American Behavioral Scientist

Towards a posthumanist ethics of qualitative research in a Big Data era

Abstract:	The Big Data phenomenon, and its uptake in qualitative research, raises ethical issues around data aggregation, data linkages, and data anonymization as well as concerns around changing meanings and possibilities of informed consent and privacy protection. In this article I address the ethical issues that arise from Big Data through a posthumanist philosophical framework. The humanist ethics that underpins normative ethical concerns—as outlined above—focuses on the unequal power relationship between researchers and research subjects and the potential harm that research can cause to research participants. Ethical practice consists in following guidelines and codes of ethical conduct designed, not so much to avoid these power differentials, but to protect research participants from potential exploitation and infringements of their human rights. Unethical research is understood as research that breaches these principles and/or harms its research subjects. A posthumanist ethics treats knowledge-making itself as a matter of ethical concern. It shifts the focus away from the power of researchers over research participants towards the 'world-making' powers of practices of inquiry: their ability to constitute (and not simply discover) the very nature of their objects/subjects of study. Its focus of ethical concern—what it regards as unethical—is research that claims to represent the world 'as it really is'. On this appraoch, ethical practice consists in accounting for the ways in which research ontologically constitutes its objects and subjects of study. The critical intervention made possible by bringing a posthumanist perspective to bear on the ethics of qualitative research in a Big Data is to foreground Big Data's treatment of data as self-evident, and its positivist claim to represent the world innocently, accurately and objectively, as matters of ethical concern.

Towards a posthumanist ethics of qualitative research in a Big Data era
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Introduction

This article explores the ethical issues raised by qualitative research in a Big Data era through a specifically posthumanist approach. It is important to highlight, at the outset, that a posthumanist understanding of research ethics marks a radical departure from how we are accustomed to thinking about ethics. Conventional approaches to ethics focus on the unequal power relationship between researchers and research subjects and the potential harm that research can cause to research participants. Ethical practice consists in following guidelines and codes of ethical conduct (such as informed consent, and ensuring privacy, anonymity and confidentiality) designed, not so much to avoid these power differentials, but as far as possible to protect research participants from potential exploitation and infringements of their human rights. Unethical research is understood as research that breaches these principles and/or harms its research subjects. In this context, the ethical challenges posed by Big Data stem, for example, from the ambiguous public/private nature of social media data, and the fact that these data are not generated for research purposes and therefore tend to be used without the explicit consent of those who have provided them. Similarly, Big Data research involving the aggregation of datasets or reuse of archived data may also proceed without informed consent from the data originators, and the data linkages made possible by such practices can pose risks to people by exposing their identities, and compromising their privacy and anonymity. For these reasons, new Big Data practices are causing researchers to rethink many of the cornerstones of research ethics.

My purpose in this article is to rethink the ethics of Big Data in light of a recent turn to posthumanism and a posthumanist ethics. Notions of both posthumanism and a posthumanist ethics have been variously defined and understood (Alaimo & Hekman, 2008; Åsberg, 2013; Barad, 2007; Bennett, 2001, 2010; Braidotti, 2002, 2006, 2013; de Freitas, 2017; Dolphijn & van der Tuin, 2012; Hinton, 2013; Hollin et al., 2017; Mauthner, 2018; Puig de la Bellacasa, 2017; Rekret, 2016; Thiele, 2014). The term 'posthumanism' encompasses distinctive theoretical approaches that engage with the concept of 'humanism' in different ways and to varying degrees. These include 'transhumanism', and its focus on human enhancement through biological and technological means (Fukuyama, 2002; Stock, 2002); 'non-humanism' and its concern with the role and agency of non-human entities such as animals, matter, technologies and bodies (Grusin, 2015); and 'antihumanism', which rejects and assumes the symbolic death of the humanist subject defined as the locus of will, reason, intentionality and consciousness (see Ferrando, 2013). Each of these positions entails a different approach to the question of ethics. For example, transhumanism raises ethical questions about the limits that should be placed on the freedom of people to control their own bodies; the ownership of genes and other living things; and which technologies should be mandatory, which voluntary, and which forbidden (Hughes, 2004). By contrast, a non-humanist ethics emphasizes ethical attunement and accountability to a material world of non-human beings beyond the finite human subject (Rekret, 2016), and seeks ways of sharing ethical responsibility with these non-humans entities (Verbeek, 2009). Attempts to conceptualize the ethics of

algorithms involved in Big Data (e.g. Mittelstadt et al., 2016) could be seen as an example of the latter approach.

In this article I take up Karen Barad's (2007) distinctive notion of posthumanism. On my reading, her posthumanist philosophy entails decentering the human subject— including the assumption that this subject is the locus of ethical agency and responsibility—as well as a more general questioning of the presumed existence and given-ness of all beings, including the human. Following Barad, the world is not composed of pre-existing and already-formed entities awaiting discovery by human knowers, whose ethical responsibility is to ensure that these entities are accurately represented and in a way that avoids harm. Rather, knowledge practices are understood to play a constitutive part in bringing their objects of study into existence, and are theorized as inseparably "onto-epistemological" (Barad, 2007, p. 185) or 'world-making' (Haraway, 1997). Their powers to bring their specific objects of study into being—to give and deny life—confer an inescapable ethical dimension to practices of inquiry. They are seen as inherently morally consequential (Barad, 2007; Haraway, 1988, p. 593; Haraway, 2011) and as inseparably "ethico-onto-epistemological" (Barad, 2007, p. 185). As Barad (2007, p. 37) suggests, "ethical concerns are not simply supplemental to the practice of science but an integral part of it".

A posthumanist ethics therefore shifts the focus away from *the power of researchers over research participants* towards the *'world-making' powers of practices of inquiry*: their ability to constitute the very nature of their objects/subjects of study. The object of ethical concern from a posthumanist perspective—what it regards as unethical—is research that claims to innocently represent the world 'as it really is'. It takes issue with claims to disembodied objective knowledge, and insists that practices of inquiry justify and account for themselves and their effects on the world. Bringing these insights to bear on qualitative research in a Big Data era displaces conventional ethical concerns with risks posed by research/ers to human subjects, and foregrounds instead Big Data's treatment of data as self-evident and its practice of letting the data 'speak for themselves' as moral issues.

I further develop this argument by organising my article in two halves with three sections in each. The first half opens with a discussion of Big Data, its uptake in qualitative research, and the ethical challenges raised by these emerging practices. The next two sections—on humanism and its legacies in terms of moral philosophy and research ethics—bring into view the largely forgotten and naturalized humanist underpinnings of normative approaches to research ethics, including the ethics of Big Data. They show how a historically- and culturally-specific set of humanist philosophical assumptions and commitments have, over the centuries, given rise to the particular understandings and practices of research ethics that we now largely take as given. Materializing this humanist legacy is a necessary preliminary step to the development of a posthumanist ethics which is the focus of the second half of the paper. In this part I elaborate further on my understanding of posthumanism and a posthumanist ethics, by drawing on the works of feminist science studies scholars, Karen Barad and Donna Haraway. In the final part I return to the question of Big Data and argue that bringing a posthumanist perspective to bear on the ethics of Big Data opens up new and distinctive issues for ethical scrutiny, by positioning the implicit

positivist philosophy of science that underpins normative understandings and practices of Big Data as a matter of ethical concern.

Qualitative research in a Big Data era and its ethical challenges

The concept of 'Big Data' emerged in the early 2000s and was initially associated with sciences like astronomy and genomics before migrating to other areas of human enterprise (e.g. healthcare, government, business, finance, education).[1] In its early use, the term referred to volumes of data—the so-called 'data deluge'—that exceeded available computational storage and analysis capacities and capabilities, and that required the development of new processing technologies (Mayer-Schönberger & Cukier, 2013). However, Big Data is understood to denote not only volumes of data but the speed and dynamic nature of their production—rapidly and continuously created in or near real-time—as well as their ontological features: diverse, exhaustive, fine-grained, indexical, relational, flexible, messy and unruly (Kitchin, 2014b; Mayer-Schönberger & Cukier, 2013; Zwitter, 2014). boyd and Crawford (2012, p. 663) define Big Data as a sociotechnical phenomenon that maximizes "computation power and algorithmic accuracy," and that involves searching, gathering, analyzing, aggregating, linking, and comparing large data sets "to identify patterns in order to make economic, social, technical, and legal claims". Another aspect of Big Data is its production through the so-called 'internet of things' (Zwitter, 2014). Generation of data in this way involves both 'digitization'—converting information into computer-readable format—and what Mayer-Schönberger and Cukier (2013, p. 15) call "datafication": turning aspects of our everyday lives and practices into quantified data which can be transformed into new forms of value. This, they suggest, is what makes data "the oil of the information economy" (Mayer-Schönberger & Cukier, 2013, p. 16). The concept of Big Data, then, is invoked to signal large volumes of data as well as different types of data produced and handled in new ways. As Mayer-Schönberger and Cukier (2013, p. 6) explain: "big data refers to things one can do at a large scale that cannot be done at a smaller one, to extract new insights or create new forms of value."

The use of terms such as Big QualiData and Big QLR (Qualitative Longitudinal Research[1]) point to some of the ways Big Data discourses, practices and imaginaries are being taken up within qualitative research (see also Hossain and Scott-Villers, this volume).[2] One example is the practice of 'scaling up' (Neale & Bishop, 2012) qualitative research achieved by augmenting the quantity of qualitative data being analysed. Scaling up qualitative research has been made possible in part by the growth of qualitative data archives over the past two decades following the introduction of data archiving, sharing and reuse policies and infrastructures.[3] Scaling up qualitative datasets has also resulted from a growth in multi-site qualitative research studies, often large-scale international development projects (see Camfield, this volume). The growth in qualitative datasets is generating increasing numbers of qualitative data re-use studies (see Bishop & Kuula-Luumi, 2017) as well as renewed interest in qualitative longitudinal research (McLeod & Thomson, 2009; Thomson & McLeod, 2015). Rather than being entirely 'new', these practices build on, and reconfigure, already established research approaches and infrastructures. The recent expansion of qualitative archives, for example, builds on longer-running qualitative

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[1] http://bigqlr.ncrm.ac.uk

data archives such as the UK's Mass Observation Archive at the University of Sussex and the US Human Relations Area Files at Yale University, both initiated in the 1930s. Similarly, the growing emphasis on, and importance of, secondary analysis can be seen as an extension (but also reconfiguration) of existing traditions and practices including secondary analyses of quantitative data by economists, revisits of classic studies by sociologists, returns to ethnographic fieldsites and fieldnotes by anthropologists, the creation and use of archival narratives by oral historians, and the use archives as source materials by historians (Holland, Thomson, & Henderson, 2006; Thomson et al., 2014).

The Big Data phenomenon is also generating new sources of textual data, particularly social media data produced through networking sites such as Facebook and Twitter (e.g. Robards & Lincoln, 2017). The volume, form and origin of these data is leading to what some have called a "computational turn" (boyd & Crawford, 2012, p. 665) in the social sciences. This is manifested in increasing collaboration between social and computer scientists, and in the emergence of new computer-based techniques for analysing, visualizing and representing these data, including the elaboration of automated methods for coding large volumes of textual data (e.g. Benoit et al., 2016; Karamshuk et al., 2017; Nulty et al., 2016; Tinati et al., 2014). Again, these Big Data computational techniques need to be placed within the broader technological history of the social sciences. This includes, for example, the development of computational technologies for managing machine-readable quantitative data in the 1960s which gave researchers the capacity to manipulate large datasets and to use complex methods of analysis in ways that had not been previously possible (Fienberg et al., 1985). Similarly, the 1980s saw the introduction of Computer-Assisted Qualitative Data Analysis Software, which facilitated direct coding of the data and subsequent searches in the coded material (Brinkmann et al., 2014).

Emerging qualitative research practices and methodologies associated with the Big Data phenomenon are generating a number of ethical challenges. For example, the use of social media data raises concerns about the use of these data without people's awareness or consent, questions about the public/private status of these data, and risks of identification when multiple datasets are combined (e.g. Zimmer, 2010). A key ethical issue is that while different datasets may be innocuous on their own, when aggregated, they can compromise people's identities and invade their privacy (see also Hauge et al., 2016; Metcalf & Crawford, 2016). This in turn is changing the nature, meaning and relevance of existing ethical practices. The notion of informed consent, for instance, can seem redundant in research using social media data, particularly when these data are considered to be already in the public domain and "consent often amounts to an unread terms of service or a vague privacy policy" (Metcalf & Crawford, 2016, p. 2). Similarly, the move towards routine archiving and secondary use of research data is prompting proposals for the adoption of broad or open consent as a replacement for traditional approaches to informed consent, which restrict how data can be used as they require researchers to contact participants and seek their consent for every new research project. While broad or open consent is presented as 'best practice' for social science data archives (e.g. Corti et al., 2014), it is not neutral in its effects. For example, broad or open consent, coupled with the idea that data are a naturally occurring resource (Mauthner, 2012), confer a deceptive self-evidence onto the appropriation, commodification and commercialization of data. Thus, a significant concern raised by new forms of (qualitative and quantitative) data

and emerging data science methods—and echoing earlier debates about online research methods (e.g. Hine, 2000)—is the way in which they are reconfiguring what are regarded as the key principles of ethical research, including informed consent; minimal harm; protection of anonymity and confidentiality; respect for the rights, dignity and privacy of research subjects; avoidance of deception; and the right to withdraw from a research study (see Metcalf & Crawford, 2016; Zwitter, 2014).

These ethical challenges and debates surrounding Big Data exemplify a normative approach to social science research ethics. While this understanding of research ethics is largely taken as given, it is a legacy of a humanist worldview and its philosophical commitment to human autonomy. Ethical principles and practices embody this commitment in their over-riding concern with protecting human rights, including the right to self-determination, privacy and autonomy; and in the development of codes of ethical conduct designed to honour, respect and safeguard these rights. The conceptualization of research ethics that we have inherited, that we pass on from one generation of researchers to the next, and that shapes how we think about the ethics of Big Data is therefore a throwback to humanist philosophies and their enshrinement of human rights and autonomy. In the next two sections of the paper I flesh out this argument in more detail. I begin with a discussion of humanism and its commitment to an ontology that is both anthropocentric and essentialist, before moving on to consider how this has shaped notions of morality and ethical practice, including within the social sciences. I argue that humanist philosophies have given rise to what I call a 'humanist ethics': an ethics that (1) takes the rational human subject as both locus of moral agency and object of ethical concern; and (2) considers the domain of morality and ethics to be separate from that of science and knowledge-making. The purpose of this discussion is to de-naturalize the apparent self-evidence of contemporary ethics—including the ethics of qualitative research in a Big Data era— by pointing to its *specifically* humanist philosophical underpinnings, and thereby open up the possibility of an alternative ethics situated in a posthumanist philosophical worldview, which I discuss in the second half of the paper.

Humanist philosophies

The term 'humanism' is associated with a cluster of ideas rather than denoting a unified worldview (Norman, 2012). While there are differences and similarities between Roman, Renaissance, Enlightenment, and 20th Century humanisms, for many, humanism's defining feature is as a philosophy that places humans (rather than God) at the heart of its literary, philosophical and scientific projects. Humanism, as it emerged during the Renaissance and came into its own during the Enlightenment, released humans from the constraints of religious and other institutional belief systems and authorities, liberating them to govern themselves. As Christians (2005, p. 139) suggests "The cult of human personality prevailed in all its freedom. Human beings were declared a law onto themselves, set loose from any faith that claimed their allegiance". This emerging anthropocentrism was fuelled by the diminishing influence of the Church and the growth of individualism, and the increasing role of science and reason (versus the Church and religious faith) as primary sources of authority and legitimacy (Russell, 1946).

Modern science, which began to emerge in the Renaissance period, sought to use human beings' supposedly unique capacity for reason and observation to uncover the

universal laws of nature: "As a Cartesian thinking subject, man could examine the world and explain its workings with scientific detachment… This view of man as an autonomous agent, separate from though still engaged with nature, flourished in the Enlightenment" (Bolter, 2016, p. 1). Indeed, science played a critical role in setting human beings free both from nature—allowing "humans to dominate nature, which formerly had dominated them" (Christians, 2005, p. 139)—and from the moral order. In particular, the notion of a *value free* science was seen as necessary to the promotion of human autonomy and freedom. As Christians (2005, p. 139) points out, the Enlightenment brought about a radical disjunction between "hard facts and subjective values," isolating reason from faith, and knowledge from belief. This view was expressed, for example, upon the foundation of London's Royal Society when Robert Hooke noted in 1663 that in seeking to "improve the knowledge of natural things, this Society will not meddle with Divinity, Metaphysics, Morals, Politics and Rhetoric" (Lyons, 1944, p. 42 cited in Christians, 2005, p. 139). Enlightenment thinkers believed that rather than the state dictating how its citizens should live their lives individuals should be guided by their own ideas and beliefs. Science, and later social science, were seen as having an important role to play in discovering objective, impartial and value-free facts about the human condition which could inform social and political decision-making. Key thinkers such as Comte, Mill and Weber saw science and social science as neutral and amoral, and political only in their application. Despite differences in their views, all advocated a morally neutral social science—premised on a facts-values distinction—as a means of securing political and personal autonomy (Christians, 2005).

Humanism is therefore a celebration of human reason, autonomy and free will, including intellectual and moral freedom. This anthropocentric perspective is underpinned by a commitment to human exceptionalism, and the presupposition that their capacity for rational thought makes human beings essentially different from all other kinds of beings.[4] In giving humans privileged status, humanism relies on an essentialist conception of the human being and human nature. More generally, it presupposes an essentialist ontology by taking the existence and identity of all beings—and the differences between them—as given. Heidegger (1998, p. 245) takes up this issue in his *Letter on Humanism* when he notes that varied interpretations of humanism assume not only an already determined essence of the human being, but also "an already established interpretation of nature, history, world, and the ground of the world, that is, of beings as a whole". Heidegger's point is that humanist philosophies presuppose an elaborate ontology or metaphysics—including a historically established notion of the essence of the human—without acknowledging this starting assumption.

For the purposes of this discussion, then, I identify humanism as a philosophical worldview that is anthropocentric and believes in human exceptionalism; that is underpinned by an essentialist ontology in which the world is understood to be populated with a metaphysical foundation of fixed, unchanging, pre-existing and 'naturally given' entities (including but not restricted to human beings); that assumes that human knowers can discover foundational truths through the application of reason; and that subscribes to a hierarchical and dualist distinction between facts and values in which truthful, certain or factual knowledge of the world is separate from, precedes, and provides support and justification for, further derivative knowledge such as moral and ethical claims.

A humanist ethics

The ways we conceptualize morality and practice research ethics in the social sciences, and elsewhere, are humanist legacies to the extent that they have been developed within the context of these dominant humanist philosophies and the ontological primacy they give to the human; their privileging of the rational human subject as primary holder of moral agency and responsibility; and their enshrinement of human autonomy and rights as key foci of ethical concern. In this section, I briefly discuss different aspects of moral philosophy to give a sense of this intellectual inheritance, including how it shapes ethical practice and how we approach the ethics of Big Data.

Within a Western tradition, ethics is understood as a distinctive branch of philosophy—moral philosophy—that concerns itself with the science or study of morality, with questions of what is right and wrong, and with the problematic of how we ought to live our lives.[5] It is divided into three areas: meta-ethics, normative ethics, and applied ethics (Wolff, 2017). Meta-ethics is the most abstract area of moral philosophy. It concerns itself with the philosophical question of what morality is, and explores the ontological status, foundations, and scope of moral values, properties, and words. For example, while some philosophers (moral realists or objectivists) claim that moral facts have a real and objective existence that is independent of any beliefs or evidence about them, others (moral relativists or subjectivists) suggest that individuals and cultures create moral values in diverse ways (Wolff, 2017). In this formulation, morality is taken to be either 'naturally given' awaiting human discovery or it is understood as a cultural elaboration constructed by humans. Despite their differences, both perspectives can be characterized as humanist in that they assume the prior existence of (1) moral facts or values, and (2) already constituted human rational subjects who either discover moral facts or construct moral values.

Normative and applied ethics both focus on the question of what is moral. Normative ethics is concerned with providing a moral framework and set of guiding ethical principles to inform moral behaviour. It explores what values and norms should inform moral decision-making, and how these can be justified. There are three main traditions in normative ethics (Wolff, 2017). Virtue ethics emphasizes cultivation of the virtues, or inherent moral character, of a person and is associated with Aristotle. Utilitarianism focuses on the consequences of actions. It holds that an action is morally right if it leads to the most happiness for the greatest number of people. In this view, human happiness is the foundation of all morality. Classic proponents were Jeremy Bentham, John Stuart Mill, and Henry Sidgwick (Christians, 2005). Deontology emphasizes moral duties and rules. The rightness or wrongness of actions depends on whether humans fulfil their duty by following universal moral laws. A prominent example is Kant's ethics. It roots morality in humanity's rational capacity, and asserts the existence of a supreme and universal principle of morality, 'The Categorical Imperative,' which determines what our moral duties are. While virtue ethics, utilitarianism and deontology are regarded as the main ethical theories, they have not gone unchallenged. One example is the ethic of care proposed by Gilligan (1982), which emphasizes the importance of human interdependence and relationship as both an ethical goal and as a central element of moral decision-making. Despite

their differences, these contrasting ethical theories share humanist assumptions; for example, in the unconditional value of human rationality and free will found in Kant's ethics, or the understanding of moral reasoning as exact calculation based on rational choice theory associated with utilitarianism, or the privileging of human relationships in the ethic of care.

Applied ethics uses principles and insights from normative ethics to resolve specific moral issues in concrete and particular settings (e.g. medical ethics, business ethics) (Kitchener & Kitchener, 2009). Social science research ethics is an example of applied ethics. Two fundamental ethical questions have guided social science research ethics (Kitchener & Kitchener, 2009; Punch, 1994). The first deals with the moral and ethical aspects related to the purpose and conduct of research itself. It asks: what is the ethically proper way to collect, process and report research data? The second, which has received more attention, relates to how social scientists should behave with respect to their research subjects. In addressing these two questions, researchers are guided by professional codes of ethical conduct. These prescribe and proscribe certain values and ways of acting, including ensuring the accuracy and validity of data, seeking informed consent, ensuring anonymity and confidentiality, safeguarding research participants against harm, avoiding deception, and risk–benefit evaluation (Kitchener & Kitchener, 2009; Christians, 2005).[6]

The ethical principles of autonomy, beneficence, non-maleficence and justice that underpin modern Western research involving human subjects and its codes of ethical conduct rely on a series of humanist assumptions about what makes human beings both unique—e.g. their dignity and rights—and distinctive from non-human entities (e.g. animals, machines, inanimate objects). These humanist foundations are apparent, for example, in the human-centric nature of ethical concerns within social science research, and their focus on respecting research participants' rights to information, self-determination, dignity, and privacy; and protecting them from physical, emotional, psychological and/or moral harm. They are evident in the commitment to individual autonomy, human freedom, and rational decision-making that underpins the practice of informed consent. And they can be seen in the ways in which social science research ethics frames moral agency as a human concern located with researchers and their ethical responsibilities towards science, society, and the human subjects taking part in their research.

As already indicated, this normative moral framework, including its conceptualization of social science research ethics, is contested. For example, social scientists, qualitative researchers, and feminist scholars have voiced concern with the growth of research ethics regulation and governance; the perceived inappropriate imposition of a biomedical model of research ethics onto the social sciences; the limitations of abstract universal ethical principles compared to flexible, contextual, situational and relational ethical practices; and the use of technocratic approaches to research ethics (e.g. Dingwall, 2006; Edwards & Mauthner, 2012; Haggerty, 2004; Hedgecoe, 2008; Miller et al., 2012; Shrag, 2010; Stark, 2011; van den Hoonaard & Hamilton, 2016). Critics have also argued that the ethical conduct of research lies as much in political, epistemological, theoretical and methodological practices, as it does in ethical ones (Clegg & Slife, 2009). In particular, postmodern approaches to ethical practice eschew the distinction between the research process and research ethics; recognize that research is laden with values, assumptions, and perspectives; and sees "research

as an inherently ethical enterprise" (Clegg & Slife, 2009, p. 36). Ethical research, they suggest, is politically engaged, epistemologically situated, and methodologically reflexive. And these ethical commitments, it is argued, can be put into practice through more reflexive, collaborative, relational, inclusive, participatory, and empowering research designs and knowledge construction processes (e.g. Brabeck & Brabeck, 2009). Nevertheless, these critical ethical projects remain situated within a humanist framework that continues to privilege the human subject as locus of epistemological and moral agency, and focus of ethical concern. Clegg and Slife (2009, p. 36), for example, argue that a postmodern ethics requires "an insistent self-examination" and reflexive approach on the part of the researcher, as well as an "an unflinching sensitivity" to our relation with the research participant. Thus, while normative ethical approaches have been contested, their critiques re-inscribe humanist assumptions with a supposedly pre-existing human subject remaining the fountainhead of ethical agency and responsibility, as well as the object of ethical care and concern.

The purpose of this first half of the paper has been to situate the ethical concerns raised by Big Data, and its uptake within qualitative research, within a broader humanist framework and humanist ethics—to show that the ways in which we think about the ethics of Big Data, the challenges it raises, and how we might address these are all rooted within a very specific humanist understanding of morality and ethics. Drawing on emerging posthumanist philosophies, I now move on to explore a different understanding of ethics before returning to the question of what this might entail for a posthumanist ethics of qualitative research in a Big Data era. The point of this discussion is not to suggest that a posthumanist ethical approach to Big Data is better or more ethical than a humanist ethics. Rather, I argue that humanist and posthumanist approaches to ethics are rooted within distinctive philosophical worldviews, focus on distinctive matters of ethical concern, and therefore configure the ethics of Big Data in different ways.

Posthumanist philosophies

Over recent years, posthumanist theories have joined other intellectual traditions—such as poststructuralism, postmodernism, postcolonial studies, feminist studies and cultural studies—in critically deconstructing the legacies of humanist philosophies. Coming from wide ranging disciplinary backgrounds—including philosophy, science and technology studies, literary studies, critical theory, theoretical sociology and communication studies (Bolter, 2016)—and encompassing distinctive theoretical approaches, posthumanist scholars are seeking to rethink and rework the humanist assumptions underpinning modern Western philosophy and science (Ferrando, 2013; Miah, 2009) including notions of: an autonomous human subject; a pre-given 'human nature'; scientific reason; objective and value-free knowledge and truth; universal laws of nature or morality; and a metaphysics of essence and presence.

The specific posthumanist approach I take up in this article—associated in particular with the work of feminist science studies scholars Karen Barad and Donna Haraway[7]—takes a critical stance towards traditional Western humanism in three ways that are of relevance to our discussion of a posthumanist ethics, and its implications for the ethics of Big Data. The first challenges the alleged sovereignty of the human autonomous subject, its hierarchical relation to the non-human realm, and

the human exceptionalism it is granted by virtue of its supposedly unique capacity for reason, including moral reasoning (Barad, 2007; Braidotti, 2013; Haraway, 2008; Wolfe, 2009). The object of posthumanist critique here are foundational anthropocentric assumptions underpinning Western philosophy and science whereby the rational and intentional human subject is seen as the locus of epistemological and moral agency, responsibility and accountability. In terms of research ethics this dimension of posthumanism presents a challenge to the idea that ethics consists in autonomous individual human subjects—researchers and research participants— making ethical decisions on the basis of intentional rational thinking (such as researchers seeking their research subjects' informed consent).

A second and broader concern is a refusal to bestow ontological priority, primacy, superiority or separateness on to *any* ontological being, let alone the human (Barad, 2007). This variant of posthumanism calls into question the assumed given-ness of all beings, and the essentialist and dualist ontology that underpins much of Western philosophy and science. It eschews the representationalist notion that reality consists of pre-existing, and distinctive, entities or categories (such as 'human' vs 'nonhuman', 'culture' vs 'nature', 'values' vs 'facts') awaiting human discovery and representation. Rather, it proposes a performative understanding of world/knowledge-making practices in which the latter are implicated in the constitution of reality. These practices neither put us in touch with naturally given entities; nor do they produce social constructions of the world. Rather, they "play a role in producing the very phenomena they set out to describe" (Barad, 2007, p. 207). Knowledge-making practices help make their objects of study by giving them determinate and specific ontological form. Whereas humanism assumes that the ontological nature of the world is a matter that has already been settled, posthumanist philosophies take as their key problematic the question of what and how entities come into being in the first place. World-making practices can never be innocent or neutral because they make the world in privileged ways by bringing specific (i.e. valued) entities, and their binary others (e.g. 'human' vs. 'non-human'), into being. It is in this sense that world-making practices are understood as necessarily ethical because they make the world in morally and politically consequential ways. On a posthumanist approach, there is no separation between finding out about the world (the realm of knowledge), and ensuring that no harm is done in the course of such an investigation (the realm of ethics). Rather, there is ethical duty and responsibility in knowledge/world-making itself. Knowledge-production is an inherently ethical matter.

Third, posthumanism deconstructs both the liberal subject found at the centre of humanist philosophies—including philosophies of science and moral philosophies— and the essentialist ontology that underpins these philosophical traditions by *calling them to account.*[8] Its concern is with justifying the ontological constitution of entities and boundaries, such as the 'human' vs. the 'nonhuman', or 'nature' vs. 'culture'. Following Barad (2007, p. 136), posthumanism is "the practice of accounting for the boundary-making practices by which the "human" and its others are differentially delineated and defined". Significantly, however, this is not a reflexive accounting in which the human subject accounts for the social construction of reality, and the effects of theory, culture, history or subjectivity on knowledge. This position assumes the pre-existence and centrality of human agency and re-inscribes a priori distinctions between 'nature' and 'culture' through the notion of an already formed material world that is socially constructed by an already constituted human subject (Barad, 2003).

Rather, posthumanism (as elaborated in this article) assumes that the world is ontologically indeterminate outside of specific practices and entails knowledge practices accounting for themselves and their world-making effects. The consequential effects of world-making practices is what demands their moral justification. Posthumanism takes this accounting or justificatory practice as its prime ethical concern; and conceptualizes this practice in other than humanist terms. Posthumanist interventions attempt to move beyond social constructivist approaches, reflexive accounting practices, and the notion that truth claims mask particular human interests in local, cultural and political struggles. The posthumanist argument is therefore distinctive to the postmodern claim that human subjects (and cultures) make the world, create knowledge, engage in ethical practices and reflexively account for their practices. As already indicated, posthumanism seeks to conceptualize ontological, epistemological and ethical agency without recourse to the human subject. In this respect, posthumanist interventions are carving out trajectories that are distinctive, albeit indebted, to critical projects that have come before them.

A posthumanist ethics

As indicated above a posthumanist ethics is distinctive to conventional—and what I characterizing as humanist—approaches to ethics.[9] On a posthumanist approach there is no intentional human subject at the helm of knowledge projects and ethical decision making. Rather, ethical (and ontological and epistemological) agency is located with practices of inquiry and their performative effects. The object of ethical concern is not humans but the world-making powers of practices of inquiry—their ability to bring specific configurations of the world into existence. It is in this sense that ethics is seen as inseparable from knowledge making, and is understood as responsibility and accountability for the performative effects of knowledge practices—where responsibility and accountability are conceptualized in other than humanist terms. In this section I further flesh out these points by: first, introducing Foucault's concept of the 'apparatus' as a means of conceptualizing agency without recourse to the human subject; second, discussing Haraway and Barad's notion of the 'apparatus of bodily production' to theorize the performativity, and world-making powers, of apparatuses; and third, further drawing on Haraway and Barad to articulate a posthumanist ethics as ethical accountability for apparatus of bodily production, and their performative effects. In the final section of the article I build on these insights to begin to develop a posthumanist ethics of Big Data.

Foucault's 'apparatus' as a means of conceptualising posthumanist agency

Foucault's (1980) concept of the 'apparatus' provides a way of conceptualizing agency beyond the human subject, with the apparatus becoming the locus of knowledge-making. In *The Confession of the Flesh*, Foucault (1980) elaborates on his use of the term 'apparatus' (translated from the French *dispositif).* The concept, he suggests, provides a way of speaking about a complex formation or system of discursive and non-discursive practices, elements and relations. It includes "a thoroughly heterogeneous ensemble consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions—in short, the said as much as the unsaid" (Foucault, 1980, p. 194). The nature, meaning and function of these heterogeneous elements are not fixed but vary along with the nature of the

connection that exists between them. In this way, "a particular discourse can figure at one time as the programme of an institution, and at another it can function as a means of justifying or masking a practice which itself remains silent, or as a secondary re-interpretation of this practice, opening out for it a new field of rationality" (Foucault, 1980, p. 194-195). The main strategic function of the apparatus is to respond to an "*urgent need*" (Foucault, 1980, p. 195) at a given historical moment. There is, Foucault suggests, a strategic imperative that acts as the matrix for an apparatus.

The concept of the apparatus provides Foucault (1966/2005, p. xiv) with a way of addressing what he refers to elsewhere as "the problem of the subject". In *The Order of Things,* Foucault seeks to tell a history of the human sciences without recourse to an intentional meta- or trans-historic human subject. He wants to undertake a historical analysis guided by "a theory of discursive practice" rather than "a theory of the knowing subject" (Foucault, 1966/2005, p. xiii). His objective is to retrace the "spontaneous movement of an anonymous body of knowledge" (Foucault, 1966/2005, p. xiv) and "its conditions of existence, its changes, the errors it has perpetrated, the sudden advances that have sent it off on a new course" (Foucault, 1966/2005, p. xiv) all "without reference to the scientist himself" (Foucault, 1966/2005, p. xiv). Specifically, he rejects the phenomenological approach "which gives absolute priority to the observing subject, which attributes a constituent role to an act, which places its own point of view at the origin of all historicity—which, in short, leads to a transcendental consciousness" (Foucault, 1966/2005, p. xiii). Conceptualizing the human sciences—or in the case of this article Big Data as a means of knowledge production—as an apparatus opens up the possibility of exploring its history in terms of the role of, and relations between, "instruments, techniques, institutions, events, ideologies, and interests" (Foucault, 1966/2005, p. xiii). Foucault suggests that it is through this apparatus, and its underlying logic, rationality, rules and systems of regularities, that the human sciences constitute their very existence and historical trajectory. In the final section of the article I will discuss how conceptualizing Big Data as an 'apparatus' provides a non-anthropocentric way of thinking about the nature, effects, and ethics of the phenomenon of Big Data.

Haraway and Barad's 'apparatus of bodily production' as a means of conceptualising the posthumanist performativity of apparatuses

Feminist science studies scholars, Haraway and Barad, flesh out the ontological nature, performative effects and ethical dimensions of the apparatus through their concept of the 'apparatus of bodily production'. On their account, agency is located with the apparatus's ongoing materialization of itself, and not with a human subject as driver of the apparatus. The human subject neither precedes nor is separate from the apparatus, but rather is one of its many constitutive effects. The human subject and human agency do not simply disappear from their posthumanist metaphysics and ethics. Rather, they are both implicated in and performative effects of apparatuses.

In *Situated Knowledges*, Haraway (1988) introduces 'the apparatus of bodily production' as a means of developing her feminist theory of embodied objectivity, situated knowledges, and non-innocent world-making. With this concept, Haraway (1988, p. 595) specifies the "material-semiotic" nature of embodiment; that is, a conceptualization of both the bodies that are produced and how they are produced. Embodiment, she suggests, designates neither an inert material substance—"organic

embodiment"—nor its "technological mediation" (1988, p. 581). Nor is the notion of material-semiotic used in additive terms to imply the combining of already constituted material entities with already constituted semiotic elements (see Mauthner, 2018, p. 58-60). Rather, the material and the semiotic are understood as ontologically inseparable and mutually constitutive. In Barad's terms, the relation between the material and the semiotic is an intra-active rather than interactive one (see below).[10] On this account, embodied objectivity entails a material-semiotic apparatus intra-actively bringing material-semiotic objects into existence.

Haraway (1988, p. 593) further uses the notion of the apparatus of bodily production as a means of conceptualizing the agency of the bodies that are produced; i.e. the apparatus's objects of knowledge. She rejects the objectification of the world as "raw material for our humanization": the assumption that the world is already given and can speak for itself once it has been discovered and decoded by human knowers and their knowledge projects. Situated knowledges grant agency to the "objects" of the world. This agency, however, is not understood in classical humanist terms: it is neither located with human subjects—it is "independent of intentions and authors" (Haraway, 1988, p. 595)—nor with/in pre-existing entities or objects. Rather, agency is conceptualized as the on-going materialization of bodies and ontological processes of materialization (see also Barad, 2007). In Haraway's (1988, p. 595) words, "bodies as objects of knowledge are material-semiotic generative nodes". Objects of knowledge materialize with and through boundary-drawing practices—i.e. apparatuses—which are also material-semiotic generative nodes continually and dynamically making and remaking themselves. Following Haraway and Barad, the nature and configuration of the world are 'phenomenal': the world materializes itself into existence, and into specific forms, only *with* and *as* specific entangled apparatuses of bodily production, where the latter are also understood to be 'phenomenal'. Apparatuses (enacted through material-discursive devices and practices of inquiry) are understood as inseparable and constitutive parts of the objects (and subjects) they help to produce. Following Barad, the referent for practices of inquiry—the 'object' that these practices make determinate and intelligible—is a 'phenomenon': entangled, inseparable and mutually constitutive practices-objects, rather than an independently existing object. Objects of study do not exist as determinate givens outside of phenomena. Rather, they are "phenomenal" (Barad, 2007, p. 315). In the social sciences, this implies for example that research practices, such as Big Data practices, "neither discover pre-existing identities, nor do they provide interpretations or constructions of these identities. Rather, research practices, along with many other kinds of practices, help *constitute* specific kinds of identities (humans, animals, machines) as well as specific categories of human identities (men, women, White, Asian, Black, working-class, middle-class, and so on)" (Mauthner, 2018, p. 52).

Through their practice, apparatuses therefore bring into being not only specific 'objects' of study but also specific configurations of themselves (see Mauthner, 2016). To reiterate, the focus is not on how (separate and already constituted) human researchers deploy (separate and already constituted) apparatuses (or material-discursive practices of inquiry which may be philosophical, theoretical, methodological, or ethical) to discover pre-existing worlds. Rather, apparatuses materialize *phenomena,* that is, specific, intra-active and inseparable configurations of practices of inquiry and their objects of study. Barad's posthumanist performative

conceptualization of practices of inquiry as material-discursive world-making practices therefore undermines the classical understanding of knowledge-making as an anthropocentric epistemological project. It dethrones the human as the locus of knowledge and puts in its place material-discursive practices and their performative world-making (onto-epistemological), rather than just knowledge-making (epistemological), powers and effects.

On my reading of Barad's work, the material-discursive specificity of world-making practices comes from the specific philosophical, moral and political commitments they embody and enact. These values, however, are not taken as already constituted cultural entities that are separate from fact-finding practices and that are drawn upon by human researchers to engage in reflexive practices of inquiry. Rather, these values are understood as ontologically indeterminate outside of the material-discursive world-making (and much wider) practices through which they are materialized. Values and world-making practices therefore co-constitute one another and come into being together. This means that practices of inquiry can never be ontologically, epistemologically, morally or politically innocent or neutral. They *necessarily* perform themselves in metaphysically-specific ways. It follows that world-making practices perform not only themselves, but also their objects of study, in metaphysical configurations that embody and enact specific values. As Barad (Juelskjær & Schwennesen, 2012, p. 15) notes, "If phenomena, not things, are the objective referent then the apparatus that produces data and things also produces values and meanings".

Following Barad, world-making practices are therefore necessarily ethical because it is through these practices that values—as well as bodies and meanings—are actualized and come to matter (Juelskjær & Schwennesen, 2012, p. 15). Barad's (2007, p. 185) metaphysics undermines the facts-values distinction and characterizes practices and apparatuses as inseparably "ethico-onto-epistemological". Engaging in *any* world-making practice—philosophical, theoretical, methodological, ethical—*is* an ethical matter in itself. Ethics inheres in *the very practices of inquiry*, and not simply in codified norms and rules of ethical conduct. Engaging in knowledge/world-making practices entails ethical duty, responsibility and accountability for the real ontological, epistemological, ethical, and political world-making consequences of enacting metaphysically-specific practices of inquiry. Importantly, while it is a human subject that engages in these practices, this subject is not understood as pre-existing these practices but rather as intra-actively coming into being with them (see below). By extension, ethical agency and responsibility are not understood as located with/in an already constituted moral agent but rather as materialising with/through specific world-making practices, along with human subjects and objects of inquiry. All of these are regarded as 'phenomenal'.

A key question in developing a posthumanist ethics of Big Data is how to conceptualize moral agency without locating it with a pre-existing, intentional and rational human subject. Conceptualizing Big Data as an apparatus of bodily production provides a way of theorizing the ontological, epistemological and moral agency of Big Data other than in terms of a human subject. Big Data can be understood as an apparatus of bodily production whose multiple practices are implicated in the 'data' they produce. Big Data practices do not innocently find patterns of pre-existing meanings within data; rather, they help to produce them. The implications for an ethics of Big Data is to locate ethics with the performative effects

of data practices; with the power of these practices to constitute, and not simply represent, the world.

A posthumanist ethics as ethical accountability of apparatus and their performative effects

Haraway (1988) takes issue with classical objectivity understood as the "god trick of seeing everything from nowhere" (Haraway, 1988, p. 581): "a conquering gaze … that makes the unmarked category claim the power to see and not be seen, to represent while escaping representation" (Haraway, 1988, p. 581). In contrast to notions of transcendental and disembodied knowledge, and the splitting of subject and object, Haraway proposes "embodied, therefore accountable, objectivity" (Haraway, 1988, p. 588) as a means of conceptualizing the situated, partial and locatable nature of knowledge production—its particularity, specificity and non-innocence (Haraway, 1991, p. 124). This, Haraway suggests, is a way of producing knowledge that "allows us to become answerable for what we learn how to see" (Haraway, 1988, p. 583). Barad (2007, p. 340) makes a similar point when she redefines objectivity as "a matter of accountability to marks on bodies" and the specificity of these marks and the objects that they produce. Haraway is not simply arguing that situated knowledges and embodied objectivity provide new epistemological ways of understanding the construction of knowledge. She is making a much stronger ontological claim that embodied objectivity and situated knowledges are practices that produce not only knowledge but also reality, and it is through their world-making powers that practices acquire ethical agency and responsibility. For Haraway (1988, p. 583), scientific objectivity as classically understood constitutes irresponsible knowledge and scientific practice. Haraway's argument for situated and embodied knowledges is therefore a stance "against various forms of unlocatable, and so irresponsible, knowledge claims" (1988, p. 583). Barad (2007, p. 37) elaborates on this point:

> Objectivity is simultaneously an epistemological, ontological, and axiological issue, and questions of responsibility and accountability lie at the core of scientific practice. The correct identification of the objective referent of scientific practices of theorizing and experimenting requires an accounting of the ethical (as well as epistemological and ontological) concerns. It is not possible to extricate oneself from ethical concerns and correctly discern what science tells us about the world. Realism, then, is not about representations of an independent reality but about the real consequences, interventions, creative possibilities, and responsibilities of intra-acting within and as part of the world.

Significantly, neither Barad nor Haraway conceptualize answerability, responsibility and accountability in humanist terms. It is not the human knower who is responsible, answerable and accountable for what is produced. Consequently, Haraway's 'partial' and 'situated' knowledge is not a social constructivist epistemology that requires reflexive positioning on the part of the knower through specification of personal, social, demographic, political, theoretical, cultural, and historical coordinates. Rather, there is a more complex causality at work here whereby the human knower is both implicated in, and a relational and performative effect of, knowledge production systems and apparatuses. In Barad's terms (2007), the human knower is one of many 'bodies' (i.e. ontological entities) that is 'intra-actively' (see below) produced through

knowledge/world-making practices. This means that while humans, and their scientific instruments and practices, play a part in bringing the world into existence and rendering it intelligible, they "are not the only active beings—though this is never justification for deflecting our responsibility onto others" (Barad, 2007, p. 391). When Haraway suggests that 'we' are answerable for what 'we' learn to see, she is therefore not invoking an already formed and pre-existing human subject that precedes, accounts and is responsible for its actions in the world as if it is "separate from the intra-active becoming of the world" (Barad, 2007, p. 394). Rather, this is a subject that 'becomes with' (Haraway, 2008) knowledge apparatuses (see also Butler, 1993, 1997). Indeed, Barad (2007, p. 33) introduces the neologism, 'intra-action', precisely to convey an ontological notion of causality that is fundamentally different to the more familiar concept of inter-action:

> "intra-action" *signifies the mutual constitution of entangled agencies.* That is, in contrast to the usual "interaction", which assumes that there are separate individual agencies that precede their interaction, the notion of intra-action recognizes that distinct agencies do not precede, but rather emerge through, their intra-action. It is important to note that the "distinct" agencies are only distinct in a relational, not an absolute, sense, that is, *agencies are only distinct in relation to their mutual entanglement; they don't exist as individual elements.*

Posthumanism therefore promises an understanding of human agency that can be reduced neither to free will nor to determinism; and a notion of moral agency and responsibility that is therefore located neither simply with, nor outside of, human beings.

On Haraway's (1988, p. 587) approach, situated knowledge and positioning imply "responsibility for our enabling practices" where this entails understanding how knowledge-producing systems—or the 'apparatuses' that Foucault (1966/2005) has in mind—work "technically, socially, and physically" (Haraway, 1988, p. 583). Barad (2007, p. 390) further explains that:

> the responsible practice of science requires a full genealogical accounting of the entangled apparatuses or practices that produce particular phenomena. In contrast to more traditional conceptions of objectivity, which are only responsible to the norms of correct practice as narrowly conceived (e.g., the correct operation of equipment, the production of determinate marks on bodies, the following of standards of interpretation, the following of correct procedures for reporting results), objectivity in an agential realist sense requires a full accounting of the larger material arrangements (i.e., the full set of practices) that is a part of the phenomena investigated or produced.

For both Haraway and Barad it is the unavoidable power of, and violence implicit in, knowledge-making apparatuses that is called to account. The key moral and indeed political issue is accounting for the power of apparatuses to bring *specific* realities into being *to the exclusion of others*. Embodied, situated and accountable knowledge necessarily entails affirmation of non-innocent commitments. This kind of knowledge-making neither rejects commitments nor presumes their innocence. This echoes Derrida's (1995) point, in *Archive Fever*, when he notes that the classificatory

concepts and systems through which archival content is both organized and ontologically made—for example, whether a record is classified as 'theory or 'private correspondence,' 'biography' or 'autobiography'—cannot be avoided as without them "no archive would ever come into play or exist as such" (Derrida 1995, p. 3). For Derrida, the issue is that the politics and "violence" (Derrida 1995, p. 7) through which the archive must be, and is inevitably, constituted is naturalized and forgotten, rather than accounted for (see Mauthner and Gárdos, 2015).

It is in this sense that, following Barad, we are partly but not wholly responsible for the bodies, meanings and values produced through knowledge/world-making practices and apparatuses more generally. On my reading, it is this non-anthropocentric and performative move that Barad (2007, p. 36) is proposing through her posthumanist "ethics of mattering," in both senses of the word: world-making practices matter because they help materialize the world in ways that are significant and make a difference. The ethical practice of inquiry therefore requires "an ethics of responsibility and accountability not only for what we know, how we know, and what we do but, in part, for what exists" (Barad, 2007, p. 243). It demands a practice that takes responsibility and accounts for its world-making/constitutive powers (for their ability to materialize specific 'phenomena'), where these practices are understood as neither simply human, nor given, nor ours alone. Following Haraway and Barad, accounting for the 'phenomenal' nature of reality—for the mutually constitutive relation between apparatuses and the material-semiotic bodies they produce, including human subjects and objects of inquiry—*is* an ethical matter and ethical practice. A posthumanist ethical practice of inquiry is a practice that accounts for its own ontological existence, commitments and effects (Mauthner, 2018). Posthumanism therefore does not simply reject the notion of human subjectivity, agency, responsibility or accountability. Rather, it refuses to take these as a priori givens and insists instead that they are intra-active effects of specific practices and apparatuses and as such must be accounted for.

On my reading, a posthumanist ethical and responsible practice of inquiry is a practice that accounts for itself as an apparatus of bodily production: that justifies its own existence and assumptions, and its performative role in bringing specific entities into the world (such as 'the human subject'). In terms of an ethics of Big Data, the object of ethical concern from a posthumanist perspective is Big Data's claims to represent the world truthfully and innocently; that is, its failure to account for, and make explicit, its positivist philosophy of science and associated practices. The implications for an ethics of Big Data is that it must account for its own practices and the data these produce, where this justification is not a humanist reflexive practice but a posthumanist accounting of the apparatus of Big Data, a point I return to below.

Towards a posthumanist ethics of qualitative research in a Big Data era

I now move on to consider what this posthumanist ethics might entail for qualitative research in a Big Data era. First, I suggest that the practice of qualitative research in a Big Data era can be conceptualized in posthumanist terms through the concept of the 'apparatus of bodily production'. Second, I argue that the posthumanist ethical concerns raised by qualitative research in a Big Data era relate to the representationalist practices and discourses associated with the Big Data movement. In particular, Big Data's constitution of itself in instrumentalist, empiricist and

positivist terms—as seen in its treatment of data as given, self-evident and 'speaking for themselves'—naturalizes precisely those practices of Big Data's apparatus of bodily production that posthumanism insists must be accounted for. Third, I propose that a posthumanist ethical practice of qualitative research in a Big Data era is a practice of 'genealogically accounting' (Barad, 2007) for the apparatus and its performative effects.

Qualitative research in a Big Data era as an apparatus of bodily production

Conceptualizing qualitative research in a Big Data era as an apparatus of bodily production entails identifying a complex, entangled and heterogenous system of *inter alia* practices, policies, principles, technologies, instruments, infrastructures, methods, techniques, tools, archives, norms, values, ethics, regulations, laws, institutions, and discourses—and their underlying rationalities—through which the entity 'qualitative research in a Big Data era' on-goingly constitutes itself and its objects of study. This includes, for example, the specific ways in which qualitative research—its identity and philosophical, methodological and ethical practices—is (re)constituting itself with the emergence of Big Data. As with qualitative research, Big Data is not taken to be a unified or fixed concept or entity (see also Kitchin & McArdle, 2016). Rather, it is understood as an ontologically dynamic phenomenon on-goingly (re)making itself as part of a longer history of social statistics and other methodologies, and in relation to broader forms of governance, political economy, rationality and reasoning (see Beer, 2016). This apparatus is a dynamic system that has a life and momentum of its own; that propels itself forward not so much independently of human intervention but in intra-action with it. This means that while humans, and their projects, are implicated in this apparatus—for example, through the development and implementation of policies, methods, infrastructures, technologies, and so on—they do not precede, but rather come into being with, this apparatus. In this sense, the entangled elements of this apparatus constitute the material-discursive practicalities, possibilities and constraints through which qualitative research in a Big Data era, including its practices, practitioners and objects/subjects of study, are materialized and rendered meaningful. This conceptualization provides a way of thinking about what the phenomenon of Big Data is and does without simply placing human subjects as responsible for Big Data's ontological nature, epistemological claims and ethical effects.

Posthumanist ethical concerns raised by qualitative research in a Big Data era

On a posthumanist approach, a key matter of ethical concern is humanism's—and the apparatuses and practices it gives rise to—abrogation of responsibility for itself and its constitutive effects on the world. As Haraway (1988, p. 581) suggests, practices that "claim the power to see and not be seen, to represent while escaping representation" constitute irresponsible knowledge-making. This posthumanist perspective therefore positions the humanist philosophical assumptions and commitments that underpin qualitative research in a Big Data era—and all elements of this apparatus—*as* ethical concerns. Significantly, it opens up the possibility of foregrounding dominant positivist, empiricist and representationalist understandings of Big Data science—and associated qualitative research practices and methodologies—as matters requiring *ethical*, and not simply philosophical, attention.

Several commentators have noted that the Big Data phenomenon appears to be reinforcing particular philosophical understandings of science and social science (boyd & Crawford 2012; Kitchin, 2014b). For example, much of the literature on Big Data assumes that these data 'speak for themselves' (e.g. Mayer-Schönberger & Cukier, 2013) and reflect the objective nature of reality. Many see the messy, fluid, networked and real- or near-real time features of Big Data as providing direct and immediate access to the messy, fluid and networked nature of the real world as it unfolds through time. Indeed, Big Data are highly prized precisely for these ostensibly naturalistic qualities. As Zwitter (2014, p. 2) suggests, "by collecting everything that is digitally available, Big Data represents reality digitally much more naturally than statistical data—in this sense it is much more organic. This messiness of Big Data is … the result of a representation of the messiness of reality. It does allow us to get closer to a digital representation of reality". boyd and Crawford (2012, p. 665) suggest that the unprecedented scale, breadth and depth of big data, the increased automation of data production and analysis, and the algorithmic extraction and illustration of large-scale patterns in human behavior all contribute to the widespread belief that large data sets, combined with computational techniques that can reveal their inherent truths, "offer a higher form of intelligence and knowledge that can generate insights that were previously impossible, with the aura of truth, objectivity, and accuracy". Thus while the Big Data phenomenon is seen as providing opportunities for the social sciences—through the provision of large, new and rich forms of social, cultural, economic, political and historical data (Mayer-Schönberger and Cukier, 2013)—there is also concern that it is generating "an epistemological approach that enables post-positivist forms of computational social science" (Kitchin, 2014b, p. 10) and qualitative research. In particular, the Big Data phenomenon is seen as giving rise to "new forms of empiricism" (Kitchin 2014b, p. 1) that privilege data-driven modes of knowledge in which data are understood as proxies for truths about the real world, truths that can be uncovered through the use of ostensibly neutral, innocent and agnostic data analytics without recourse to theoretical interpretation (Kitchin, 2014b).

On a posthumanist approach, the representationalist practices and discourses associated with the Big Data movement are a matter of ethical concern, including its treatment of data as given and self-evident, and its failure to account for the philosophical, methodological, technological, moral, social, political, economic practices and (labour) processes through which data are constituted. The empiricism, and marginalization of philosophy and theory (Kitchin, 2014b), underpinning Big Data's constitution of itself deletes precisely those multiple and entangled elements of Big Data's apparatus of bodily production that posthumanism insists must be accounted for. Following Haraway and Barad, Big Data's claim to innocent knowledge-making embodies and enacts an irresponsible and unethical practice, where "Irresponsible means unable to be called into account" (Haraway, 1988, p. 583). The key contribution made possible by a posthumanist approach inspired by Haraway and Barad is to position positivism—i.e. "a specific philosophical doctrine that denies being either a doctrine or a philosophy" (Kolakowski, 1972, p. 7)—as an ethical concern, and not simply a philosophical matter. In this respect, a posthumanist approach seeks to overcome the divide between philosophy and ethics that characterizes scholarship within critical data studies. Critiques of Big Data raise both philosophical and ethical issues but treat these as separate concerns. In their discussion of the ethical dimensions of public datasets, for example, Metcalf and

Crawford (2016) identify the marginalization of human subjects and their rights within Big Data science as a growing problem. Equally, one of the key philosophical aims of critical data studies is to analyse "the ground upon which positivist Big Data science stands" (Iliadis and Russo 2016, p. 2). A posthumanist approach brings these two strands together by positioning *a positivist philosophy of science (including its separation between science and ethics) as an object of ethical concern.*

A posthumanist ethical practice of qualitative research in a Big Data era

Following Barad's (2007, p. 390) suggestion that "the responsible practice of science requires a full genealogical accounting of the entangled apparatuses or practices that produce particular phenomena," I want to argue that a posthumanist ethical practice of qualitative research in a Big Data era entails a genealogical accounting of this apparatus, its ontological specificity and 'situatedness', and its performative effects. This genealogical accounting, I suggest, is a non- or post-humanist way of the apparatus taking responsibility for itself and its world-making powers. This involves accounting for the multiple and entangled practices, technologies, infrastructures, instruments, policies, principles, laws and much more through which qualitative research in a Big Data constitutes itself; and their conceptual and ontological histories, commitments and effects. This article already enacts this posthumanist ethical practice by beginning to account for the humanist underpinnings of current philosophical, methodological and ethical approaches to qualitative research in a Big Data era as seen in my discussion of humanism and a humanist ethics, and how these inform, for example, empiricist understandings of Big Data social science as well as ethical concerns and practices such as the risks posed by data aggregation, data linkages, and data anonymization as well as the changing meaning and possibility of informed consent and privacy protection within this environment.

On a posthumanist approach, engaging in this kind of deconstructive and genealogical work constitutes ethical practice because it foregrounds and accounts for the apparatus, and its non-innocent nature and role in bringing into being specific ontological configurations of data, knowledge, reality, subjects, accounts, identities, relationships, technologies, methods, ethics and so on. Ethical responsibility lies with/in a complex and dynamic system of practices that constitutes the apparatus of qualitative research in a Big Data era, and a posthumanist ethical practice of qualitative research in a Big Data era entails accounting for the non-innocent genealogical constitution, ontological nature, and performative effects of this apparatus.

Concluding comments

The conceptualization of a posthumanist ethics developed in this article is challenging and counter-intuitive. A posthumanist approach to ethics is not simply a matter of applying posthumanist ethical principles and practices to a specific domain, such as qualitative research in a Big Data era. Rather, it entails rethinking the very nature, meaning and practice of ethics. Not only does it opens up for critical examination the humanist foundations underpinning normative approaches to social science research ethics and that have been institutionalized within contemporary social science research ethics and its codes of conduct. It furthermore positions humanist philosophies of science, such as positivism, as matters of ethical concern. On the face

of it, this posthumanist ethics bears little relation to a normative notion of research ethics, and its concern with "well intentioned calculations for right action" (Barad, 2007, p. 396), or with following codified norms or rules of behaviour and 'good practice' guidelines such as informed consent, avoidance of harm, or protection of privacy. However, a posthumanist ethics neither simply rejects nor accepts conventional humanist ethical principles, practices and concerns. Rather, and I have suggested elsewhere, "it is a way of conceptualizing and practising research ethics that follows from taking up a distinctive metaphysical position on the nature and role of knowledge-making" (Mauthner, 2018, p. 67) and its relation to ethics. This approach entails critically working through humanist foundations and inheritances, and calling them to account for their historical, cultural and metaphysical specificities, genealogies and effects. A posthumanist ethics therefore paradoxically entails both a continuation of humanist social science knowledge making and research ethics (as normatively understood) *and* a radical ontological reconfiguration of these practices. The latter is achieved by challenging the naturalization of these practices; by refusing to take them as ontological givens; and by insisting that they account for their ontological existence, commitments, power and effects.[11] By implication a posthumanist ethics is a critique or deconstruction of the humanist philosophical project which assumes and presumes the ontological givenness of the world, where deconstruction, in Barad's words, "is not about taking things apart in order to take them down, but on the contrary, about examining the foundations of certain concepts and ideas, seeing how contingency operates to secure the "foundations" of concepts we cannot live without, and using that contingency to open up other possible meanings/matterings" (Juelskjær & Schwennesen, 2012, p. 14).

Importantly, a posthumanist ethics does not provide evaluative judgements or categorical statements about qualitative research in a Big Data era, and its performative effects. For example, it does not make claims about the benefits or limitations of qualitative research, and its transformations in a Big Data era. Nor does it simply accept or reject conventional (humanist) ethical concerns with Big Data practices highlighted above, but rather demands that they account for their metaphysical—humanist—specificity, or 'situatedness' in Haraway's terms. A posthumanist ethics seeks to account for and materialize the historical and genealogical conditions of possibility for the constitution of qualitative research in a Big Data era, its world-making effects, and the objects/subjects it brings into being. In giving an account of the genealogical processes of formation and conditions of possibility through which qualitative research in a Big Data era materializes itself, and the world-making effects of these specific configurations, this posthumanist practice constitutes qualitative research in a Big Data era as ontologically indeterminate thereby opening it up, as well as its objects of study, for potential contestation. Creating this openness and indeterminacy, with regard to the past, present and future nature and effects of qualitative research in a Big Data era, is precisely the ethical gesture that a posthumanist ethics is after. As Haraway (1988, p. 590) suggests, reconfigured in this way, "science becomes the paradigmatic model, not of closure, but of that which is contestable and contested."

Notes

1. The origins of the term Big Data are contested. One of the earliest academic references to the term is by Diebold (2003). Lohr (2013) favours John Mashey as

the originator of Big Data in the 1990s. During this period Mashey was the chief scientist at Silicon Graphics, a computer graphics company that dealt with many kinds of new data, which Mashey termed 'big data'. For a definition of Big Data see Kitchin (2014a, p. 67-79).

2. I first came across the term Big QualiData when I attended a workshop in May 2016 on 'BIG QUALIDATA: Tackling Analysis of Very Large Volumes of Qualitative Data in Social Science Research' run at the University of Edinburgh, funded by the UK's Economic and Social Research Council. The speakers talked about how they were using different types of software to address the key question of the workshop: 'Can social researchers scale up techniques of working with qualitative data and meaningfully analyse massively more text than they can possibly read?' (Jamieson et al., 2017).

3. The UK Data Service was amongst the first to systematically create a dedicated qualitative data archive (Qualidata, now no longer a separate archive), while a more recent example is the Qualitative Data Repository at Syracuse University (https://qdr.syr.edu).

4. For example, Cartesian dualism "insisted that the essence of the human was cognition and that animals were merely highly intricate machines, part of the material world over against the world of the mind" (Bolter, 2016, p. 3).

5. Western philosophy is compartmentalized into distinctive branches or 'kinds'— metaphysics, epistemology, ethics, politics, aesthetics. These a priori divisions are a feature of humanist philosophies, and their essentialist ontology, that posthumanist approaches take issue with. Barad's (2007, p. 185) proposal for an "ethico-onto-epistemological" metaphysics, which is sensitive to the intertwining of ethics, knowing, and being, is an example of this.

6. See Mertens and Ginsberg (2009) for wide-ranging discussions of these ethical principles, policies and practices; and Iphofen and Tolich (2018) for discussions of qualitative research ethics.

7. I find the term 'posthumanism' useful to characterize Haraway and Barad's work, and to distinguish it from other critical projects, even though Haraway (2016) distances herself from the concept. Barad (2007), however, defines her philosophy of science as 'posthumanist performative' and I draw specifically on her notion of posthumanism in this article. Barad has developed what she calls an 'agential realist' metaphysical framework as an alternative to a classical Newtonian and Cartesian metaphysics. Classical formulations of philosophy and science, she suggests, are underpinned by a representationalist metaphysics that fails to "take account of the practices through which representations are produced" (Barad, 2007, p. 53). Representationalism, she continues, "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" (Barad, 2007, p. 137). Agential realism shifts these foundational assumptions by refusing to "take separateness to be an inherent feature of how the world is" (Barad, 2007, p. 136) and by attending to the material practices through which separation (e.g. between representations and that which is represented) is produced. Agential realism is thus a "posthumanist performative" (Barad, 2007, p. 135) metaphysics: performative in that practices of inquiry are understood as helping to constitute (rather than represent already constituted) bodies, meanings and boundaries; and posthumanist in that it specifically rejects the assumed and "alleged spatial, ontological, and epistemological distinction that sets humans apart" (Barad, 2007, p. 136).

8. In this sense, posthumanism neither rejects nor accepts humanism (including humanist practices of inquiry, the humanist subject, and a humanist ethics). Rather, its calls into question both humanism's philosophical commitments (e.g. to a pre-existing human rational autonomous subject) and their assumed self-evidence. On this approach, posthumanism seeks to deconstruct humanism and its apparent inevitability, and calls humanism to account for itself. It insists that humanist philosophies and practices cannot simply be taken as given, but rather must justify themselves and their specific commitments. On my reading, posthumanism must also be held to account and justify its own ontological being (see Mauthner 2015, p. 331, Mauthner 2018, p. 60).

9. I want to emphasize that my conceptualization of a 'posthumanist ethics' reflects my own understanding and interpretation of the works of Haraway and Barad (see also Mauthner, 2018). For an alternative reading of Barad's approach in particular, see, for example, Rekret (2016).

10.   This notion of the material-semiotic relies on a specific conceptualization of materiality as 'ontological processes of materialization', in contrast to other theoretical understandings of materiality as 'social structures', 'symbolic objects' and 'material artifacts' (Mauthner, 2018).

11.   In this respect, a posthumanist ethics has resonances with Levinas' ethics as the exploration of conditions of possibility of any interest in good actions or lives (Derrida, 1967/1978). To borrow Derrida's term, a posthumanist ethics can be thought of as "an ethics of ethics" (Critchley, 1999, p. 4).

Acknowledgments

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