
ARTICLES

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Social Property: An Interdisciplinary Experiment*

“How do I account for my day?” This was said with a mixture of anxiety (how indeed) and resignation (that it should be expected) by a young knowledge worker.¹ It was our first meeting. He had not been in post very long, and was to a large extent having to invent his job. He was a newly appointed “network manager”—a title he had changed almost at once to Research Network Manager since people thought he was an internet servicer. His job was attached to a newly named entity, the Cambridge University Interdisciplinary Research Network (UCIRN).²

Located in the physical sciences, the Network has made explicit a need increasingly identified these days: the need for interdisciplinary collaboration. As originally planned, it has a Network Management team and Advisory Committee, its day-to-day running falling under a Network Manager responsible to a Network Research Facilitator. The facilitator is the Professor of Chemical and Structural Biology, whose new post is held jointly in the departments of Chemistry, Physics, and Biochemistry. The post is specifically designed to promote interdisciplinarity and interdepartmental collaboration within the University. For it is not sufficient to wait, so to speak, for collaborative needs to arise in the solving of specific “problems” (problems within biology, say, that may be investigated within the context of physics), but must be actively pursued in all directions (so that the way in which biological problems are amenable to physical description becomes drawn into the science itself). One set of aims is to engage disciplines not traditionally linked through standard research practices, and to stimulate new collaborations across the University. A second set concerns the desirability of setting up a knowledge base that will make scientific findings widely available. Among other things this will serve as a repository for papers, in some cases written by the network management team, designed to demystify complex areas so as to make them accessible to a broad audience across the sciences

I have described the bureaucratic structure here since it makes the need for the management of such activity evident. Networks that were (and still are) instruments of collaborations between researchers have become newly expressive of the desirability of collaboration as such. Means are also ends of a kind. There will be more to say about the way instrumental relations become expressive ones, and the objectification entailed in making such relations new objects of reflection, and thus in themselves new objects of knowledge (after Riles 2003).³

Formerly a microbiologist engaged in plant research, the Research Network Manager (RNM) sees his job as bringing together people and stimulating links where none might have been imagined. In facilitating interactions, he was very

aware that researchers might find him redundant—they would get on with collaborating if and when the need arose anyway—but confident that he would bring about unexpected conjunctions. What concerned him was less the fruitfulness of what he was doing than how to *demonstrate* it. He did not doubt that there would be interactions and later down the line perhaps research collaborations and outputs that could be attributed to his own interventions. But how could he show that was the case? It was simply impossible to measure what he was doing.⁴ The observations he was making of the overall project became concentrated into how he was going to organize his day so as to feel he had done something—got something out of it.

Does this sound familiar? Aren't we all "knowledge workers" in a way? Isn't this a very ordinary and humdrum experience? Well, yes and no. I want to use it to comment on some of the kinds of solutions that are being generated at the moment in response to what is felt to be poorly understood, or at least poorly managed, knowledge. For a new "problem" is simultaneously emergent here: scientific knowledge that is trapped, so to speak, within its original disciplinary nexus when it could be so much more productive in combination with others. These solutions, including the structure that the CUIRN has put into place, are in part *social* ones. And something not socially dissimilar to this small local solution internal to one university's physical sciences is also happening on a large scale in the UK across the Life Sciences, more accurately perhaps the "Life Technologies."

Objects of Interest

I don't know whether any of this is of interest. What I am going to say cannot borrow fascination from the nail-biting kinds of scenarios that applications of the Life Sciences often conjure. I am thinking here of the dilemmas that are attributed to biotechnology, and of the impossible choices that are bundled up in the notion of ELSI (the ethical, legal, and social implications of science/technology). We see people having to make difficult ethical decisions concerning information about genetic makeup; we know medicine shapes social attitudes towards suffering, and we ask how one deals with death as a legal certainty when it is made medically ambiguous, and so forth. But when I say that by comparison I don't know whether these observations will have any interest, there is a greater anxiety behind that little one.

Ordinarily an anthropologist would approach a topic such as this with some ethnographic object. Among other things, ethnographic objects are phenomena *made interesting*, that is, rendered worthy of description or at least capable of description (and I subsume analysis and theory under description). They have become that through being studied. In addition, when the ethnographic object is made out of people's concerns and edge-of-life dilemmas, the successful ethnographer turns one kind of interest into another, not so far removed from an ELSI

programme that draws out otherwise unarticulated dimensions. My present concern is not at all nail-biting. I feel rather like the Network Manager in fact, with a humdrum and ordinary-looking question mark hanging over my head. He had to justify all his activities, and to himself, before he did so to his line-manager, to be certain that they were meeting expectations. He was given considerable freedom to create his own job, but knew he was expected to facilitate interdisciplinary interactions. I find myself in the position of having to justify being in turn interested in new practices of knowledge dispersal. And if I were to do it through creating an ethnographic object then I would have to *demonstrate* the interest of that object. Here of course is one of the benefits of an occasion such as this—because that general need to demonstrate interest is turned into a need to keep you (as audience) interested.

I borrow thinking about the quest for ethnographic objects from Annelise Riles (2000). From her, too, I borrow theoretical courage in broaching something that seems already too known, too experienced, too humdrum. After all, being *interested* in something is a means to study—what am I trying to do in turning it into an end by insisting that its interest is communicated? If I become anxious about whether or what I have to say is interesting, is it precisely because I am trying to create an object that will be expressive of the nature of the anthropological enterprise? Yet if so, perhaps there is a purpose in this—for it is important to appreciate the continuities between the ethnographer's situation and those (situations) she studies. As it happens my anxiety rather directly touches on that of the knowledge worker: he is a colleague I have drawn in to a seminar series I am organizing, someone incidentally I have thereby made part of my own network. Indeed, I say "studies" rather wryly, if only because there is too much rushing around to be encompassed by that sedate term (study). I suspect many of us are like the knowledge worker in having to create networks.⁵ A great deal of contemporary scholarship, at least in my neck of the woods, seems to be engagement in networking activities. And everyone with their own networks, of course.⁶ People run workshops, make contacts, organize meetings—all of which enrich the sense of social milieux in which they move. At the same time, this can sometimes feel like not quite the real thing.⁷ It is as though all that rushing around creates a sense of there being a focus or content elsewhere, all that activity pointing to something that must have been displaced by the activity itself. It is as though when one gets down to actually carrying out a study the point of it had become elusive nodes in a star dust scatter of (the need to engage) other people's interests.

You will hear in a moment how absolutely typical of this phenomenon my own actions have been. I do have an object of study I want to make into an ethnographic object, namely a consortium that has been set up in Cambridge called the Cambridge Genetics Knowledge Park (CGKP). What I find curious is that, as a would-be ethnographer, I am acting out on a small scale some of the concerns of the Knowledge Park itself. These are to do with demonstrating output, and with

how to measure performance, when a principal part of its activity involves facilitating interactions and collaborations. The Network Manager who manages networking activities cannot find simple management indices to gauge his own success. And that, I suspect, is partly because he feels obliged (or the CUIRN for him) to render into an object expressive of a particular *kind* of endeavor what works perfectly well as an instrumental activity in and of itself. The same is true of the GKPs.

In carrying forward its programme the CGKP creates its own form of social organization. Borrowing from current investment in the ideas of interdisciplinarity and networking, it sees itself as at once localized (with a set of core activities and core staff) and distributed (across institutions, across spheres of interests). Yet in creating itself afresh—there was no institutional blueprint—from this combination of elements already to hand, as a social phenomenon it is probably rather typical of many self-created enterprises. However, its task is distinctively conceived. The CGKP does not leave the question of knowledge implicit—it explicitly addresses the question of how “knowledge is put into play” by itself aiming to generate a special kind of knowledge.

As you will see, there is more emphasis in my account on the making of knowledge (“science”) than on its application (“technologies”). And in the end, I shall have talked hardly at all about genetics, nor about the kinds of substantive issues with which the CGKP deals. But you will have heard something about social aspirations and thus about one of the effects of genetic science on the imagination of appropriate social forms.

Ethnographic Specifics

The first context into which to put the CGKP is the recent establishment of six such enterprises across the country (UK).⁸ With funding for five years, this simultaneously regionalized and virtual form of consortium originates in the UK Department of Health’s desire, with the support of the Department of Trade and Industry (DTI), to put research in clinical genetics into a specific relation with “society” (cf. Nowotny et al. 2001). The idea is to promote at the same time public health and public awareness of the value of clinical genetics. They are thus designed to bring together multiple aspects of emerging medical developments, and to develop knowledge bases, while taking into account the views and expectations of the public. The scheme is premised on effecting interactions between several sciences, between scientific and clinical applications, between academic and non-academic users, and between the consortia and the commercial community.

Perhaps the first ethnographic question to ask is “why genetics?” The inaugural issue of the NoWGEN (North West Genetics Knowledge Park)⁹ newsletter (Jan. 2003, p. 3) says: “UK NHS Genetics Services are highly regarded internationally and our overseas colleagues have been very envious that the Secretary of State

[for Health] has chosen to place such emphasis on genetics and has funded important initiatives.”¹⁰ The Department of Health’s own initial statement (DoH 2002) refers to the need to develop a dynamic national strategy to support research in clinical genetics where the public is brought in from the outset.

The vision was for Genetics Knowledge Parks to work together to build a critical mass of expertise to undertake research, technology development, assessment and audit in human genetics. . . . They will also work together to develop appropriate economic, ethical, legal and social frameworks for the effective delivery of genetics services and for a better public understanding of human genetics.

In addition to promoting research and enabling exploitation, then, education, training, and public engagement are very visibly built in. “Collectively, the Genetics Knowledge Parks will explore different information dissemination and communication strategies for genetic science” (DoH 2002).¹¹

So what is peculiar about genetics that it should attract such attention? This is not going to be an issue that the GKP programmes, concerned with implementation, necessarily need to spell out. It is amply spelled out in other registers. Thus, for example, NoWGEN’s professional education and public engagement programme has contributed to a proposal to develop resources to help teachers address the ethical implications of genetics in the classroom (Revised Project plan, November 2003:24) This was initiated at the London Institute of Education by Ralph Levinson and Michael Reiss who were publishing a guide for teachers. In their guide, genetics is seemingly embedded in the very project of Bioethics itself. The opening words tell us that the first draft of the Human Genome sequence is hailed as ushering in a revolution, and “there is little doubt that many of the most pressing concerns in *science* are in biomedicine and associated reproductive technologies. The new biotechnologies raise huge *ethical* dilemmas that concern us all” (Levinson and Reiss 2003:3, my emphasis).¹² Although there are many non-genetic issues here, genetics has become a principal fulcrum that links science and ethics. These authors, for instance, move straight away into the example of stem cell research as prototypical for the new bioethics, in which one of the issues is positive control over an organism’s genome (e.g. King 2003:61), to be contrasted with prenatal genetic testing as a form of negative control.

The term “biotechnology” is used to characterize those processes and products that have at their basis “interventions at the level of the gene” (Bauer and Gaskell 2002:3).¹³ More than that, “Such is the breadth of impacts across previously unrelated sectors that a new collective category, “the life sciences,” has been adopted within the industrial and scientific communities” (Bauer and Gaskell 2002:1). In the rather more domestic framework conceived by the UK knowledge parks, clinical (human) genetics plays out on a smaller scale what is true of biotechnology in general. One characteristic of clinical genetics is that the sci-

ence (or rather its application through technology) contributes directly to two very visible arenas—the provision of healthcare, a justification that drives much development in science research in general, and the possibility of developing commercially significant applications.

So the new genetics is already conceived as marshaling together different arenas. (Conversely we could say that players in different fields have seen possibilities in this arena for their own.) Clinical medicine, with its focus on the patient as an entity that corresponds to no one set of practices, has always done the same.¹⁴ From the perspective of engaging expertise and skills from different arenas, the clinical team is thought of as a *multidisciplinary* one. Correspondingly, in the way in which the genetics knowledge parks have set out to marshal skills and expertise, the axiomatic assumption is that this must be a multidisciplinary exercise. And here is something the GKP programmes do spell out.

Multidisciplinary is embedded in the multi-institutional confederations that make up the knowledge parks. The Newcastle-based Northern Genetics Knowledge Park supports the International Centre for Life, also described as “the UK’s first Biotechnology Village,” and coalesces the reference in its name for itself, as the “Life Knowledge Park” (<http://www.nowgen.org.uk>). Its “Partners for life” thus comprise several organizations: Life Science Centre, Life Knowledge Park, Life Bioscience Centre, Centre of Excellence for Life Sciences, Institute of Human Genetics, Newcastle Fertility Centre at Life, Science and Industry Council, PEALS (Policy, Ethics and Life Sciences Research Institute), Northern Genetic Service, not to speak of Life Conference and Banqueting. We may note that these are institutions and organizations of very different orders of formality and orientation. This mixing is equally evident in the Cambridge Genetics Knowledge Park.

The CGKP is in some respects more conventionally tied into university and other local structures. However, the units can be variably clumped, so there are many ways of counting its elements, while it also jumps levels of organizational complexity. Expertise is found lodged in bodies of diverse kinds—a veritable C21 encyclopedia of cross-referring entities. These bodies are named¹⁵ variously as *faculties, departments, research centers, research groups, research programmes, units, institutes, schools* (as in the CU School of Humanities and Social Sciences), *laboratories*, all largely embedded within the University, across some 17 *disciplines* and areas of *expertise*, but drawing in allies from external *institutes, resources centers, and units*, including a *campus*, as well as collaboration with UEA (University of East Anglia), while outreach to industry brings in other entities, such as an *enterprise*, a regional *initiative*, and a transatlantic *company*; there are in addition named *participants, partners, and sponsors*, and more diffusely *consumers* and *the public*. “Organization” is itself represented in the core staff under a *director*, a *supervisory board*, and an *executive board*.

If the venture as a whole intends to generate a particular kind of knowledge from knowledge that already exists or is in the making, this vision does not just require the organization of knowledge (instrumentally speaking), it is *about* the organization of knowledge (that is, expressive of the process of organization). The CGKP's first remit is to "establish an administrative structure that will actively and explicitly bring together the activities of academic research with those of the commercial sector, clinical and public health practice, and the views of both consumers of genetic services and the public." And, "Knowledge is only useful if others can have access to it. The [GGKP] will concentrate its efforts at dissemination and education on three groups: (a) health professionals, (b) policy makers, (c) scientist/entrepreneurs and commercial partners" (Zimmern 2001).

There are many answers to "Why genetics?" But among the answers that have fueled the way in which the parks are set up must be the perception that the new genetics encapsulates what is so multi-factorial, so hybrid, about the way knowledge is to be produced by and disseminated across institutions.

The second ethnographic question is why "knowledge?" What is there about genetic knowledge that demands special treatment? Again, this could be answered in numerous ways, not least in terms of the fact that knowledge about themselves raises many questions in people's minds that they have come to understand as "ethical" questions. The way in which knowledge is asserted to be bound up with questions of identity is a ready example. The NoWGEN description of its research emphasis in the area of "ethical, legal, and social dimensions of genetics" explicitly says of various healthcare ethics practices that fundamental to them is the question of ownership and use of personal genetic information. Thus there are issues that are immediately consequent on the knowledge of genetic risk. Apart from that, the knowledge parks' orientation to the wider public (among other concerns) implies both that their own knowledge practices will be under scrutiny/be significant, and that they will be meeting diverse needs. Here the Cambridge version is explicit. It proposes, so to speak, a deliberately multi-factorial view of knowledge itself.

Of the six parks, the Cambridge plan goes furthest in responding to the invitation to develop appropriate economic, ethical, legal, and social frameworks for the effective delivery of genetic services. New research will have implications beyond the field of human genetics, and (with regard to accountability) it has become irresponsible not to anticipate that. The CGKP will offer visible evidence of the way society can be taken into science before, so to speak, it leaves the labs.¹⁶ As the original proposal points out, the process of validation will simultaneously involve disciplines "not normally included" in the purview of science and "interpret that science in a wide social context."¹⁷

For if the first specific remit of the CGKP was to establish an administrative structure, the purpose of the second is to "create knowledge." And knowledge, in

turn “we define as information that has been validated through critical appraisal of research findings, and integrated with an ethical, legal and social analysis and the input of consumer views” (Zimmern 2001).

Enabling the outcome of genetic research to be exploited for the benefit of both personal and population health is an explicit aim. Exploitation for medical benefit means dissemination to health professionals, policy makers, and so forth. But in the creation of knowledge lies a further vision of hybridity. The Cambridge proposal does not shrink from complexity. And the co-evolutionary nature of research and policy on numerous fronts (Nowotny et al. 2001; Nowotny 2002), the simultaneity of developments, is central to what it invites us to grasp.

Knowledge parks were also conceived with the aim of helping restore an authority to science, specifically to genetics. One hope is to bring about a new robustness, in Gibbon’s (1999) terms, by thus building into the very concept of knowledge a mix of scientific and non-scientific expertise. (The Cambridge proposal uses the phrase “socially robust science,” recognizing that the institutions of society must deal with “dispersed knowledge” and “mixed expertise”; cf. Strathern forthcoming.) Scientific information will combine with other kinds of information to produce validated knowledge. This will require some common measurements, at the very least compatibility in the languages of intention. It will also require social tools, that is, tools to handle incompatibility as well.

If there is a dash of utopianism here, then that touches this anthropologist too. It is as though the GKPs were an absurdly concrete manifestation of a possibility only hypothetically conceived. The hypothesis (in a loose sense of the term) concerns one particular form of knowledge that the scientific revolution—and I am talking of the European scientific revolution of the C17—put into place, and is arguably still with us. This was a form of relational knowledge that meant that conceptual relations and social relations became mutually visible (Strathern n.d.).¹⁸

Perhaps the third ethnographic question is why a “park.” The term lifts off from the numerous business parks and science parks to be found across the UK, whose attraction is the (commercially vibrant) concentration of diverse expertise in unexpected locations. The rural or open-space overtone¹⁹ is definitely not industrial in imagery, and possibly conjures the kind of airspace in which ideas are free to circulate. Indeed the London consortium calls their knowledge park simply IDEAS (full title: the London Ideas Genetic Knowledge Park).

Unlike some of the other parks that are a mix of located and dispersed elements, London IDEAS makes it plain that it is all virtual. “The IDEAS park is a collaborative effort, it has people, machines, projects and ideas, but no buildings of its own” (press release, September 2002; <http://londonideas.org/internet>).²⁰ Elsewhere (Strathern 2004; forthcoming) I have drawn attention to Daniel Miller’s (2003) theorization of bureaucratic virtualism. This is his modeling of a

one-way²¹ relationship between means and ends, where the instrumental relation is constantly converted into an expressive one [not his terms]. Miller defines bureaucratic virtualism as “the successive replacement of actual consumers as the beneficiary of welfare and provision by abstracted models that come to stand in their stead.” (Numbers of meals delivered to the elderly as an index of home care is an example Tsoukas [1997] gives.) The abstracted models he has in mind are especially techniques of management audit—with indicators and targets that in apparently embodying aims and goals come to stand in for them. In a climate where the concept of accountability in turn embodies aspiration for the responsible and effective delivery of services, the need to measure output is answered by such techniques.

In this milieu, measurement becomes a stand-in for accomplishment, such that aims become focused on indicators, or reaching the target becomes the goal. Here is one source, among others, for the anxiety of the knowledge worker. And here the GKP’s remit chimes with the academic remit of the UK’s consortium of Higher Education Research Councils. They have recently stipulated the importance of promoting a wider awareness of science as part of the fabric of society and of the importance of understanding science and the new technologies (DTI 2001:61). This in turn is in order to facilitate the involvement of the public in decision-making. The explicit admonition to adopt a “science and society” agenda, entailing consultation, engagement, and dialogue, comes with the caveat that this is not meant to be a passive matter of dissemination: rather, the views of the concerned public should be actively sought, even as engagement with stakeholders has as its aim mutual understanding, support, and participation. Taking steps to secure such participation becomes part of the scientific researcher’s role. The knowledge worker observed that every research report these days comes with a “public understanding of science” box to be ticked.

In the GKPs this seeking out of the public is writ large. Of course the GKPs as a whole have implemented the original aim of the DoH and DTI through strategies of dissemination and communication “to the public” in diverse ways. Invariably, however, they deploy the media (especially via the internet) to send out direct messages. Thus, in addition to its school programme, London IDEAS has set up a Public Information Centre. This is a counterpart to its training support for scientific and health professionals (for parts of which people must register/subscribe). The Information Centre is for direct consultation by patients, and offers information leaflets that are immediately, that is freely, downloadable. So for example, it reproduces the Genetics Reports put out in the Consumers’ Association journal *Health Which?* over the last couple of years. Many of the reports focus on the marketing of tests, including pre-symptomatic tests. The relaying of such information clearly operates in a field in which any concern over disease may be translated into a concern with the possible genetic factors. Much of the Information Centre’s output points to publications and outlets that provide

specialist data, with brief pointers of its own. The Consumer Association Reports include very direct advice about products to avoid, by name, and shows up the spurious claims of certain genetic “life style” tests or over-the-counter home testing kits.

Since the issue here is relaying information, output is demonstrable in the dissemination process itself (quite separate from the question of take-up). At the same time, the ambition of the GKPs goes beyond publications. Of the Cambridge GKP, its director has observed that the categorization of deliverables in such a novel and complex enterprise provides a huge challenge in relation to the very definition of outputs and outcomes.

Certainly the CGKP is conscious of its responsibilities towards the DoH and DTI, and of the need for there to be “deliverables” at the end of the day. It is driven, as we have seen, by the formula—inspired by clinical medicine—that useless knowledge is for all practical purposes no knowledge. If how to make (genetics) knowledge usable is a fundamental premise, that process of conversion or transformation will have to be demonstrated. Yet to date its “deliverables,” a series of reports, reviews, position papers, briefing papers, courses, alongside specific appointments, project plans, and so forth, are deliberately open-ended as to both form and content. “Our view is that it is neither possible, nor advisable, to specify in detail the exact deliverables that will be achieved . . . [for experience has shown] that greatest flexibility and efficiency result when detailed objectives and deliverables are agreed from year to year in response to the priorities and pressures of the time” (Zimmern 2001:4.33). The observation is spelled out in the imagery of a shared social space, and it is an open space. When it comes to evaluating itself, in the Director’s words, the park’s success will depend on achieving a shared vision between the different partners and a degree of trust. It is this vision and trust that means that, alongside the aims of the CGKP, each partner will also have the opportunity to achieve his or her individual objectives.

Now when we are dealing with the relaying and publishing of information, those articles and papers and information sheets do not work quite like bureaucratic indicators for the delivery of services. They *are* the delivery of a service, means not (just) ends. Where indicators are expressive of quality of output, publications are in themselves instruments for purveying information, not to be analyzed for their meaning, but existing as things in the world with evident uses (Riles 2003). So nothing need be displaced here,²² and that is not where these organizations are virtual. That begs a question about where these organizations might be considered virtual. It is not to be answered here: I have not yet come to *any* conclusion about their virtuality, and leave that open as a research question. Recall this is a study not yet completed. It could after all be that they are virtual in a very non-sinister, indeed possibly vitalizing sense, tantamount to no more than the kinds of displacement of other activities that self-descriptions always effect. We might ask, nonetheless, what it means to try to dislocate knowledge of an academic

kind from its disciplinary base. That displacement is pretty overt—so what is of interest here?

Interdisciplinarity

Given, in its own words, that the “complexities of the modern world demand an approach that takes into account the need for pluralism, shared values, collaboration and public involvement,” the Cambridge GKP proposal struck a note of caution. It sought to spell out rather than minimize difficulties: there is nothing straightforward about “bringing together organizations with different aims and objectives and diverse cultures” (Zimmern 2001). We have seen the intention to involve academic, clinical, and industrial communities. There is nothing straightforward about bringing together disciplines either. For in addition to the multi-disciplinarity that is taken for granted in collaborative research enterprises, and that is written into the GKPs’ factorialization of issues, the idea is to produce dialogue across expertises. In the same way as the public, for instance, is to be rendered sensible and receptive, so too disciplines should be receptive to one another.

Beyond multidisciplinary, in the lining up of different pools of expertise, then, it is assumed that there will be interactions of an *interdisciplinary* nature. Here the Cambridge GKP twins its aims as “fostering new research initiatives and collaborations and of working synergistically towards a common goal.” That the dissemination strategy of the park will require many different modalities of communication certainly applies across disciplines. Nothing straightforward here: it is expected that communication procedures and outcomes will be of different kinds.

This anticipated diversity may or may not lead to difficulties. Allowing individual parties to feel each has gained from an interaction is one solution. How to pinpoint the value of the interaction might be another. Yet here we would be moving from implicit (and in this case also instrumental) features of interactions to the requirement that they be explicit and, more than that, expressive. Just such a move is surely behind the brief comment of the Editor in Chief of the U.S. journal *Science*, David Kennedy: “It is a terribly difficult issue,” he said (quoted by Mansilla and Gardner 2003:1.) What he is referring to turns out to be nothing other than the virtualism we have already encountered with assessment procedures.²³ There seems widespread acknowledgment that what makes interdisciplinary work difficult is knowing how to recognize that it has happened, and beyond that, knowing to what extent it has been productive, in short, how to pinpoint the value of the interaction. This is what the knowledge worker said. In other words, the same concerns about measurement that are raised in relation to the success of the GKPs as a project affects the assessment of one its tools, interdisciplinarity.

In an online and ongoing discussion about interdisciplinarity, Veronica Mansilla and Howard Gardner address “the lack of available criteria to assess interdisci-

plinary work on its own terms.”²⁴ There is a general agreement that criteria for judgment do not exist, or at least cannot be agreed upon. They report on an empirical study of experts’ view of interdisciplinary research (the Harvard Interdisciplinary Studies project collected views from researchers at the MIT Media Lab, Santa Fe Institute, Center for Bioethics at Pennsylvania, Research in Experimental Design at Xerox PARC, and others). They found that researchers rely on indirect indicators such as publications or numbers of patents. “Measures that directly address epistemic dimensions of interdisciplinary work (e.g. explanatory power, aesthetic appeal, comprehensiveness) were rarer and less well articulated” (Mansilla and Gardner 2003:1-2).²⁵

Now it may well be that this sense of difficulty applies across a science versus social science/arts divide and is much less a feature of intra-science collaborations. Certainly internal collaborations, as the Network Manager found, carry on to instrumental effect without having to be articulated as such. Hence perhaps the novelty of his own position. In arts–science collaborations, on the other hand, an expressive element is invariably built in: they constantly point to themselves. There is also a further substantive reason. When different sciences contribute expertise to one another the accepted model is that they commonly do so through focus on a problem; perhaps they are more like design engineers in this²⁶—the question is to solve the problem through whatever means. (So interdisciplinary work often has an “applied” status.) But when it is a case of interaction involving social scientists or people from the arts, the model is often closer to that of the public understanding of science. The question is phrased in terms of one having an “impact” on the other. Auditing impact is a dimension of assessment that reinforces the expressive aspect of interactions. It is not just that there are results, but one result should be the interactional/interdisciplinary engagement as such.

Sara Selwood (2002) reviews the way in which the UK Department of Culture, Media and Sport, under whose aegis arts programmes are promoted, has tried to respond to the politics of accountability favored by the present New Labour government. One of the grounds on which funding is sought to support the arts is that of their contribution to public well being, the fact that they may help contribute (say) to urban regeneration, neighborhood renewal, and the like. If so, justification for further funding must show the effectiveness of these connections. What impact do cultural programmes have? How can evidence of their impact be captured in the toolkits and frameworks of specific projects? Under very different circumstances, she comes to a conclusion somewhat similar to Mansilla and Gardner’s. Attempts at qualitative assessment of the success of individual programmes have tended to focus on the directly observable, in this case surveying participants (for the satisfaction they register) rather than institutions, and addressing outcomes (what happened) rather than outputs. She suggests that such so-called “fact-finding” ventures have often been spurious exercises that have not served the Department’s intentions well. But while she puts this into the con-

text of the evidence-based ideologies of a particular form of government, and a specific government department in the UK, it is clear that the tenor could apply more widely. In effect she is saying—is “culture” (as in cultural programmes) something that can have an “impact” (on people’s lives)?

Asking if culture can have an impact is like asking if interdisciplinarity can have epistemic effect. Has some difference been achieved? I throw the question about epistemic effect open, and offer only a small but suggestive example myself.

A recent study carried out by Diana Rhoten (2003),²⁷ focused on the phenomenon of research centers in the U.S., which often coordinate both research and non-research interests. (Sitting alongside university departments, such centers have everywhere taken hold as well established features of the academic landscape.) Her study was sparked off by a comment from Sheila Jasanoff who in 1999 expressed some skepticism about looking at the strategies by which scientists collaborate—science’s specialness, she had argued, derives from the objects of its quest. Rhoten, by contrast, wished to place emphasis on the process as well as the product.

All the centers were interdisciplinary by design, focused in the sciences, with the life sciences prominent and social science/arts-humanities input low or non-existent. Interactions were studied through network analysis. The study is largely based on unearthing the sociology—but she does mention the intellectual or epistemological commitment of staff, especially among younger staff and graduate students (Rhoten 2003:6-7). One finding is that none of the centers had a unified or unifying theme, problem, or product, a reason she hazards for there being more information-sharing rather than knowledge-creating activities. Revealingly, when I first read this, I gave these two concepts negative and positive values, where she is reporting neutrally on outcomes. Even more revealingly, I put the values round the “wrong way” . . . if anything, when a positive emphasis emerges in her account, the positive value falls on the former (information-sharing) not the latter (knowledge-creating) as I had assumed it!

In the current academic structure, the value of research and researcher alike is usually measured by the production of new knowledge as published in learned journals. While such tangible forms of knowledge emerge from individuals and small communities of practice, networks of practice do not generally take action nor produce new knowledge either immediately or directly. However . . . the intangible information sharing that occurs through such networks is perhaps the most central and creative aspect of the interdisciplinary research collectivity. It is the most common output of the interdisciplinary research process, at the same time that it is one of the most under-appreciated and unrewarded activities within the current academy. [Rhoten 2003:9]²⁸

This does not mean that the centers make best use of them. Her network analysis suggests that how people are hired or recruited to such centers and the career opportunities available are the principal obstacles to their development. The result is “the implementation of research networks looking for tangible points of intersection rather than in the designation of research problems finding networked solutions,” such that centers remain loosely defined sets of connections between individuals and institutions with no investment in the enduring costs of collaboration. Investment in the CUIRN or the GKPs, with their albeit rather short-term funding packages, possibly offers a model here. An interesting side finding of her study is that when groups get very close-knit, maintaining close social relations takes over as a goal, and participants tend to seek concurrence between their ideas rather than exploring differences (2003:45).

Now, when I got the values the wrong way round, I had fallen into the trap laid by the rhetoric of assessment and other objectifications. Information-sharing is invisible precisely because it is part of the regular, ordinary, quotidian, and taken-for-granted nexus of interactions among collaborators, instrumental to their purposes, not (yet) expressive of them. In Rhoten’s phrasing as intangible rather than tangible output, they (so far) escape measurement. The interest is that information-sharing could perhaps qualify as one of the epistemic effects for which Mansilla and Gardner were looking.

Context

Social anthropologists by convention put things “into context” (and for a thoroughly anthropological and current critique of that convention, see Dilley 1999). Here I return to the problem with which I opened. The problem of context for myself is of course just how to create a context for ethnographic study. Recall that my target is the CGKP. Rather than set out a programmatic statement of what I ought to be doing, however, I take the liberty of observing what I have been doing. It will perhaps yield another kind of answer to the question about whether interdisciplinarity can have epistemic effects.

Of course in some senses the CGKP is obvious as an object of study. At the very least, proposal, website, and work plans together conceive the CGKP as a coherent, and in that sense, single entity. Though by definition it embraces multiple possibilities under its umbrella (one of the Director’s images), it has theme, problem, and products. It is a real-life organization of many different kinds of knowledge practitioners. It has a palpable social presence. Markers of “the social” here include (1) proximity—the “Cambridge phenomenon” of geographical intensity and concentration (like a village);²⁹ (2) cultural identity—a common project (like a school or HE institution); (3) its configuration as having a task to do and targets to meet—specific or even niche products (like a company/business); (4) its being bound by material limits—a time-limited social entity/space limited/resource limited (like a government in office), and so forth. Finally the

CGKP is larger than the sum of its parts. It has an agency that can be mobilized and take action, as at once a community of practices and a network of practices. The further question prompted by Rhoten is whether it can produce new knowledge.

If this is a question about the epistemic effects of collaboration, then it is also a social question. Rhoten observed—it was seemingly with disappointment—that people in the interdisciplinary research centers she studied more frequently took a multi- than an interdisciplinary view. Rather than insisting on the “interaction” or “integration” of different theories or methods, they talked about the “inclusion” of this or that perspective (Rhoten 2003:43). But whereas inclusion can be observed, I am not so sure about integration. Where and in what would such integration appear? In the artifacts, objects, analysis, theory, report, products that were the outcome of the collaboration? Of course. But how are such artifacts, objects, analysis, theory, report, products to give this evidence? They won’t bear testimony to collaboration unless they are *described* that way.

In other words, I suggest, the evidence for such integration could only lie in the testimony of those involved, namely to the effect that they had learned to do or think things that they had not done before, that is, that their working practices registered an alteration of some kind as a consequence of interaction with others. *And that they were prepared to describe them that way.* I do not see how we can bypass the fact that we would need to be told.³⁰ Otherwise the evidence can only be of “inclusion” (with the rider that a discipline inclusive in orientation is going to have no problem including anything). As soon as one introduces the issue of description, however, one has produced an artifact that stands as easily in a representational as an instrumental relationship to what is being described. Like audit, many kinds of description require people to be ethnographers of a kind. And this is where we began (after Riles), with description as a mode of objectification, an expressive act. For the anthropologist it seemingly can be little else.

Ethnographers describe; that is their job. But not all description is ethnographic. Ethnography as a genre depends on the further specification of the context in which the description is generated. (The “context” is frequently a social entity such as a “people” [hence the *ethnos*] or residents in a locale, but it could be a set of knowledge practices such as a world religion or a mythic sequence.) Whether its content is bounded or dispersed, a context sets the epistemological boundaries. An ethnographic object thus requires a double objectification: a description contained within a description of its conditions of possibility, or at the least the implications contained in the circumference of and manner of the describing. That is where the “discipline” in such work lies.

There is no agreement among anthropologists, however, as to the temporal point (Greenhouse 1996) at which you lay out a context. Do you lay out a context at the outset of the investigation, or will one emerge at the end?³¹ When I look at

how I have embarked on this work, an unkind epithet would be prevarication. I have seemingly deferred, put off, “the study.” Instead I have engaged in some other activities, to highly instrumental ends, it may be noted, but not apparently “about” the CGKP at all. I did not in fact realize that I would go to such exhausting lengths to put off the moment of objectification.

Initially unclear as to what could be fashioned as an ethnographic object, I chose the route of indirection. I knew that I did not want to approach the CGKP directly. That was partly because I did not want to reproduce the organization of knowledge that was at the basis of its own sense of organization.³² (That is, “organize” my knowledge in accord with the visible structures.) But if I was to be interested in the epistemic effects of the kinds of collaborations and synergies that the proposal for the park envisaged, then I also needed some training. Again, not in genetic science, for that would reproduce the learning processes that the park was setting out to inculcate. I didn’t think this through quite as I am putting it now, but did realize enough to know that I had to proceed sideways. I put it to myself that it was necessary to create a context—less a context that would envelop or encompass the park, than a point of view, a subject position, *from which* to sally forth.

At this juncture, the Network Manager comes back into view—because of how he had surprised me. Musing on his role and how he was to achieve the kinds of facilitations people were expecting, he said that he had realized that it was no good being too direct or being direct all the time. What he had to do was try to produce situations where collaborations would emerge as by-products; they would spring, indirectly, out of some other activity. One could thus create a purpose for people coming together—such as a discussion evening—from which they could derive benefit, even though his own ultimate interest would be in the interactions that might ensue. If I almost fell off the proverbial chair, you must recall that I had lined him up to speak at a seminar. He had rumbled my ruse! For the seminar was designed precisely as that, as the anthropologist’s indirection.

My context was to have both a conceptual and a social aspect. Conceptually, my motive was to foster an interest in interdisciplinarity *in myself*, for I knew practically nothing about it and needed training. Socially, I needed to involve people in interaction, and the idea of a seminar was a rather obvious strategy for an academic to light upon. So the result was—is—a set of four occasions, the knowledge worker being invited to the first. Under the rubric “social property and new social forms” it has become known as the Social Property Seminar. Let me sketch it briefly.

Each occasion, spread over two days, consists of a colloquium and workshop. Some of the core concerns of the CGKP provide substantive focus for the four Colloquia; each Colloquium is followed by an Interdisciplinary Design Workshop. The notes for the Seminar plainly stated (and see Annex) that the sub-

text was an experiment in collaboration, while the main text was the topic of different models of ownership across disciplines. Ownership was chosen as the principal focus of the seminar—as a topic that belonged to no one discipline, but also as one that cut across any easy ideas about collaboration being imagined as some effortless flow of knowledge. So the hard word, property, was used in the title, prefaced by the epithet social. The “social” here was both to remind people that we were dealing with interest and cleavages and social nexuses, and to distinguish this from earlier research in the Cambridge Department of Social Anthropology on cultural property.³³

I had looked on the Seminar as a learning exercise for myself. What I had not realized in embarking on the exercise was quite what it would mean to turn its instrumental activity into a “context” for the CGKP study. I was imitating, if you like, the way in which the park itself, a largely instrumental organization of people with the knowledge to help promote public health and public awareness, is made expressive and representational. The knowledge park is rendered full of signification, by politics for example, including the politics of accountability and the politics of bioethics, and of course (on a small scale) by being turned into an ethnographic object.

Let me at this point admit that among the elements of this presentation that I thought would put you off—make you *not* interested in what I was saying—is its apparent reflexivity. I seem to be talking about observing myself, observing how anthropology creates its objects, and not getting on with the job! How can I persuade you it is probably a rather crucial part of the job? That it helps fashion the questions?

Running through all of what I have said has been the constant reiteration of how this or that phenomenon repeats or copies another phenomenon (usually on a larger or smaller scale). There are many ways one could analyze this apparent replication. Reflexivity on the part of the observer is indeed one; the fractal behavior of culture is another.³⁴ But in this context, which has been among other things about learning how to do a particular kind of knowledge, I would put it that there is something else to emphasize, although it is altogether too ordinary or humdrum, of course, for usual note. This is the process of imitation. It is not unfamiliar. For instance, when people talk of a common language emerging between disciplines, what is going on may well be less a moment of exchange than a moment of borrowing by imitation. This suggests a question. Is imitation, an activity as modest and as likely to be overlooked as information-sharing, another epistemic effect of collaboration?

Conclusion

The tangible outputs of the CGKP have to date been quite various. They include reports specially prepared “by the Cambridge Genetic Knowledge Park” (for example, the document *A Governance Framework for Medical Research*

Databases); discussion papers under the title of the CGKP but with authors separately named (such as the 2004 *Critique of the Human Tissue Bill*); the relaying of news items on the web from its associated body, the Public Health Genetics Unit, including news about DNA testing or stem cell regulation; papers commissioned by outside bodies, as the DoH commissioned a report on *Intellectual Property Rights and Genetics*, completed in 2003, that engaged collaboration with (named) members of the Cambridge University Law Faculty; reports on conferences and workshops organized by the CGKP, such as the 2004 *Human Tissue Workshop*; press releases under the name of the CGKP Knowledge Officer, and so forth. It also puts forward a list of scientific and other publications authored or co-authored by CGKP team members since funding began, under the names of the individual researchers.

One conclusion to all this has been staring me in the face. I chose the topic of the interdisciplinary seminar I was running as “ownership” in order to drop into the debate about the flow of knowledge a concept that divides as well as unites, that separates the products of interactions from the process of interaction, among other things. I had not appreciated at the time how plain lucky this was. For very much like the notion of “the law” with which Riles began, “ownership” is a social form that works in the world to instrumental effect. It sorts out relations between people in a particular way. So what is also interesting is the silent role it plays in the co-production of knowledge, as it is silent in much bioethics debate (apart from issues that directly confront the ownership of genetic information).³⁵ But suppose indeed it were distributed across the landscape of knowledge-making, unremarked, quietly doing its work, what then might my description look like?

Let us go back to the issue that Rhoten found less interesting than information-sharing: viz. knowledge-creation. Those research papers that appear under the CGKP list of publications all belong to the field of knowledge-creation because they are authored and thus owned. The individual is identified at that point, as may be the Park as a collectivity. Information-sharing also demands ownership of a kind, but a transient ownership, the person who possesses access to a source of information that he or she is willing to pass on.³⁶ As opposed to copyright or other claims to permanent identification as author, ownership here will be palpable enough (tantamount indeed to “possession”) but have momentary duration. It is appropriate that such transient ownership should be embedded in a structure that is more enduring, namely the relevant relationship or network. In any event, collaboration is presented in a very straightforward way, whether it involves the park as a whole, or its active parts such as a conference here, a working party there, or its individual members, all simply noted as so many authorial names. In fact, this is a point at which collaboration need have very little expressive effect.

These artifacts clearly signify multidisciplinary: you can deduce that from the names of authors who are assigned to different disciplines. And I was wrong to say they tell us in themselves nothing about interdisciplinarity. In one small

respect they do, for they tell you that the parties so named were able to co-author the publication, to “write” it together.³⁷

In dealing with the Life Sciences in this way, I have tried to reproduce some of the humdrum nature of the practices of knowledge I (have trained myself to) find interesting. On the one hand, this is to cut some of the issues down to size—we have met them already, in other places. This is why I began elsewhere, with the Network Manager, who was to contribute to my Seminar but at that point was wondering what best to say about his work on which he had been asked to speak. Our conversation turned out in fact to be a rehearsal. As I noted, he spoke about exactly these issues in his much appreciated presentation to the first colloquium. In other words, the instrumental conversation we had between us then became a description of what he did, an expressive object! (In this account I have objectified it again as a context for my discussion of the GKPs.) On the other hand, I have tried to reproduce some of the humdrum nature of the practices of knowledge to aggrandize them, to put them into a larger context as a fascinating instantiation of the relationship between what are perceived as “new” forms of knowledge and appropriate social vehicles for their promulgation.

So here, to end, is another effect, though I don’t know whether to characterize it as epistemic. Has this happened to you? It has, I realize, been typical of the few collaborative efforts in which I have been engaged involving teamwork.³⁸ It is this. The first attempts at formulating a position in company, where everything seems in the future, a working paper perhaps, roughly sketched out, suddenly appears to have been a rehearsal for what is to come, suddenly becomes in retrospect *the* output or product. From looking forward one finds one has swiveled round and is looking back. That temporal moment, when what could have been a prelude to the future suddenly appears as one’s past contribution, work that has already happened, might be another kind of “turn” from the instrumental to the expressive embedded in the very practices of working with other people. Is it that the presence of other people speeds up the process of objectification?

ANNEX

Rubrics for the 2004 Cambridge Social Property Seminar

Information made available to participants (adapted)

The Seminar is aimed to stimulate debate about interdisciplinarity. Its inspiration lies in recent moves both outside and within Cambridge to value collaboration as a special source of creativity, to forge alliances between cognate disciplines, to experiment across the boundaries of academic disciplines and the performing arts. If the desire for dialogue between the Arts and Sciences is an ancient one, what is interesting about this moment in time is the *institutional* drive to embed such aspirations in new social forms. Three such enterprises in Cambridge provide the immediate impetus. Each has its own character.

The new Research Centre in Arts, Social Sciences and Humanities (CRASSH) acts as a sponsor and facilitator of projects that open up new fields, enhancing emergent constellations of interests wherever they might be, a galactic or network model of deliberately dispersed activity. The Cambridge Genetics Knowledge Park (CGKP), by contrast, draws numerous clinical, commercial, and academic concerns—scientific, sociological, legal, philosophical—in toward its own central concern; this is to contribute to policy formulations in an arena that is very specific to our times, highly complex in its making, and of intense public concern, namely genetic knowledge. The third is the interdisciplinary network called Crucible, which among other things offers consultancies in interdisciplinary design; along with new collaborative experiments between creative artists and scientists supported by AHRB (Arts and Humanities Research Council)/ACE (Arts Council), it affords design models for getting from debate to deliverables.

Social forms (organizations, networks, alliances, and such) invariably evolve according to their own initial conditions and the environments that nurture them; they develop their own properties. Among them may well be a sense of proprietorship. The theme of the Seminar as whole is “Social Property.” Thus the four Colloquia focus on *issues of ownership*. This ranges from practices of belonging, possession, and exclusion, to provisional forms of ownership exercised in transactions and primordial claims to the products of creativity. As a starting point the Colloquia will deal with different models of ownership across diverse disciplines and contexts; alert to changing conventions, their endpoint could well be some pointers to the role ownership practices play in the formation of new and old (unpredictable or highly predictable) social alignments. The four IDW attached to the Colloquia will take each of the specific facets of ownership and attempt to work out its implications for the design project in hand. One intention of the Seminar is to create an intellectual field (of discussion) and a set (or typology) of concrete studies against which to assess the *kinds* of synergies sparked off by the CGKP.

The topics: I. **Ethics, evaluation, and observation:** Ownership: identification with a mission? How does one “own” an enterprise? By acting in relation to its goals (ethics), giving it value (evaluation), and objectifying it through a narrative (observation)? What is the shared narrative of an enterprise such as the CGKP (Cambridge Genetics Knowledge Park), the enthusiasm it generates (how it “owns” people)? What could be the role of evaluators and observers (“ethnography”)?

II. **Incommensurability and scale, comparison:** An owner: somebody with something to transact? Transacting with partners from across different technologies/commercial interests. Establishing the bases for comparisons of worth. Creating transactable goods. How far can one take the idea of trading zones? The role of commerce in evaluation

III. Owners, authors, and inventors: Owners as originators. Creativity and letting go of objects (creativity externalized). Evoking justification of origins. Copyright and patents: models of creativity. Interests in scientific authorship and recognition of collaboration and collective endeavors. Multiple employers/multiple agencies.

IV. Output, accountability, and “society” as the collaborative partner. Can one speak of owners as curators or custodians (of public values)? Collaboration turned into social investment: what is due to “society”? Academic work, intellectual property, and demands from the outside. The CGKP and its publics. Responsibility and the creative role of audit. The specific need for output: recognizable deliverables.

Notes

*This essay is based on a written talk presented at the Cornell University Social Sciences Seminar on April 6, 2004. I am very grateful to Annelise Riles and to the Cornell Social Science Seminar for inviting me to contribute to their discussions. A version was also given to a colloquium on Life Technologies organized by the Center for the Study of Religion and the Department of Anthropology at Princeton University.

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The Cambridge 2004 Social Property Seminar is a joint venture with my colleague James Leach. Inspiration for the topic of “ownership” came from Bronac Ferran (Director of Interdisciplinary Arts, Arts Council England). Ron Zimmern (Director of the University’s Institute of Public Health, Founder-Director of the CGKP) provided an impetus from his interest in the combinations of funding, employment, secondment that make up each research node. The models for the IDW come from experimental associations between creative artists and scientists supported by an unusual collaboration between the UK Arts and Humanities

Research Board and the Arts Council England, and from industrial design. Here the genius belongs to Alan Blackwell, from the Cambridge Computer Laboratory, co-founder of Crucible. Finally, the work of Helga Nowotny (Swiss Federal Institute of Technology, Zurich) and her colleagues have laid out some of the conditions of modern knowledge production that is the starting point of the exercise.

1. Duncan Simpson, 15 March 2004. I am very grateful indeed for his permission to quote so freely from our conversation. Much of what he said here was also the substance of a paper (Creating—and Owning—Networks) he gave to Colloquium I of the Cambridge Social Property Seminar in the same month. (“Knowledge worker” after Newell et al. 2002; “Everybody is a knowledge worker,” Wheatley 2002:6.)
2. The following comes from the 2003 proposal to establish the Network (my considerable thanks to Cait MacPhee).
3. She observes that the expressive genre makes objects, such as “social groups” in anthropology, by producing significations about them.
4. Was he to count up all the conversations he had in a day and then mark which had led somewhere?
5. Riles’s monograph (2000) was very prescient here. Networking has of course existed for as long as conversations between scholars have existed. Again, what is notable here is the new articulation of networking as a dedicated activity.
6. The seminar brought together people from CUIRN and the CGKP for the first time.
7. From a conversation with Monica Konrad, for which many thanks, 16 March 2004.
8. Newcastle (North East), the North West (Manchester, Lancaster), Oxford, Cambridge, London, and Cardiff (Wales).
9. Its strap line is “Understanding Genetics for Life,” with an hourglass that could also be a double helix.
10. For the Genetics Knowledge Parks, £15m over five years.
11. The conclusion of the NoWGEN briefing paper: “The overall objective will be to improve healthcare through better public understanding of genetics science and to provide opportunities for increasing UK national competitiveness in this fast moving area.”
12. Bauer and Gaskell (2002:1) start their collection, aimed for a very different audience, in interestingly overlapping terms: “Biotechnology is one of the

fastest growing areas of scientific, technical and industrial innovation of recent times, and it is also one of the most prominent in public discussion. Following the developments of recombinant DNA techniques in the early 1970s, modern biotechnology has burgeoned in diverse areas”—and their list encompasses pharmaceuticals, diagnostics and testing, cloning and xenotransplantation, genetically modified food and environmental remediation. However, their focus is not bioethics as such but rather the role that national and international opinion has come to play in research application. The “widening range and growing intensity of public debates” has meant that public opinion is no longer “after the fact,” but part of the whole process of research development. The book has a chapter on the institutionalization of bioethics.

13. The reference here is strictly to “modern” as opposed to “traditional” biotechnology that was concerned with interventions at the level of cell tissue or organism.
14. As in the prototypical ward round (Latimer In press; presentation to Colloquium I of the Social Property Seminar).
15. Taken (in each case) from the Proposal to the Department of Health and DTI, initiated by the Public Health Genetics Unit, with thanks to Ron Zimmern (2001).
16. This is separate from the aim to “stimulate the transition from research into clinical and commercial benefits through programmes and activities designed to promote intensive dissemination and sharing of genetics knowledge,” which is oriented to clinical practice. From the CGKP website (Genetics Knowledge for the Benefit of Society, May 2003, <http://www.cgkp.org.uk/about.html>).
17. As I have argued elsewhere (Strathern 2004, Working Paper 4), going across disciplines is bracketed with the idea of taking society into account—especially when the disciplines come from the social sciences. Appointments have been made in Law, History & Philosophy of Science (Public Health Ethics), Social Science (Sociology), as well as Primary Care Genetics.
18. Though needless to say there is a KM (Knowledge Management) version of this for the twenty-first century. Wheatley (2002:7), talking about the hard time people have in sharing knowledge, says that it is important to remember that it is not technology that connects, but relationships: “We share knowledge because we are in a relationship, not because we have a broader bandwidth.” This normative reading of the “value” of relationships is part of the phenomenon.

19. I have heard only landscaped or bucolic interpretations, perhaps implying browsing or grazing (through information), not car parks or parks for supermarket trolleys.
20. Embedded within the huge complex that is London University, its three partners—University College London, Imperial College, and St. George’s Hospital Medical School—embrace hospitals, centers, and institutes. Note that “collaboration” across knowledge parks is signaled in the dissemination of information—the IDEAS website entry on a guide to online genetic resources points to the Cambridge Public Health Genetics Unit, a core element of the CGKP, in its listing.
21. In Riles’s (2003) original formulation, instrumental and expressive effects can co-exist as distinct perspectives, in sequence or in oscillation, or as one “containing” the other.
22. However there is a quite different argument to be had in relation to the displacement of medical expertise, exercised by qualified persons with whom appointments have to be made, by self-help medical advice, e.g. over the internet. (My thanks here to Andrea Stockl and her research on self-diagnosis; she contributed to Colloquium I of the Social Property Seminar.) Another contrast would be with the role of publications in the reading networks of, say, literary societies. (The observation is prompted by Adam Reed’s work and his contribution to the same Colloquium.)
23. In Working Paper 4 (Strathern 2004:78), which lays out some of the ground also covered here, I said I had not come across measures of interdisciplinary success. (Indeed this led me to make an argument about the role that interdisciplinarity plays as itself an indicator of *disciplinary* success [at communicating].) I have now come across attempts at assessment, although the number of items in Klein’s (2003) beginning bibliography is very small. This is all in contrast to the well established practice of (say) measuring “intellectual capital” (Bassi and Buren 2002).
24. This was a contribution to an online debate stimulated by a group headed by Helga Nowotny, Dan Sperber, and others. The question of interdisciplinary—or transdisciplinary (a term I do not engage with here)—research evaluation and assessment, once aired, was clearly of considerable interest. Klein (2003) produced a short bibliography of texts in this area, citing Rhoten’s text among others.
25. Interdisciplinary work is defined as purposeful means to a cognitive or practical goal (understanding, solving a problem), with the stipulation that “disciplinary lenses be integrated in mutually informative networks of relationships rather than simply juxtaposed” (Mansilla and Gardner 2003:2). The

aim is to focus on *disciplinary integration*, rather than just the integration of multiple perspectives (as in “multidisciplinarity”).

26. Although those interested in industrial design (Alan Blackwell, personal communication, apropos the IDW at the Social Property seminar) may draw as sharp a line between scientists and technologists as scientists do in turn (for example, speakers at the *EC Modern Biology and Visions of Humanity Encounter*, Genoa, March 2004).
27. I am most grateful for her permission to cite her work and to quote from it.
28. Networks of practice and communities of practice, after the work of Brown and Duguid cited in Rhoten 2003:8.
29. Thanks to David Leitner.
30. Even if only indirectly, from future career choices or career trajectories.
31. Of course, on a small scale every activity will do both; there is no such entity as “a (single) context.”
32. There was also a team of researchers from Warwick University, in “knowledge management” by discipline, who wished to study the CGKP’s organizational practices (cf. Newell et al. 2002).
33. Probably not how anyone else would have read it; PTC is the antecedent project. (PTC: ESRC-funded research project under the title: Property, Transactions and Creations: New Economic Relations in the Pacific.)
34. Not to speak of diffusion and colonization, both considered in relation to the “fashionization” of KM (Knowledge Management) (Swan, Bresnen, and Robertson 2001).
35. In fact, there is a deliberate attempt to divest discussion over human tissue or the repatriation of human remains of the language of property.
36. The question of whether a thing has to be named to be owned was raised at Colloquium I of the Social Property Seminar. I note that the issue of information-sharing will be discussed at Colloquium II, and property at Colloquium III, though this is not quite how the rubrics were written.
37. Though clearly the authors whose names appear on scientific articles will be of very different status, and only one person may have actually penned the piece (Biagioli and Galison 2003).
38. Notably: The Representation of Kinship in the Context of the New Reproductive Technologies (1990–1991); PTC (Property, Transactions and Creations) (1999–2001).

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