Accountability is literally about giving accounts, a mix of reporting and justifications. The same action can be reported and justified in many ways, even if the principles of evaluation are the same. In particular, a research activity will be framed very differently if the account is formal, as opposed to more personal. If accountability is embedded in personal relations, the accounts will be more likely to fulfill evaluation criteria. Communication that involves personal ties is much richer, and it is more difficult to manipulate evaluative principles if the evaluation is personal.

If only formal accounts are required, the chances are much higher that the principles will not be taken as seriously. In general, the interest of a collective is to be accountable, while the interest of individuals is to live without the constraints of accountability. Embedded relations transmit collective goals to individuals. Thus collegiality, rather than abstract norms from above, guarantees accountability.

For example, with David Stark and Laszlo Bruszt, we found that the accountability of civil society organisations is enhanced by embeddedness. Accountability is horizontal: Peer organisations collectively monitor each other. They are not so much accountable to society in general as they are to other similar organisations, and to local communities that are personally represented., along the civic regime of worth. Let's now consider how various regimes of worth are anchored in embedded accountability relations.

Ties between researchers > The first three regimes of worth – inspired, domestic, and opinion – are linked to embedded ties *between researchers*. On creativity, the heart of research accountability, a key dynamic is enculturation by co-authoring, the most important relation in research. Obviously a dense network of co-authorship ties leads to better chances of accountability than isolated researchers. No one scrutinizes our ideas as critically as a co-author. So one task in promoting accountability along the creativity dimension (the quality of ideas) is providing opportunities for co-authoring.

There are signs of change in the structures and density of research networks. James Moody investigated co-authorship trends in U.S. sociology (Moody 2004), and found that in the flagship journal *American Sociological Review*, the proportion of co-authored articles increased from 15% in the 1930's to 75% in the 2000's, and from 50% to 75% within only the past ten years. This is a major change toward accountability for the quality of ideas. I suspect that co-authorship is much weaker, and networks of co-authorships more highly fragmented, in Europe. The creation of such networks should be a critical priority for increasing accountability in European research.

Market ties of embeddedness > The market dimension of evaluation is typically well represented by managers within the hierarchical structures of a firm (if the research unit belongs to it). The critical question is the representation of market logic *outside* firm boundaries. How can the economic interest of social units larger than firms be represented? How could we ensure that research in institutions *not* incorporated in firms will advance the economic interests of the EU? Or, for that matter, how can we hold research units of a firm accountable for economic interests outside the firm?

I would argue that the key, again, is networks of social ties. Several researchers have demonstrated the importance of inter-organisational networks. Walter Powell and his co-authors demonstrated that a critical element in the evolution of biotechnology was network ties between firms, universities, hospitals, and state agencies (Powell, Koput, White, and Owen-Smith 2005). Likewise, Anna Lee Saxenian compared Silicon Valley to a less successful technological region on the East Coast, and concluded that particularly close ties between research, venture capital, and production were key factors in the valley's success (Saxenian 1994). Again, there is a demonstrable disadvantage for Europe in this regard. Inter-organisational ties spanning the boundaries of the business sector and science are relatively underdeveloped here.

Embedded ties help in representing market interests concerning research. However, this representation can be *too* effective, which raises an opposite concern: Can we ensure that the interests of research are represented towards market actors? The economic and social power of a large firm can easily outweigh those of a research institution. Firms can use their power to appropriate research findings that are in the public domain. Firms are not individually accountable for overall economic development, and so the dismantling of boundaries between firms and research centers might not be enough to ensure the accountability of research for development. In sum, research centers need protection – partly to retain the integrity of research, and partly to ensure accountability for longer-term economic development that neither firms nor research institutions pursue as a primary goal. This is a governmental task – to ensure that research and market organisations can be linked while retaining their integrity, by promoting forms of market-research collaborations that aim at economic growth.

Efficiency and embeddedness > Evaluation based on the efficient use of resources – the industrial regime of worth – links into budgeting units in firms, funding agencies and state bureaucracies. In the case of applied research the enforcement of efficiency is relatively easy. (If it becomes too easy, efficiency might suffocate creativity.) The case of research outside firms is a little more complex. Funding agencies require frequent reporting on how research grants are spent. This in itself does not constitute an embedded personal tie, nor does it ensure efficiency. Aside from the obvious issue of whether reporting takes time from research, another danger is that both funding agencies and researchers might be interested in over-spending. State agencies like to keep increasing their budgets (whose size is a key measure of their status). Researchers also prefer bigger grants that leave more room for conference expenses, travel, etc.

EU research funding in particular contains an element that corrupts efficiency in research spending. Because the system of peer reviewing of grants is incapacitated in Europe by the extreme fragmentation of science, EU funding agencies cannot deal with a large number of smaller grants. They prefer a small number of mega-grants, which obviously carries a greater risk of inefficient use of funds.

Promoting personal ties between European researchers would contribute to the emergence of research communities that span borders within Europe. This is a precondition for European level peer reviews. Such a peer review system could help in decreasing the average project size on the part of European funding agencies, as well as in processing grant applications, and thus to create a more efficient allocation of research money.

Embedded ties and accountability towards society > The ultimate accountability of research is toward society in general, not least because most research is funded by taxpayers. However, this is the dimension of accountability where the lack of embedded ties is most acute. Few research projects build ties to civil society organisations. There is a general problem of representation: Who could personally represent the whole of society toward a researcher? To some extent, this representation can be brought inside institutional hierarchies, as is done with human subject reviews. But the representation of society is often missing from the identification of research problems. Representation is the key that focuses accountability. In a case cited by Jesus Hernandez, researchers at a pharmaceutical firm were presented with tangible examples of patients waiting to be cured by a new drug. The researchers' abstract relation to society was replaced by a concrete relation to individuals with a specific condition that could be named. Researchers could then be made accountable to these patients by management. Here accountability is kept focused: Society is represented by the patient, and not, say, by an activist who addresses various needs of society.

Bringing social accountability closer by establishing a clear link to specific beneficiaries of research products could be applied in most research settings. In basic research these links to specific constituencies are more remote, but they can be established through applied research.

Conclusions

Research is at the intersection of several regimes that might conflict. All of the dimensions along which research is typically held accountable can be justified in a credible way, but creativity should remain the most important dimension of accountability. Rather than seeking to suppress conflicts, we must look for innovative combinations of dimensions of accountability. Research projects that are accountable to many standards are preferable, because they make research a factor of social integration.

The establishment of unified European research spaces (research communities spanning national borders) would help solve several problems of accountability. Creative productivity might be increased by denser networks of co-authorship. Peer reviewing might become possible, increasing the efficiency of research spending, while the visibility of successful innovation will increase. The ivory tower networks of national science may eventually be supplanted by new, more inclusive networks. However, if it is difficult to be accountable to British, German, or Belgian society, it will certainly not be easier to be accountable to European society.

A suggestion for managers or funders of research: Try to list the accountability pressures bearing on a given project. Do they weaken or strengthen each other? Are there important criteria of accountability that are not represented by embedded personal ties? If so, be careful: *All criteria of accountability should be matched by embedded ties.* If ties are missing, create opportunities to build personal networks. Because everyone has a limited time-budget to cultivate personal ties, the promotion of new ties also means weakening ties elsewhere. Today a typical researcher has dense ties within a narrow specialization. These ties could be sacrificed, but also renewed, by encouraging work across specialties, across national borders, and in collaboration with market actors.