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Are research data a 'common' resource?

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Joining the conversation

I join this conversation on 'the commons' as a feminist qualitative researcher in the social sciences who has been caused to think critically about the notion of research data as a common resource as a result of my own research practices and experiences. In 1995, the Economic and Social Research Council (ESRC) introduced its first Datasets Policy. This policy required grant-holders to offer their research data for deposit within an archive within three months of completion of their project, unless there were convincing reasons for not doing so. The following year, a colleague and I applied to the ESRC for a three-year ethnographic study of work and family life in the oil and gas industry in North East Scotland. The project was to involve fieldwork in families, communities, schools, and oil companies including onshore offices and offshore oil platforms. We would be interviewing mothers, fathers, children, human resource managers, health professionals and community figures. We had to complete a section of the form on 'Data collection and provision for the preparation and archiving of datasets', in which we had to outline any difficulties we envisaged in making the data available for secondary research. This is what we wrote:

> We have some concerns over the confidential nature of data we anticipate collecting from both the families and the oil companies, particularly given that the proposed project would be a very focused study on a very discrete geographical area. However, provided the material was anonymised and all identifying features removed, and the research participants give their informed consent, we would be happy to offer our dataset to the Data Archive or any other data centre and make it available for secondary research.

In our eagerness to comply with ESRC requirements, we agreed, in principle, to sharing our research data. Yet even as we wrote this statement, I had nagging questions about this policy, its underlying assumptions, and its potential effects on my research practices and participants. I knew from my previous research on mothers' experiences of postnatal depression how sensitive these women were to what I was doing with their stories. Part of their motivation for taking part in my study was so that they, through me, could bring their voices and stories out into the open. They wanted other mothers to know about what has largely remained an untold and hidden story about motherhood: that one in ten mothers experience postnatal depression after the birth of their child. At the same time, they were very clear that they did not want their story out there in its 'raw' form because their greatest fear was being identified. These were women whose public face of happy motherhood concealed inner despair and a deep sense of guilt and shame (Mauthner 2002). My challenge was an intertwined ontological, epistemological and moral one: to establish a relationship with these women that would enable them to speak the unspeakable, to tell me things

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that, as many said, "I've never told anyone before"; to discover and make sense of stories that went against the grain of hegemonic understandings of motherhood; to create the moral and relational conditions of possibility that would allow these women to trust me and tell their stories in the knowledge that I would honour them, and use their accounts in such a way that would neither cause them moral harm nor violate our relationship; and to secure the women's trust that, although I would be using their stories for my own research and purposes, I would not lose sight of what was also in their own best interests.

This challenge required physical, emotional and intellectual effort and investment on my part: skill, time, patience, care, compassion and understanding. I recently had cause to re-listen to the interviews I did with these mothers for a book I am currently writing on the interpretation of interview narratives (Mauthner and Doucet forthcoming). I had not listened to these audiotapes for 20 years and I was struck by my way of being in these long interviews. In one sense I seem to be doing very little: I ask few questions, rarely interject, and largely let them talk – which they did, at great length, for asking them a question that few other people had put to them, "Can you tell me what it has been like for you becoming a mother?", was like opening the flood gates. Yet this apparent passivity on my part obscured a great deal of activity because my practices were focused on communicating to the women that I was listening to them closely and hearing what they were saying with care and concern. I accomplished this through eye contact, holding their gaze, facial expressions, sitting in silence at times, uttering supporting hmms and uh-uhs, and quietly and softly interacting with their babies and toddlers who were often present during the interviews. All of this *work* - for although largely taken for granted, this is the invisible and 'naturalised' (see Bourdieu 1999) *labour* that we perform as interviewers and the reason why we often come away from interviews feeling drained and exhausted - created the kind of accepting and non-judgemental space that these women had been searching for in their own lives and relationships. And all of this work was ontologically, epistemologically and morally *necessary* to, and indeed constitutive of, the material-semiotic realities that my research was bringing into being. This labour helped me to discover, and make sense of, the particular stories of motherhood and postnatal depression that I heard. These interviews, practices of engagement, and relationships were not merely neutral tools giving me access to already-constituted and meaningful stories or nuggets of data. Rather, they were what and how I was coming to know.

It was against this research background that I came to the question of whether research data should be regarded, *a priori*, as a common resource. My instinctive response at the time of writing the above-mentioned ESRC grant application was that the apparently innocuous notion of researchers sharing their data through national or international digital repositories was more complicated than it first seemed. The ESRC Datasets Policy implicitly assumed that research data were pre-formed, given and bounded entities that researchers simply collected. It implied that data could be unproblematically harvested, and reused, out of the contexts and relationships in which they were produced. It assumed that stories and their meanings were given. Most importantly, it took for granted the labour, practices and relationships through which data emerge as meaningful entities. It assumed that, for example, the interview labour I outlined above was immaterial and inconsequential, entirely separate and separable from data and meaning. In other words, it assumed that how we produce

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knowledge bears no relevance to the knowledge that we produce. Not only is this notion contrary to one of the most significant philosophical contributions of feminist thinking regarding the inseparability of the 'how' and 'what' of knowledge production (Doucet and Mauthner 2008), but it did not resonate with my own experiences of doing research. From my perspective, my knowledge-making practices were intricately bound up with and constitutive of the stories I was hearing and my interpretations of them, and I did not see data or meaning as inherently separate or separable from the contexts in which they were produced. This meant that the very thing that I regarded as constitutive of data and meaning – being-in-relation and all that it entailed and made possible; or what Barad (2007: 185) terms "the practices of knowing in being" – was precisely what was being taken for granted and rendered invisible in the notion that research data should be regarded *a priori* as a common resource.

The ESRC policy therefore raised challenging philosophical questions for me because it assumed and imposed a model of knowledge-making that was at odds with my own practices. Furthermore, this philosophical model implied a set of moral and political assumptions that I found equally problematic. As is clear from the statement we wrote in our ESRC application, normative ethical and legal guidelines for data sharing suggest that practices such as seeking participants' informed consent to share their data and data anonymisation provide ethical, moral, and legal safeguards for data sharing (Van den Eynden et al. 2011). However, I knew from my research experiences that protecting our research participants was not achieved by following abstract guidelines and principles: it was a matter of understanding what might cause moral harm in the context of the specific human relationships in question. Indeed, even the *assumption* that *uninvolved* third parties could make ethical and moral judgements about what might or might not harm participants seemed to me like a violation of the participant, the researcher and the relationship between them. This is because participants entrust *specific* researchers, *whom they know*, with their stories and in the process implicitly confer upon *these researchers* (and not others) the moral right to act on their behalf and in their best interests. It follows that it is the researchers involved in a particular project who are best placed to judge whether and how sharing their specific data might potentially harm their participants, threaten their anonymity, breach confidentiality agreements, or violate relationships of trust with participants. Yet the ESRC policy was assuming that others could, as a matter of principle, make these moral decisions. This in turn raised a further political question: in requiring that researchers share their data, the ESRC policy was asking researchers not only to give up the fruits of their labour (the hard-won 'data' they had invested themselves in), but also to renounce their moral ownership rights over their data. In a very profound sense, researchers' labour was being not only rendered invisible; it was being appropriated by others, no longer seen as belonging to the researchers in question, and therefore no longer seen to constitute legitimate grounds for intellectual property or moral ownership rights over the data that they had produced.

Declaring that research data are to be viewed, *a priori*, as a common resource is neither an innocent nor a neutral practice in at least two ways. First, it depends on making a metaphysical, moral and political commitment to the illusion of research data's givenness. The belief or proposition that data are a common resource is only possible if data are treated, as the etymology of the word implies, as 'given': if they are viewed as free-floating commodities that are separate from the contexts and

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relationships through which they are produced; if the labour of data producers, and the moral ownership rights that arise from it, are ignored; and the rights of those who make economic rather than material investments in the production of data are privileged. Second, these metaphysical, moral and political commitments are performative: they have effects. Severing research data from their entangled webs, from the labour and relations of their production, is ontologically, epistemologically, morally and politically consequential. These breakages, and what they exclude from mattering, make a difference to what we discover about the world and how we discover it.

My discomfort with the ESRC Datasets Policy was a response to a radical shift that was taking place in data ownership regimes. The de facto moral ownership rights enjoyed by researchers were being eroded. New discourses and policies were emerging suggesting: firstly, that research data belonged to 'the public' and those publicly-funded organisations that finance research and employ researchers; and secondly, that research data should be viewed as a shared, common and indeed global open access resource. As a researcher, I was keen, and indeed felt I had some responsibility, to understand how these shifts might impact on my research participants as well as reconfigure the nature of my research. In this article I want to explore these issues in further detail, and in particular the implicit philosophical framework that underpins, and provides the moral and political justification for, the move towards treating data as a so-called common resource. To begin, I want to trace the emergence of the idea of viewing data as an open access common resource. I then outline the regulatory, policy and legislative mechanisms that have been instituted to encourage and ensure that researchers comply with data sharing requirements, and that are institutionalising new ownership regimes away from research data being treated de facto as private property towards it becoming public property. I also spell out the case being made for treating data as a public good, including scientific, moral, economic and political arguments. I then move on to suggest that positioning data as a common resource is dependent on a Cartesian and representational understanding of data, their production, and their use in the making of knowledge. Here, I draw extensively on the work of Karen Barad (2007), feminist, physicist and science studies scholar. Her critique of classical Cartesian and Newtonian metaphysical assumptions helps me reveal the *positionality* of the assumed universalism of treating research data as a given and *a priori* common resource. Furthermore, her elaboration of an alternative performative, posthumanist, 'onto-epistemo-ethical framework', which she calls 'agential realism', provides us with a compelling account of scientific practice that allows me to make sense of my own practices as outlined above. Barad's work is therefore of enormous political significance because it renders legitimate knowledge-making practices that are otherwise seen as 'deviant' within a normative representational worldview. A further reason why Barad's framework is useful is because it reveals the inevitable inclusions and exclusions that are enacted through our metaphysical, moral and political commitments. This opens up the possibility of exploring the 'constitutive effects' of our exclusionary practices, and again, importantly, confers legitimacy on this endeavour. This is what I turn to in the final section of the article. I consider what treating data as a common resource and public good, and the exclusion of the labour and relations of data producers that it depends on, *does* ontologically, epistemologically, morally and politically. In particular, I suggest that emerging regulatory, policy, legislative and discursive practices

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reinforce, institutionalise and legitimise power differentials and inequalities precisely along the lines that feminist scholars have been contesting for over four decades.

Research data as a common resource

Emergence of the idea that research data are a common resource

The notion of treating research data as a common and indeed global resource appears to date back to at least the 1950s, when it was institutionally established through the formation of World Data Centers (particularly in the geophysical sciences) designed to minimise the risk of data loss and maximise data access (Shapley and Hart 1982). The 1980s witnessed the more widespread application of this idea within the natural sciences. In particular, GenBank was one of the earliest bioinformatics community projects on the Internet, promoting open access communications and data sharing among bioscientists (Benson et al. 2008). It was established in 1982 by the US National Institutes of Health and is a comprehensive public database of nucleotide sequences and supporting bibliographic and biological annotation. Its establishment and near-universal use as a public archive have transformed the field of molecular biology and made possible the modern synthetic use of DNA sequence data. The scale of the GenBank database is a result of a communal decision to archive all DNA sequence data, a decision initially introduced by scientific journals (Whitlock et al. 2010). By the early 1990s there was an international move towards treating research data as an open, shared and global resource within many fields of the natural sciences (e.g. Office of Science and Technology Policy 1991; OECD 1994; National Research Council 1997). For example, in their study of data sharing in the natural sciences, the US National Research Council (1997: 10) study noted that "The value of data lies in their use. Full and open access to scientific data should be adopted as the international norm for the exchange of scientific data derived from publicly funded research".

Regulating research data ownership: data sharing policies and freedom of information legislation

The idea of treating data as a common resource therefore first emerged within the natural sciences and seems to have been initially community-led: there were strong and convincing scientific reasons for sharing data; and these were widely recognised and supported by practicing scientists who then organised themselves and their disciplines to create discipline-specific data repositories. In the context of a discussion on 'the commons', and the different ways in which this term and concept has been used, it is useful to note here that this approach comprised self-governed bottom-up formed institutions. This contrasts with more recent initiatives (over the past 15 years or so) which have moved away from self to government regulation with data ownership, control and access less a matter for researchers or research communities to decide, and more a matter of government and science policy. This has been accompanied by emphasis placed on large scale, increasingly global, common pool resources that have no clear governance structure. These changes have come about in part because databases of all kinds, not simply those created for research purposes, are

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being seen by governments as critical scientific and economic resources.[1] The UK government has highlighted their potential in creating "a high quality research infrastructure" (UKRDS 2009: 1; see also Waller and Sharpe 2006; OSI 2007; ESRC 2008). The international significance of these databases has also been emphasised by the Organisation for Economic Co-operation and Development, a key international science policy organisation, which sees them as "an essential part of the infrastructure of the global science system" (OECD 2007: 3). Indeed, research data are being viewed as a global commodity, with moves afoot to remove barriers to cross-national data exchange (Noble et al. 2011). The availability, development and application of advanced computing and information technology over recent years has resulted in enormous growth in the volumes of data being generated, and has facilitated and enhanced the possibilities of data preservation and sharing. The idea that research data can be treated as a shared or common resource has therefore been seen as relevant to all forms of data, all disciplines and all researchers across the natural sciences, social sciences, and arts and humanities. It has been promoted as a universal norm and constructed as a universal good (see Arzberger et al. 2004), and has been widely institutionalised across funding and other research-related organisations within and beyond the UK through the development and implementation of data sharing policies (Ruusalepp 2008).

The ESRC's (2010a: 4) *Research Data Policy*, for example, requires grant holders to make their data available for reuse and can "withhold the final payment of an award if data have not been offered for archiving to the required standard within three months of the end of the award". Universities are also beginning to develop data management plans and strategies requiring their researchers to address, at the outset of their projects, the question of data management and sharing. Data sharing is moreover increasingly being seen and defined as 'good research practice'. It is being incorporated into ethics and research governance frameworks and guidelines issued by universities (e.g. Universities of Edinburgh[2] and Oxford[3]), funding agencies (see SHERPA 2009; Digital Curation Centre 2010), professional associations (e.g. Statement of Ethical Practice for the British Sociological Association), data repositories (e.g. UK Data Archive (UKDA)), non departmental public bodies (e.g. Joint Infrastructures Systems Committee), national and international science policy organisations (e.g. OECD), and many other national and international agencies.

The introduction of freedom of information legislation in the UK - the *Freedom of Information Act 2000* and *Environmental Information Regulations 2004,* both of which came into force in 2005 – are a further means of enforcing data release into the public domain, and engendering a shift away from de facto private ownership towards public ownership. This legislation means that researchers can now be legally forced to release their data. Both Acts provide the public with a right to access information held by a UK public authority, which includes most universities, colleges or publicly-

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[1] The data sharing imperative is seen as relevant to all types of data, including those created for purposes other than research such as administrative data (Jones and Elias 2006) or patient data (Brown et al. 2010). In this paper, however, I focus on research data.

[2] http://www.ed.ac.uk/schools-departments/information-services/services/research-support/data-library/research-data-mgmt/data-sharing (Accessed 25 September 2011)
[3] http://www.admin.ox.ac.uk/rdm/dmp/checklist/ (Accessed 25 September 2011)

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funded research institutions. The information requested can include research data and must be provided unless an exemption or exception allows an institution not to disclose it. Both Acts are designed to ensure accountability and good governance in public authorities (Rusbridge and Charlesworth 2010). To date there have been few legal requests for researchers to share their data. However, two cases are worth highlighting here. In April 2010, Mike Baillie, a dendrochronologist from Queen's University Belfast, was forced to release tree-ring data under the Freedom of Information Act. The Information Commissioner's Office ruled that Queen's University Belfast must release the data to the public because Baillie did all the work while employed at a public university. Baillie unsuccessfully contested this directive by claiming that the tree-ring data he had collected over a 40-year period were his own personal intellectual property (Baillie 2010). In September 2011, the tobacco company Philip Morris International submitted a series of Freedom of Information requests to the University of Stirling to gain access to research data collected by a team of researchers over ten years exploring attitudes towards smoking amongst 6000 teenagers and young adults. Scotland's Information Commissioner has dismissed the University's case for failing to release the information and has asked the university to respond to the demands made by Philip Morris (Christie 2011).

It is important to emphasise that the regulatory, policy and legislative changes of recent years represent a significant moral and political shift in relation to the ownership of research data. Governments have always played a role in mandating data gathering and exchange for scientific and political purposes, within the context of specific projects (e.g. Dean et al. 2008). Furthermore, universities, as employers of researchers, have long had legal ownership of research data. However, *in practice,* researchers have been recognised to have moral ownership over their research data, and governments and universities have rarely exercised their ownership rights. Researchers have, until recently, had more or less full control over their research data: they have decided whether and how their data are stored, shared or reused.

This has led to a range of practices. The natural sciences have long enjoyed a strong culture, ethic and tradition of data sharing (RIN 2009). Currently, many science researchers, such as those from the historical and comparative sciences (including geology, paleontology, museology, taxonomy, archaeology, anthropology, history and the archival sciences), make routine use of data collected by others. Likewise, in the social sciences, and arts and humanities, establishment and use of archives, preservation of data in the form of personal papers, government records and historical and cultural artefacts, and secondary use of quantitative datasets are all well-established practices (Valge and Kibal 2007). At the same time, there has been a tendency within the qualitative social sciences to destroy research data (particularly personal data) once they have been analysed and written up (Cheshire 2009). This was once seen as good practice. Indeed, this is still reflected in data protection policies adopted by funding agencies and universities, policies that are now in tension with data sharing imperatives (Carusi and Jarotka 2009). Whereas research data are now being seen as *a priori* public and publicly-owned resources, up until recently they were seen as *a priori* personal or private in nature in two ways: first, they were morally, if not legally, seen to belong to the researchers who generated them; second, in the case of research involving people, the data were seen to belong to the human participants or communities from whence they came. At least one aspect of recent 'open data' initiatives, as they pertain to publicly-funded research data, is therefore an

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institutional shift in data control and ownership away from private and collective (e.g. discipline-based) ownership towards government or public ownership.

The case for viewing research data as a common resource

Underlying recent regulatory, policy and legal shifts is the principle of 'open access', and the notion that information, scientific results, and publicly funded research data are "a public good, produced in the public interest" (Arzberger et al. 2004: 136; see also Willinsky 2006). This principle lies at the heart of the OECD's (2007) *Principles and Guidelines for Access to Research Data from Public Funding,* a key policy document drawn on by funding and other agencies when developing data sharing policies (e.g. ESRC 2010a; Medical Research Council 2011). The open access principle specifies that "publicly funded research data should be openly available to the maximum extent possible" (Arzberger et al. 2004: 136). Arzberger et al. argue that the principle of openness to research data should apply "to *all* science communities" (Arzberger et al. 2004: 144; original emphasis) and they urge that this imperative is backed with "formal policy frameworks and regulations" (Arzberger et al. 2004: 146). Data sharing is therefore being increasingly encouraged, prescribed, regulated and enforced in an effort to bring about large-scale behavioural, organisational and cultural change: a new research culture in which research data will no longer *be,* and be viewed as, a personal belonging but will morally and legally become a public, shared, common and global resource.

An important question is, on what grounds is this shift being justified? The key argument put forward is that it will facilitate 'better' research. Turning data into a common resource is seen to deliver scientific, moral, economic, political, professional, social and security benefits (see Arzberger et al. 2004; OECD 2007; UKRDS 2009; CARL 2009; SSHRC 2009). For example, data depositories are seen to provide an important resource for training in research. Data reuse is understood to reduce the burden on participants and communities caused by multiple data collection efforts. Data storage is considered to reduce the information security risks associated with maintaining duplicated datasets in more than one location. Moreover, digital technologies are seen to have the potential to democratise knowledge and empower researchers and research communities; and openness, including data sharing, are seen as necessary to unleash this transformative potential.

It is the scientific, moral, and economic rationales, however, that dominate the case being made for data sharing. First, data sharing is seen as 'good science', and as promoting transparency, innovation and progress (Arzberger et al. 2004). It is understood to increase transparency by opening up our data and research processes for public scrutiny (Bruna 2010). It is said to allow researchers to verify each others' interpretations by returning to the 'raw' data. It enables researchers to investigate data in new ways: by asking new questions; by using new techniques or theoretical perspectives; by exploring data that were never analysed by the primary researchers; or by combining different datasets. The ability to retrieve and compare data from multiple sources can lead to the testing of new or alternative methods, and to "powerful new insights" (UKRDS 2009: 1). Combining datasets from different departments, agencies and sources is seen to enable the creation of new datasets which can facilitate high-quality, policy-relevant research by providing a fuller picture rather than analysing separate pieces of a jigsaw (ESRC 2008).

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Second, data sharing is seen to constitute 'good research practice'. The moral case for data sharing draws on the idea that, as public sector workers undertaking publicly-funded research, researchers are seen to be accountable to the public. Making their research data more widely available is understood to be in the public's interest, and part of their moral responsibility and duty (Bishop 2009). The UKDA (2011), for example, suggests that researchers have a moral "duty to wider society to make available resources produced by researchers with public funds (data sharing required by research funders)". And the Medical Research Council (2011) policy on data sharing explains that "publicly-funded research data are a public good, produced in the public interest, and ... they should be openly available to the maximum extent possible". Research data are therefore being defined as public resources, public property, and public outputs of research: "research data will increasingly be the starting point for new research as well as a key output" (UKRDS 2009: 1; see also CARL 2009: 4).

Third, a significant driver for the current move towards data sharing is economic in that it allows the state to realise a return on its financial investments. Reusing data is seen as a cost-effective and cost-efficient use of public funds because it provides a better return on public investment in research. As Arzberger et al. (2004: 135) make clear, the goal of open access is "to ensure that both researchers and the public receive optimum returns on the public investments in research". They continue:

> In recent years, the debate on e-science has tended to focus on the "open access" to the digital *output* of scientific research, namely, the results of research published by researchers as the articles in the scientific journals... This focus on publications often overshadows the issues of access to the *input* of research - the research data, the raw material at the heart of the scientific process and the object of significant annual public investments. (Arzberger et al. 2004: 135)

Turning research data into a public resource is therefore seen as a scientifically enlightened, morally worthy, politically progressive, and economically beneficial activity. As Arzberger et al. (2004: 136) write, "Expanding the adoption of this principle to national and international stages will enable researchers, empower citizens and convey tremendous scientific, economic, and social benefits".

Taking seriously the practices that provide the illusion of research data's givenness

The case for treating research data as a common resource rests centrally on a particular philosophical understanding of research data that can be gleaned from two key documents: Arzberger et al.'s (2004) paper on 'Promoting access to public research data for scientific, economic, and social development' and the resulting OECD (2007) report on *Principles and Guidelines for Access to Research Data from Public Funding.* Arzberger et al. (2004: 135) define data as "the raw material at the heart of the scientific process". The OECD (2007: 14) report characterises data as:

> factual records (numerical scores, textual records, images and sounds) used as primary sources for scientific research, and that are commonly accepted in the scientific community as necessary to validate research findings. A research

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> data set constitutes a systematic, partial representation of the subject being
> investigated.

These definitions treat data as facts: decontextualised bounded objects that carry
inherent meanings and are representative of reality. In the words of Knorr Cetina
(2001: 191), data are understood as 'closed boxes' that one views from the outside "as
one would look at tools or goods that are ready to hand or to be traded further". From
this perspective, data are perceived as separate, rather than inseparable, from the
people, contexts and practices that generate them. While data may be enhanced
through the provision of contextual information and metadata, fundamentally, context
is understood as conferring additive rather than constitutive meaning. That is, the
ontological relationship between object and subject, or data and context, is understood
in terms of separation rather than relationality. The ontological unit is taken to be
"independent objects with independently determinate boundaries and properties"
(Barad 2007: 33) rather than ontologically inseparable and entangled relations.

One way of understanding how research data are being normatively conceptualised
within the notion of data as a common resource is in terms of it underlying
representational framework. Representationalism, explains Barad (2007: 137), takes
the notion of separation as foundational: "It separates the world into the ontologically
disjunct domains of words and things, leaving itself with the dilemma of their linkage
such that knowledge is possible". Drawing on Rouse (1996), Barad argues that
representationalism is a Cartesian by-product in its asymmetrical faith in
representations over the material world, and its *neglect of the sociomaterial practices
through which representations are constituted*:

> representationalism is a practice of bracketing out the significance of
> practices; that is, representationalism marks a failure to take account of the
> practices through which representations are produced. Images or
> representations are not snapshots or depictions of what awaits us but rather
> condensations or traces of multiple practices of engagement. (2007: 53)

I want to consider Barad's work in greater detail here because it helps us see how the
case being made for treating data as a common resource is rooted within a *particular*
(despite its assumed universalism) Cartesian and representational worldview that is
based on an *ontology of separateness*. Barad's work enables us to do this because she
has developed a different metaphysical perspective: a performative, post-humanist
philosophical framework that is premised on *a relational ontology*. Within her
'agential realist' framework, reality is redefined as sociomaterial phenomena that are
constituted through, and ontologically inseparable from, the practices of
representation. These practices are understood in a performative way, as labourers:
they perform ontological and epistemological (and moral) work. They are material-
discursive labour processes and practices that "help constitute and are an integral part
of the phenomena being investigated" (Barad 2007: 232). Furthermore, these
practices do not simply detect differences – between self and other, agency and
structure, knower and known - that are *already in place*. Rather they contribute to the
production and reconfiguring of difference: they constitute self and other, agency and
structure, knower and known as separate and bounded entities. Significantly, it is the
ontologically inseparable *material-discursive* nature of these practices, and how they
are understood to constitute realities that are at once *ontic and semantic,* that allows
agential realism to "take the empirical world seriously once again, but this time with

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the understanding that the objective referent is phenomena, not the seeming 'immediate given-ness' of the objective world" (Barad 2007: 152).

Barad places practices of representation*,* and their productive effects, at the heart of her framework. Representationalism relies on a correspondence relation between words (discourse/meaning) and things (matter), and assumes that we have access to discursive representations in a way that we do not to material beings. Agential realism shifts the focus away from the nature of representations to the material nature of discursive practices and how they are causally related to material phenomena. "I am interested", she writes, "in a nonrepresentationalist realist account of scientific practices that takes the material nature of practices seriously" (2007: 56). A central aspect of her project is concerned with understanding matter's dynamism: the active role played by the material world and the body's materiality in constituting phenomena, in contrast to approaches that ignore matter, render it passive, or reduce it to social or discursive processes. Matter, she argues, is "a dynamic and shifting entanglement of relations, rather than … a property of things" (2007: 35).

An agential realist framework understands the ontology of the world as being comprised not of things but of 'phenomena', specific material configurations of the world that denote the ontological inseparability and entanglement "of agentially intra-acting components" (Barad 2007: 33). Barad writes: "Parts of the world are always intra-acting with other parts of the world, and it is through specific intra-actions that a differential sense of being – with boundaries, properties, cause, and effect – is enacted in the ongoing ebb and flow of agency" (2007: 338). Barad's neologism, 'intra-action', is key to understanding her agential realist framework. Whereas the term *inter*-action assumes the existence of separate individual agencies prior to their interaction, the notion of intra-action implies that agencies become determinate, separate and distinct only as a result of their intra-actions.

Epistemologically, agential realism understands knowing as emerging from our "*direct material engagement with the world*" (Barad 2007: 49). We come to know the world by intra-acting with, and constituting, it: "We don't obtain knowledge by standing outside the world; we know because we are *of* the world." (2007: 185). Coming to know the world, through experimentation and theorising, comprises "*dynamic practices that play a constitutive role in the production of objects and subjects and matter and meaning. … theorising and experimenting are not about intervening (from outside) but about intra-acting from within, and as part of, the phenomena produced*" (2007: 56). This is what Barad calls the "practices of knowing in being" 2007: 185). Ontology and epistemology, she explains, are inseparable: "Practices of knowing and being are not isolable; they are mutually implicated" (2007: 185) because "scientific practices are specific forms of engagement that make specific phenomena manifest" (2007: 336). The separation of ontology and epistemology is a reverberation of representational metaphysics and its underlying binaries.

Each specific material intra-action matters, then, for it brings into being specific phenomena and realities. Entangled practices are productive and performative: they enact what Barad (2007: 334) terms 'agential cuts' effecting and materialising a separation between 'subject' and 'object'. That is, there is no inherent Cartesian distinction between subject and object. Rather, "the agential cut enacts a resolution *within* the phenomena of the inherent ontological (and semantic) indeterminacy"

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(2007: 334). Agential realism does not take for granted the boundaries between and around subjects and objects, words and things, matter and meaning, nature and culture. Rather, it "investigates the material-discursive boundary-making practices that produce 'objects' and 'subjects' and other differences out of, and in terms of, a changing relationality" (2007: 93). It allows us to be "attentive to the iterative production of boundaries, the material-discursive nature of boundary-drawing practices, the constitutive exclusions that are enacted, and questions of accountability and responsibility for the reconfigurings of which we are part" (2007: 93).

The deeply entangled material-discursive "practices of knowing and becoming" (Barad 2007: 56) play a constitutive role in the production of phenomena, enacting exclusions that "matter both to bodies that come to matter and those excluded from mattering" 2007: 57). Epistemological, ontological, and ethical issues are deeply entangled and inseparable. This applies both to the practices that are being studied and the knowledge-making practices that we engage in. The kind of framework we need, suggests Barad, is an 'ethico-onto-epistem-ology', an "appreciation of the intertwining of ethics, knowing, and being… because the becoming of the world is a deeply ethical matter" (2007: 185) and because we must take responsibility "for the role that we play in the world's differential becoming" (2007: 396).

From an agential realist perspective, 'data' are constituted in the intra-action (relationship) of the 'object' (e.g. empirical realities) and the 'agencies of observation' (e.g. specific researchers, methods, technologies, practices). The objective referent for the data is the phenomenon, which is inseparable from the social and material, discursive and technological, human and nonhuman practices that constitute the data. The meaning of data emerges from and through measurement practices in which the object of investigation and the agencies of observation intra-act, mutually constitute one another, and are ontologically inseparable. Data production involves such measurement practices: material-discursive practices through which ontic and semantic realities, meaningful material phenomena, are constituted in the form of data (measurements). Data producers, and their methods and practices, help produce, and are part of, the data and phenomena they constitute. From an agential realist perspective, these phenomena are neither preexisting, but nor are they socially constructed or discursively constituted. Rather, they are brought into being, come to be known, and constituted as bounded 'entities' through the specific apparatuses (sociomaterial, human-technological methods and practices) we deploy.

Representational understandings of data and their production conceptualise the cut between data and context in Cartesian terms: data, which are seen to be what matters, are understood as free-floating measurements with inherent meanings; context, which is seen as secondary to data, comprises the measurement practices, labour processes, conditions and relations of production that give rise to the data. From an agential realist perspective, knowledge making practices (such as data collection) are boundary-drawing devices that produce the bounded entities we denote as 'data' and 'context'. Data do not represent fixed external (natural or cultural) realities. Rather, they are the product of agential cuts, and the constitutive inclusions and exclusions that these enact. Specifically, data generation practices enact an agential cut (enacted by researchers and the larger sociomaterial relations) between data and context: they are inherently inseparable, mutually constitutive, and only meaningful in terms of their (ontologically primary) relationality. Meaning is not inherent to the data or to

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context as separate entities. Rather, it inheres in the intra-active relations between them: data and context emerge as separate and determinate entities through our specific methods and practices (including, for example, how boundaries are drawn around 'data' and 'context' in the process of data generation).

The constitutive effects of treating research data as a common resource

I have taken the time to spell out some of the details of Barad's metaphysical framework by way of highlighting how a representational or Cartesian worldview is just *one* way of understanding data, its generation, and its use in the making of knowledge. The adoption and institutionalisation of a representational system is therefore a matter of 'choice', or rather, a position for which responsibility must be taken. Barad (2007: 203) explains that we are responsible, not only for the knowledge that we seek, but in part for what exists "not because it is an arbitrary construction of our choosing, but because it is sedimented out of particular practices that we have a role in shaping":

> Making knowledge is not simply about making facts but about making worlds, or rather, it is about making specific worldly configurations – not in the sense of making them up ex nihilo, or out of language, beliefs, or ideas, but in the sense of materially engaging as part of the world in giving it specific material form. (2007: 91)

We do not have sole responsibility for the realities/knowledge we produce: it is not a case of willfully choosing a metaphysical framework. Nor are we fully exonerated from responsibility, as this framework is not deterministically imposed upon us. Rather, our responsibility comes from the *agential part* that we play in "the material becoming of the universe" (Barad 2007: 178). This means that we must take *some* responsibility for the realities and knowledge we bring into being. At the same time, we must recognise that these realities and knowledge (and their underlying metaphysical commitments) are intra-actively entangled with larger sociomaterial arrangements that we are not *fully* responsible for. But, we are also *partly* responsible for these because the specific practices, realities and knowledge that we constitute are themselves playing an intra-active part in (re)configuring these larger sociomaterial arrangements.

Barad (2007: 93) further argues that we are also responsible *for what we exclude from mattering,* what she terms 'constitutive exclusions': "different intra-actions produce different phenomena… one can't simply bracket (or ignore) certain issues without taking responsibility and being accountable for the constitutive effects of these exclusions" (2007: 58). She further explains:

> There are risks in putting forward an ontology: making metaphysical assumptions explicit exposes the exclusions on which any given conception of reality is based. But the political potential of deconstructive analysis lies not in simply recognising the inevitability of exclusions but in insisting on accountability for the particular exclusions that are enacted and in taking up the responsibility to perpetually contest and rework the boundaries. (2007: 205)

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This performative perspective is useful because it opens up the possibility of investigating what realities are brought into being by practices that position data as a specific type of 'common' resource, namely one that is publicly (government) owned (rather than other notions of 'the commons'). We can ask: what does the illusion of research data's givenness (a commitment to representationalism), and the exclusion of the labour of data producers, make possible ontologically, morally, politically and legally? In answer to this question, I want to argue that despite suggestions that sharing research data is an inherently politically progressive move enabling the democratisation of science, the currently dominant vision of data as a common resource reinforces, institutionalises and legitimises power differentials and inequalities, particularly between data producers on the one hand, and data funders/users/consumers on the other (though I recognise the lines between these are blurred). In this sense, positioning data as a common – publicly owned - resource exacerbates precisely the power imbalances that feminist scholars have been highlighting for several decades between researchers and their participants, between and amongst researchers, and between hegemonic and 'other' or 'subaltern' (Spivak 1988) knowledges and realities.

Power relations between researchers and participants

For a qualitative researcher like myself, the notion that data are a common resource makes a difference to my research practices and what I tell my research participants. In order to share the data that I generate, I must seek my participants' informed consent to do so. In a context where digital data loss, and illegal data access and use, are routinely featured in the media I have an ethical responsibility to discuss the risks and benefits of data sharing. I must also explain that while every effort is made to ensure the security and ethical reuse of digitally-stored data, placing their interview in a digital archive would lessen my and their control over what happens to the data and how it might be used. This is because I am no longer 'simply' asking my participant to trust *me* with their story. There are now as-yet-unknown third parties (however 'bona fide'), with as-yet-unknown intentions and purposes (however laudable and legitimate), to factor into the equation. I would have to explain that researchers reusing their interview would be required by the data archive to sign an End Use Licence which "has contractual force in law, in which they agree to certain conditions, such as not to disseminate any identifying or confidential information on individuals, households or organisations; and not to use the data to attempt to obtain information relating specifically to an identifiable individual" (UKDA 2011). Nevertheless, I would also feel an obligation to explain that this in itself would not protect them against the potentially morally harmful effects of seeing their story interpreted through different lenses or used for different purposes.

From this perspective, the recommended (and increasingly mandatory, see ESRC 2010b) practice of seeking our participants' *informed* consent to share their stories for future uses *they have not been informed about* looks increasingly unethical. The ethical and moral issue is not only whether our participants will read, or feel morally harmed by, what is written about them. Rather, as researchers we have a moral responsibility to explain these potential risks because failure to do so risks breaching the relationships of trust with participants, and exploiting and wronging them. Involving participants in decision-making about data sharing (as recommended by the

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UKDA) may be a useful approach but only in a context that takes into account power differentials between researchers and participants (that feminist and post-colonial scholars have been concerned and writing about for over four decades, see Doucet and Mauthner 2008). This is because, generally speaking, participants will believe what we tell them and will entrust us with their stories *because they trust us to do the right thing.* This places participants in a vulnerable position. It heightens our own responsibility to think carefully about what we are asking of, and doing to, our participants by seeking their informed consent to data sharing: what the repercussions might be not only for our particular participants, but for others like them whose trust and participation we rely on for the very conduct of our research.

Furthermore, spelling out the potential risks of data sharing reconfigures the moral and ontological conditions in which I am doing research, conducting fieldwork, and building relationships with participants. In my interviews, I am able to make an unspoken moral commitment to my participants that I will, to the best of my ability, take care of the story they have entrusted me with. Within a data sharing context, however, it would be unethical for me to make this moral assurance because I have no knowledge of (and most likely little control over) how their story might be used at some future date. This is important because it means that seeking our participants' informed consent to share their stories, beyond the research study they are involved in, constitutes *a different moral context* for their storytelling than seeking their informed consent to take part in my study and share their story with me and my research team. Seeking informed consent is not simply an additional neutral ethical procedure that researchers must ensure they carry out and that leaves everything else unchanged. Seeking informed consent has moral and ontological effects: it constitutes *different moral and ontological conditions of possibility* for our participants' storytelling. It gives rise to different stories to those that might otherwise have been told. For example, knowledge that their account might be lodged within a digital archive (consciously or unconsciously) may foster a 'public' rather than a 'private' narrative. Similarly, (and as I have subsequently discovered in a current project[4]) this might impact on my own interviewing style: on my willingness to share and expose personal experiences as part of building relationships of trust with my participants, knowing these may no longer be shared only with my participant and members of my research team. These changes matter *ontologically* because they might make it more difficult to create the kinds of relationships that I see as critical to, indeed constitutive of, the narratives I am interested in: the quiet and vulnerable stories that are difficult to tell, and hear, in particular social, cultural and historical settings. Indeed, these practices will render harder-to-reach the kinds of narratives that many feminist scholars have been interested in: the muted, marginalised, and largely untold stories that challenge or trouble normative worldviews.

Conducting an interview on the assumption that it will, by default, be made more widely available weakens our participants' trust in us, *as it should do.* This is because we no longer have the ability or right to act on behalf, and in the interests, of our participants. It will no longer be *necessarily* up to us to decide whether data reuse

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[4] This project is developing a performative approach to digital data sharing. I am using research 'data' and materials from Jennifer Platt's (1976) pioneering sociological study of the social research process as a case study, as well as conducting interviews with her.

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might be morally harmful to them or might violate the relationship of trust within which they told their story. Furthermore, it would be naïve and unethical to suggest otherwise to our participants: to avoid spelling out or downplay the moral risks and complexities involved in consenting to wider use of their stories. This would be exploiting the power that we have as researchers and the trust that participants place in us.

Power relations between and amongst researchers

The uncritical assumption that data constitute a public, common, or global *given* resource obscures the politics of knowledge production within research teams, and power relations amongst and between researchers (see Mauthner and Edwards 2007, 2010; Mauthner and Doucet 2008). In practice, most data are produced by junior researchers, PhD students and/or technicians who, because of their structural positions and/or career stage, may lack the time and resources that senior researchers have to make full and timely use of the data they generate. While their data collection efforts are usually, though not necessarily, recognised and rewarded within the team through, for example, joint publications, recognition of their labour is less likely within the context of open data sharing as currently constituted. Power and status differentials between team members risk leaving junior researchers open to exploitation as principal investigators have responsibility for making decisions about data sharing. Even where senior colleagues consult junior team members, by dint of their power and status they may privilege their own objectives. Within the context of international projects, there is a risk that data sharing becomes a form of scientific neo-colonialism. While turning data into open or common resource has the potential to provide postcolonial contexts with easy and cheap access to data generated elsewhere, they may lack the necessary scientific, technical, digital or cultural capital and resources to make full and speedy use of the data (see Luo and Olson 2008). In practice, it may be primarily well-resourced researchers and nations who stand to gain from the globalisation of research data, by reaping scientific and economic benefits and rewards from data generated by less well-resourced researchers and nations. From this perspective, the global data sharing project risks reproducing exploitative relations between nations, and between data users and data producers.

The power to define reality

The final issue I want to problematise here is the assumed universalism of the notion that data be regarded, a priori, as a common or public resource. This assumed universalism is built on intertwined metaphysical and moral foundations. It depends on understanding data as given facts that are independent of those who do the work of constituting them. This assumed universalism is also only possible if ownership is seen to derive from economic rather than material investments: if the rights of those who fund data production are privileged over the rights of those who produce data through their material-semiotic labour. Given that data producers are already bracketed out within a representational metaphysical framework, their moral and political marginalisation 'naturally' follows, as does the 'public interest' argument: the assumption that because data production is funded from the public purse, the public necessarily have a right to access and benefit from these data.

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This assumed universalism is also what provides the justificatory grounds for the regulation of research and for a range of practices that, from the point of view of data producers, can be understood as 'boundary-violations' (Nussbaum 1995) and acts of 'symbolic violence' (Bourdieu 1999). This assumed universalism is precisely what makes it possible and seemingly legitimate for funding organisations to require data sharing (through their policies) and impose a default representational epistemic framework on all researchers, thereby marginalising alternative worldviews. This is reminiscent of what post-colonial feminist scholar Spivak (1988) calls 'epistemic violence': the destruction of non-western ways of knowing and the domination of western ways of understanding. This assumed universalism gives these same organisations the power to dictate what constitutes good ethical practice, and require that researchers seek their participants' informed consent to data sharing (a practice that, as I highlighted above, can be seen as highly unethical). This assumed universalism is also what gives government bodies (funding and law-enforcing agencies) the power to disinvest researchers of their moral ownership and intellectual property rights over their data. It renders legitimate the Freedom of Information legislation, the legal right for interested third parties to request access to research data, and the legal obligation for researchers (via the institutions that employ them) to release their data (and, as some see it, to violate their intellectual property rights). This assumed universalism also places researchers under moral obligation to release their data: to privilege an abstract and universal 'greater good' over the specific interests of their respondents or co-researchers, a practice that some regard as a violation of the trust-based relationships that researchers develop with their participants (eg Kaye et al. 2009; Mauthner 2012). The assumed universalism of treating data as a common resource not only makes these practices *ontologically possible* (it literally brings them into being and allows them to materialise), it also *gives them moral and political legitimacy*. It gives the agencies promoting these practices the moral and political means with which to claim that these practices are 'in the public interest'.

Concluding comments

In the 15 or so years since I was first drawn into thinking about the notion of research data as a shared or common resource (see also Mauthner et al. 1998; Parry and Mauthner 2004, 2005; Mauthner and Parry 2009), I have seen the widespread promotion and institutionalisation of what remain largely unquestioned and unexamined assumptions: that research data are, by default, a common resource; that data belong, by default, to the public; that researchers have, by default, a moral duty and responsibility to the public to share their data; that data sharing is, by default, a scientifically, morally and politically progressive practice; and that sharing data provides, by default, a good return on economic investments. As these beliefs are increasingly being imposed through regulatory practices, researchers across disciplines are questioning these assumptions, and voicing growing ethical, moral, scientific and political concerns. They are asking questions such as: Are the recommended ethical practices for data sharing really ethical? Is data sharing in the public interest if we risk losing the public's trust in science? Does data sharing necessarily constitute good science? Does data sharing necessarily democratise science and redistribute resources (and power) amongst scientists? (see Mauthner and

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Parry in press). And to what extent are notions of 'globalisation' and 'the public good' being appropriated by powerful research and policy bodies to promote economically-driven practices that may violate the rights and interests of members of the public and of research communities? Within a representational framework, these critical voices are easily dismissed (see Mauthner 2012; Kaye et al. 2009). This is because what gives rise to, and confers legitimacy upon, their concerns is precisely what is being rendered invisible within a representational framework: the material-discursive practices and labour of data production. Shifting the metaphysical framework is therefore important because it makes it possible to hear the legitimacy of these concerns and take them seriously. This is where Barad's work proves so useful. It enables us to make this shift and helps us excavate and question the specific metaphysical, moral, economic and political commitments that underpin the assumed universalism of treating data, a priori, as a common resource. This highlights how this is far from being an innocent practice. Rather, it reconfigures the politics of knowledge production, shifts power away from data producers into the hands of data funders/users/consumers, and in the process changes what we discover and how we discover it. This points to the need not only to debate, rather than assume, the notion of treating data as a common resource; but also to understand what moral, ethical, political, legal, economic and social realities such a position performs into and out of being. In particular, we need to better understand how to conceptualise research data as a 'common' resource and further explore the range of potential institutional, regulatory and governance arrangements for managing research data as a common resource. Here we may usefully draw on long-standing and interdisciplinary debates about the 'commons', as well as more recent explorations of the specific challenges thrown up by the 'digital commons' and 'global commons' (such as the knowledge, information, the internet, software) (e.g. Hess and Ostrom 2006).

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