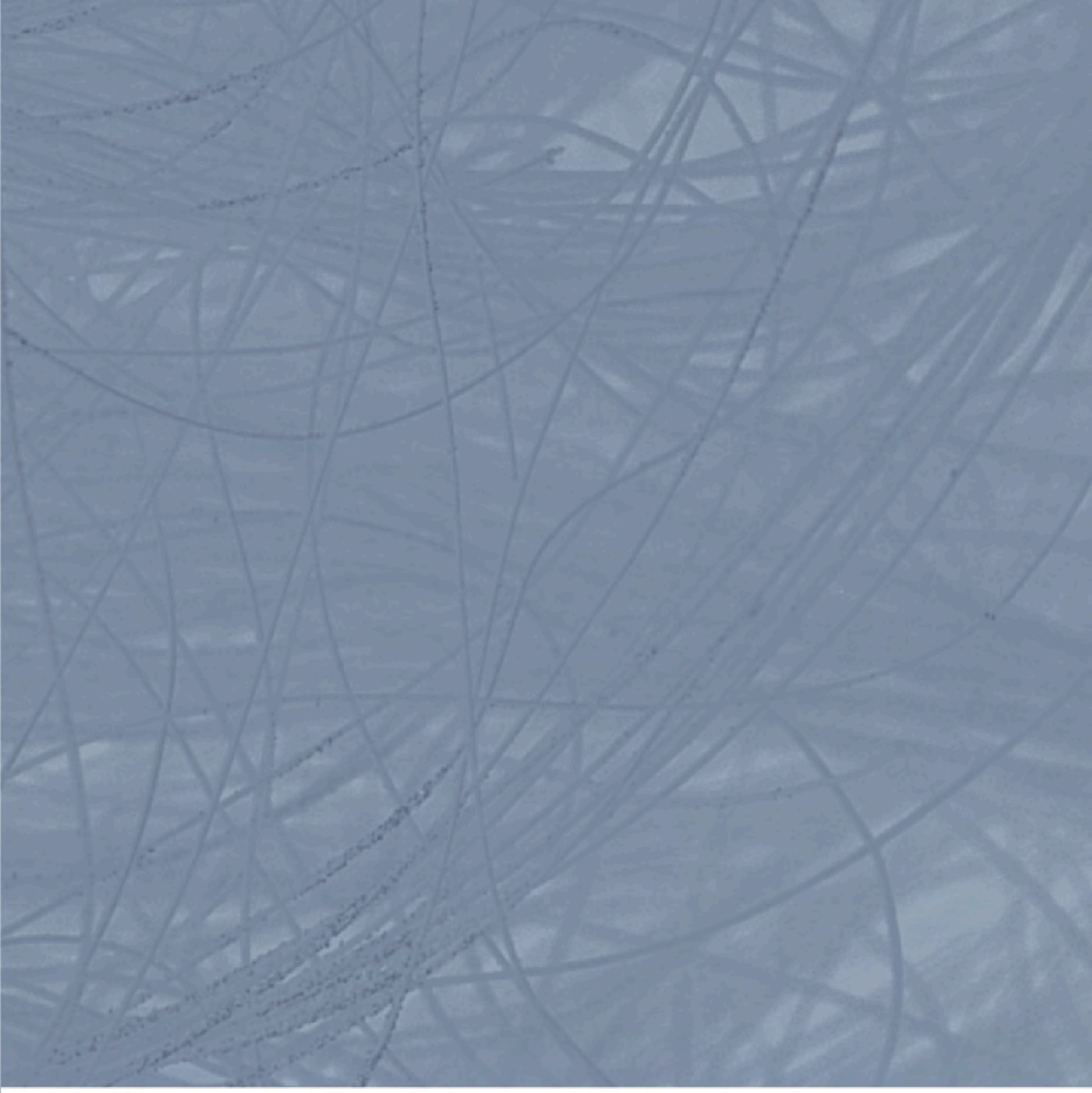

SCIENCETECHNOLOGYSOCIETY

WORKING PAPER **NO. 4**

Researching Partially Existing Objects:

What is an Electronic Patient Record? Where do you find it? How do you study it?

Casper Bruun Jensen

Researching Partially Existing Objects:

What is an Electronic Patient Record?
Where do you find it? How do you study it?

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Casper Bruun Jensen: *Researching Partially Existing Objects: What is an Electronic Patient Record? Where do you find it? How do you study it?*

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Introduction

Over the last three years I have carried out a quasi-ethnographic study, which, broadly defined, had to do with a set of new health care technologies, referred to as electronic patient records (EPRs). In the Danish context, EPRs have been imagined as crucial future components of the Danish health care system for the last decade, and they currently hold the attention of many different groups of people, such as nurses, physicians, engineers, medical informaticians, people in medical technology assessment, and politicians. I was interested in understanding such issues as 'What are these technologies?' 'Where do they come from?' 'Which goals are they imagined to achieve?' and 'Which problems are they thought to solve?' In a truncated explanation, I studied the *visions* for the EPR, the *development* of these technologies, and their *implementation* (at least to the extent that they reached that level of maturity, while my project was still ongoing).[1] This paper discusses a number of theoretical and methodical implications arising from the study of these technologies.

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[1] As it happened implementation has been delayed in the Aarhus Region and most other places, where EPR development is under way. This is unsurprising from the point of view of science and

I explored the development of electronic patient records primarily in relation to a large and ambitious project in the Aarhus region. The word 'primarily' seems innocent and insignificant enough, but in fact it is the crucial take-off point for the following methodological considerations. The reason is that in practice it turned out to be impossible to stay within the geographical, organizational and political parameters of the Aarhus Region, if one wanted to understand its development project.

Even though my study started with the ambition of simply investigating the project in the Aarhus region, I was quickly led elsewhere: for instance, to the European standardization organization and to sites of regional and national political contestation. The EPR, presumptively made in Aarhus, seemed to be both *there* and *elsewhere*. I was forced to put the idea of studying the EPR in a pre-defined and limited area under increasing reflective scrutiny, as I realized the extent to which this entity was not singular and singularly located. Rather, it seemed to be distributed, and located in what I came to think of as a fractal landscape. In this landscape, the contours of the EPR was (and is) subject to ongoing negotiation and revision as it got (and gets) into contact with differently located and interested actors.[2] Below, I explore this interesting feature by means of Bruno Latour's telling notion, the *partially existing object* (Latour 1999). I also believe it is not at all specific to the EPR, but rather is a part of most, or all, technological development projects.

Studying What? – When Words Fail

As noted above, an abbreviated description of my research concerns is to say that I studied the visions, development, and implementation of the Danish EPR. What then did I study, exactly?

Roundabout expositions and vague delineations like the one just attempted was surprisingly often interpreted, by academic interlocutors (peers as well as those

technology studies, but seems 'scandalous' to politicians and the press. In a chapter of my dissertation, 'Technologic', I analyze some of the mechanisms underlying the recurrent gap between expectations and visions for new technologies and actual practices around implementation and use.

[2] I discuss this idea in a chapter of my dissertation entitled 'Infrastructural Fractals'.

higher in the hierarchies) and other conversation partners as suggesting that I was involved in the *practical development* of a specific technology. Alternatively I was understood as suggesting that I studied the *political processes* relating to current events; consequently, I was offered evaluative comments about this situation, or asked to give my own judgment.[3] As will become clear in what follows both understandings are rather far from the mark, however, offering a lucid exposition of just what and where that mark is has proven insistently elusive throughout my project.

In intellectual and especially academic terms there is something evidently troubling in being unable to straightforwardly state what one is analysing. Here I want to turn this annoying problem into a topic worth exploring in its own right, and consider what happened when my explanatory attempts failed to convey to interested people what I spent my time studying.

I want to explore this issue not out of self-indulgence or because of a deep interest in reflexivity. Rather, I want to relate my experienced communicative dissonance to the problematic "being" of the electronic care record. I want to claim that my inability to convey what it means to study the development of the electronic care record in Denmark is related to the seemingly paradoxical ontology of this entity as empirically encountered.

The paradoxical quality stems from the commonplace notion that *qua* technology an EPR must be *one homogeneous thing*. In practice, however, it seems to be rather more like a *multiplicity* of things, which forms a whole only sometimes, or for some purposes.[4] When I call the paradox *seeming* this is because the suspension of modern categories advocated in non-humanist STS (Latour 1999, Mol 2002) dissolves the paradox: it is one only from within a modern ontology according to which the world *must* be filled with singular, well-defined, stable objects. Dissolution of the paradox, however, does not mean the disappearance of all conceptual or analytical problems: rather the field of problems and solutions change.

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[3] Giving the topic this may seem surprising, but in recent years the development of electronic care records has figured as a controversial public issue in Danish media.

[4] It is difficult to describe the EPR in "regular" language given its equivocal status between thing and non-thing. In this paper I use scare quotes liberally to point to the fact.

The problem will no longer be to define proper issues, which must be taken into account, and use these to adequately represent the situation at hand. Rather the issue will be to empirically track down how situations *are* variously delimited and with which consequences. Since no adequate model is available, one has no access to an external standpoint from which to offer an evaluation: accordingly one cannot denounce actors for failing to see what one, as analyst, clearly sees. Rather, one participates with other actors in experiments to define and re-define what the relevant contours of the problem are and where its limits might be placed.

The first point of this paper will be to clarify *why* it is so hard to state succinctly what one is studying when one is studying developing technologies such as the EPR, and *what* one is, actually, studying. This will make available for exploration a number of possibilities, which come into view when one redefines the EPR, as I will continue to do, from what appears to be a technological thing, to a set of more or less fluid practices.

2. What is an EPR? The Paradoxical Ontology of a Developing Artefact

> One needs to be nominalistic, no doubt… (Michel Foucault 1990: 93)
>
> The answer to the question what is X (e.g. what is truth?, what is knowledge?, what is value?) is, that it is, in the first instance, a word, with a history of variable and still changing usage (Barbara Herrnstein Smith, personal communication)

Let me ask first in a mundane way what is an EPR? It is easy enough to find suggestions. For instance, the Danish National Board of Health, in their *National Strategy for IT in the Health Care Sector 2000-2*, offers the following:

> An EPR is a clinical information system, which directly supports process-oriented examination, treatment, and care of the individual patient…"Process-oriented" means a patient record, which directly supports coherence and quality in the clinical treatment.

In this definition the EPR is centrally about supporting existing clinical practices, but enabling a more coherent technological framework for doing so. In other documents this problem is specified as *conceptual* and terminological

clarification and standardisation is just what the National Board of Health aims to provide.

However, the ease of finding suggestions points also to the difficulty of pinpointing *the correct* answer to the question of what the EPR *really* is, since they inevitably vary. The EPR development project in the Aarhus Region, for instance, adopts the definition from the National Board of Health, but stresses that several additional operational demands are crucial. For example, the EPR should be integrated with other hospital information systems and the record should be available as an efficient work tool for all kinds of health care workers. The Aarhus development group therefore stresses that: "we are talking about long-term development projects, with an emphasis on organizational change and learning" (http://epj.aaa.dk).

Thus, even though their description starts with the citation from the National Board of Health, their end-point is quite different. What matters to the development group in Aarhus is not primarily conceptual standardisation but the organizational transformation and development said to be enabled by it. This definition is not stable or authoritative either; not even within the project in the Aarhus region.

For example, nurses, secretaries and doctors, provide quite different viewpoints. In the summer of 2001, three working groups, each consisting exclusively of members of these three professions, formulated their responses to questions such as "How they would work on 01/04-04?[5] How it would be possible to plan a good implementation process to make all groups of personnel feel safe about the new system? How to de-mystify the EPR? and How to prepare the personnel in IT-terms?" (Secretaries' report: 3-4, Nurses' report: 4).

In their answer, secretaries focused primarily on the need for education and also for interdisciplinary interaction, since they saw these dimensions as crucial for the successful organizational transformation, said to be enabled by the new technologies. They also made critical notice of the very set-up of these working

[5] It may be noted that on 01/04-04 these people worked exactly as they had done up to the point.

groups as 'mono-disciplinary', since this organization did not facilitate interchange between secretaries, nurses and doctors, but rather kept them apart. The nurses' group concurred and said that: "the lack of contact between the groups has necessitated an array of assumptions concerning the routines and work flows of other professional groups" (5). Even as they said so, however, they excluded secretaries from their concerns, and concentrated on the hoped-for changing relationships between doctor and nurses. Their attention to this issue led them to advocate that work-flow analyses were carried out at each ward, so that fruitful re-distributions of tasks enabled by the new system could be considered. They also discussed the implications of various arrangements of hardware, such as "EPR work spaces are located in an office adjacent to the ward", "a portable computer is placed on a moving table, transported to the patient", or "doctors and nurses each have a pocket PC" (7) with this issue in mind.

Meanwhile doctors felt that they needed protection against unwanted new tasks: "Will the implementation of the EPR entail task slippage, so that the group of doctors will be expected to take care of more routine tasks, such as writing in the record, booking of examinations etc '*since it is so easy*'?" (Doctors' report: 4, original emphasis). With this worry in mind, they proposed that: "it is important that specific groups retain the possibility of emphasising/justifying the specific interests and problems in relation to its own tasks" (5). They then chose to consider the "EPR viewed with visionary doctors' eyes" (3). In this visionary modus "everything concerning security and backup is, of course, solved, such that the system is up 99,9% of the time, and the remaining 0,1% is taken care of", "the table top of the moving table for the ward round, by the way, is a computer with finger touch screen", capable of showing x-rays and "when you have dictated a note to the EPR (secretary or 'voice recognition') it immediately appears as a draft on the screen" (9). Thus, we move gradually from a high profile concern with the EPR as facilitator of new working relations between the involved parties, to an emphasis on the EPR as supporting existing ones.

Since understandings of the EPR are proliferating, sometimes opposed, at other times resonating and overlapping, but rarely identical, one may feel that it is

necessary to decide whose definition to believe in or whose agenda one prefers. One is *obliged* to make such evaluations at the beginning of an inquiry, however, only to the extent that it is viewed as necessary to *start out* with a more or less singular and homogeneous definition of the subject matter. While this is a classical move in modern (social) science, there is another option: following Foucault, one can be nominalist.

In the phrase of Barbara Herrnstein Smith, this means insisting that the electronic care record (as any other thing) is a word "in the first instance". Insisting thus certainly adds interpretive flexibility to an investigation. It leads one to expect variable answers to any number of questions regarding the object: What is the EPR? Does it even exist? What does it do? Where is it found? What are the benefits of it, and for whom? What are its risks and costs, and for whom? According to nominalism all the answers thus retrieved can be taken as reasonable contextual responses to the given question.[6] In contrast, if one starts out assuming that the EPR is a specific *something*, then alternative suggestions encountered in practice would be viewed as deviant or benighted and, perhaps, to be corrected. The above formulations can be read as a re-statement of the anthropological dictum that a researcher of some set of social practices should take seriously the perspectives of *all* the groups of people he or she encounters, rather than merely the "official" or institutionalised ones.

But enumeration of perspectives need not be the end-point of the nominalist investigation. STS-theorist and empirical philosopher Annemarie Mol advocates a shift "from understanding objects as the central points of focus of different people's perspectives" (Mol 2002: 4). Instead, she proposes, we could look at the practices in which objects are manipulated:

> If practices are foregrounded there is no longer a single passive object in the middle, waiting to be seen from the point of view of seemingly endless series of perspectives. Instead, objects come into being – and disappear – with the practices in which they are manipulated. And since the object of manipulation tends to differ

[6] Nominalist investigation as here defined means, not least, adhering to the principle of symmetry as formulated by sociologist of science David Bloor. This principle prevents the researcher from letting his analyses *lean on* the outcome of a given historical transformation (in terms of, for example, its truth or falsity, effectiveness or ineffectiveness, benefit or harm), as it is now perceived (Bloor 1976).

> from one practice to another, reality multiplies…Attending to the multiplicity of reality opens up the possibility of studying this remarkable achievement. (Mol 2002: 5)

Mol calls this research programme *empirical philosophy*. It is philosophical in its interest in understanding knowledge. But it insists that this can best be grasped through engagements with actual work practices; by carrying out a *praxiography*. This leads to a rather different set of concerns than those of traditional epistemology:

> A new set of questions emerges. The objects handled in practice are not the same from one site to another: so how does the coordination between such objects proceed? And how do different objects that go under a single name avoid clashes and explosive confrontations? And might it be that even if there are tensions between them, various versions of an object sometimes depend on one another? (Mol 2002: 5-6)

In the nominalist formulation above I stated that the EPR had to be viewed, first of all, as a word. Now, however, following Annemarie Mol, I talk about materiality, practices and objects. This is not a ”performative contradiction”. Such shifting frames of reference are themselves necessitated by the variable ontologies of objects under study. The EPR certainly allows me to make the point.

Traced in practice, “it” traverses a number of modern taken-for-granted categories. When “it” is encountered in a given practice, for instance, there is no pre-given answer as to whether the referent is a rhetorical device used for political bargaining, or a real enough technology used by nurses for medication purposes, or quite possibly both at once; prior to empirical scrutiny, one cannot be sure whether it is something ”envisioned” or something ”concrete”. In some places ”it” is viewed as in existence, but others will argue that what one can encounter at hospitals currently using EPR technologies are not the real thing but, at most, vaguely related pre-cursors. In some places ”it” is being built, but as it exists only in beta-versions, and remains untested in practical situations pronouncements on its reality are marred by uncertainties.

Furthermore, the EPR is variably understood in local terms: developed as a solution to very specific medication procedures and problems, or in national terms: as an initiative carried out by the National Board of Health to rescue the

Danish Health Sector from presumed deterioration and ruin. One cannot determine once and for all whether the EPR is discursive or material, local or national, beneficial or harmful, technical or political, or all of these to varying degrees and in various places. If it is presumed that entities have fixed properties this is a paradoxical claim, but the paradox diminishes if one begins to think in terms of variable ontologies; that is, if one starts imagining that the properties of entities are not essential, but are variably articulated (or constructed) in different practices.

In researching technological projects and developing technologies, STS-scholars "need to be nonimalist, no doubt". Methodically, this entails that one takes serious the assumption that any entity is a word "in the first instance". *In the first instance* but not necessarily *in the last instance*. Just as empirical philosophy has no investment in pre-determining what an entity must be at the beginning of an inquiry it has no reason to claim that an entity will have to remain word-like. And, of course, words and visions sometimes do materialise as technological reality, although they tend to transform substantially in the process. Letting go of both *a priories* and *finalities* such inquiry facilitates a very flexible approach to the question of what actually happens in practice.

3. Where is the EPR? Locating Partially Existing Objects

> I…study how different styles of research practices emerge and survive; I am interested in how their disputes are conducted and how factions are formed and maintained, how their community recognizes and limits variations in their practices. I am intrigued by how these practices differ along lines of class and gender, as well as lines of local, regional, national, and international political economy. I want to know how this powerful group creates and constantly recreates a discrete, identifiable community while operating all over the world in many different local, regional, and national cultures… (Traweek 1996: 51)

Anthropologist Sharon Traweek describes her research interests in relation to the highly dispersed community of high-energy physicists. Her focus is on the relationship between the homogeneity and heterogeneity of these people; that is, why everyone would agree that they constitute a community, even though everyone can also recognise that this group is differentiated in numerous important ways.

It is Traweek's merit to show how coherence is practically maintained and stably reproduced as a ″physicists' community″ without recourse to the powerful essentialising explanatory model, which imagines their similarity as consisting merely in them having shared ideas. Her questions and interests are clearly affiliated with those one could ask under a program of empirical philosophy. A contrast could be found in the willingness of the latter to use its insights to engage in somewhat more abstracted discussions of the results of such moves away from classical theorising.[7]

Recent articles have also discussed the specific practical and methodological problems inhabiting attempts to make anthropological studies of information technologies (Henriksen 2002, Newman 1998, Star 1995). Anthropologist Dixi Louise Henriksen characterises the classical conceptualisation of the relationship between the researcher and the object of study in the following way:

> …we tend to consider the site and object of study as preceding the empirical investigation. We think of a field study as a situation in which the researcher in person enters a bounded site, for example a particular organizational department or a single control room, to investigate the nature and characteristics of the setting for a specific period of time. Such notions of field study and fieldwork rely on the concept of a field site as an already delineated geographical location and on an object of study that pre-exists the study and lies out there just waiting to be discovered. (Henriksen 2002: 32)

This traditional approach, dubious in its naïve realist and positivist epistemology, encounters multiple practical problems in contemporary networked organizations, since the field site is often geographically dispersed and the objects of study, not least in the case of information technologies, are distributed (see also Cooper, Hine, Rachel and Woolgar 1995). While this situation makes it impossible to survey the entire field (whatever that might mean), it also enables the emergence of a new set of opportunities and insights. Not least among these is the realisation that the perception of entities such as networked organizations and corporations as ″very large″ or even ″global″ is interrelated with the functioning of what we regularly understand as ″very small″ localised activities. The effect of scaling up from "local" to "global", that

[7] She discusses this unwillingness in Traweek 1992.

is, might be viewed as a complicated achievement of various sets of actors, constantly testing which social and technical elements will be able to durably hold together if moved out of a specific setting:

> Like tracking the assembly of actors and design issues, grasping the technical object involves frequent shifts and the judicious knitting together of disparate elements. As much as for the ethnographer, or more, it requires this virtuosity from the participants themselves…These activities are part of the practice of constructing a future of relations mediated by the technology-under-design. (Newman 1998: 258)

Such complexities return also to haunt the researcher trying to make sense of his data, as I will return to below.

Henriksen and Newman both indicate the difficulty of locating technologies as simple things, and point to their heterogeneity and distribution. The complexity of studying such artefacts is highlighted by the fact that both researchers encountered these practical and methodical difficulties in investigations carried out in what might superficially seem to be relatively circumscribed fields:[8] Henriksen studied a Web-based information system in a pharmaceutical company, while Newman "organized…fieldwork primarily around the activities of a small, but changing, group of participants composed of system architects and developers and their managers" (Newman 1998: 237) in a product organization.

Problems of clearly delineating the field proliferate in the case of technological development projects such as the EPR. Here, multiple actors from multiple sites, such as the Danish government, the regions, the National Board of Health, the health professional and patient organizations, individual hospitals, the medical informatics community, the Board of Technology, as well as software companies, standardisation organizations, and medical jurists try to define and influence the stakes of development.

Furthermore this debate is not only discursive but also exceedingly material, as indicated by very active attempts by different Danish regions to develop a well-functioning EPR model. To be able to demonstrate a successful system to

[8] I do not think that these fields *are* circumscribed and I find the idea of something being, as such, "more limited" than something else, dubious. However, from the point of view of the classical micro-macro distinction, these field studies would look in this way; that is, as located firmly within the *micro*.

politicians, other hospitals, and the public, would likely be a much stronger argument for the adoption of that particular system as the national standard than any amount of written statements.

Locating and investigating technologies in highly distributed and politicised environments is a complicated business. What one investigates in such instances seems not to be a technology, which *happens* to be distributed but, vividly illustrating and dramatising the variability of practical ontologies, rather many different material and discursive ways of ordering practice, which sometime go by the same name. This makes explicit the possibility that *the EPR* might exist in a diversity of modes. Or should that be – makes visible the fact that *different varieties* of EPRs exist?[9] Again, this remains undecidable because the ontological unity or multiplicity of the entity referred to as EPR is at stake in these very practices. Thus, the EPR offers a concrete demonstration of what Latour talks about as the *partial existence* of objects (Latour 1999); an object the actualisation of which many different actors are invested in, in many different ways.

For these involved actors the multiplicity of involved interests have been both an asset – in that it has ensured a very broad support of the development of a Danish EPR – and a challenge to the very existence of an EPR as a singular recognisable object in the Danish context – because the multiple engagements in its construction threaten to fragment development and turn *it* into *many* (Latour 1993, 1996). The complexity of this situation encourages, indeed demands, empirical studies of the many practical and material events, which are variously taken to relate to the EPR.

My discussion so far has repeatedly stressed the productivity of adopting a nominalist stance, and emphasised the multiplicity, heterogeneity, and

[9] The first of these formulations suggests that the EPR is *one* technology, which happens to take different concrete forms in different practices. The second proposes that there is no such thing as the EPR but many competing technologies exist in different places. The ontological unity or multiplicity of the EPR is not an esoteric question, but one, for example, which bears immediately on the relationship between the National Board of Health and the Danish regions, which are threatened with harsh measures if they do not adopt the model of the EPR developed by the former. The practical and ontological question arises from the fact that what it means to adopt the model is a negotiable matter.

variability of "the EPR". From this description it would seem that the EPR is very hard to pinpoint, as indeed I think it is. But, conceding that, the point is not to show the complete randomness or subjectivity of the phenomenon. Rather, the idea is that analyses, which are duly subtle and responsive to the variability of actual occurrences in the EPR-landscape would be facilitated if one became seriously de-familiarised with the traditional ontological assumptions underlying most explanatory models of technological development.

Reaching that point it would become possible to closely follow the multiple associations of objects, humans, and practices, which are working hard to produce specific versions of the EPR. It would become possible to trace the ways in which some varieties of the EPR are stabilising (gaining existence) and the counter-movements through which other versions of it are disintegrating (losing existence) (Latour 1999, chapter five). Finally, it would enable research into how an entity *becomes an entity*, with an apparent unity, essence, and established definition, or how, contrarily, it does not become an entity, but might become *several different ones*. In proposing the study of the ontological stabilisation and destabilisation of technological objects I am thus not saying that coherent, unified objects cannot exist. But coherence is an achievement: it requires lots of work to assemble complex technological objects and ensure their survival; it is never a matter of natural development or simple progress.

The nominalist stance also folds back on the writer who must be seen as himself implicated in the production, definition, and assembling of some versions of the EPR rather than others. As a social researcher one is not *free* to articulate versions of this entity: most often other actors would immediately jump on incredible claims and propositions as they encountered them. But the alternative to the feared scenario of unconstrained subjectivism and wild imagination is not to view the researcher like the blank slate from the positivist ideal, on which information about the EPR could be neutrally imprinted. Rather, object and researcher may be seen as mutually articulating each other, like in the formulation of Winthereik et al.:

> The various EPRs encountered at different sites should be allowed to each "…yield new questions and guide [the researcher] into a different direction, whereby she ha[s] to redefine what would count as a research site (Winthereik et al. 2002: 51)

This view necessary removes from such studies the theory-hope of really being able to solve the problems of one's benighted informants. What then are their contributions? In a short version I believe that they (ought to) work towards *elucidation* of the practices about which they talk, as well as *addition* of the conceptual repertories of the disciplines on which their investigations draw. Both of these aspects are meant to imply transformative capacity as much as representational adequacy. For example, I hope that analyses of the kind here advocated may help some actors involved in EPR development to re-interpret and re-contextualize their practices, by suggesting new relevant considerations and by twisting well-known ideas into somewhat different shapes. Without being able to promise any solution to existing problems, this would already seem quite an accomplishment within a field, in which grand expectations, and larger disappointments, seems the order of the day.

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