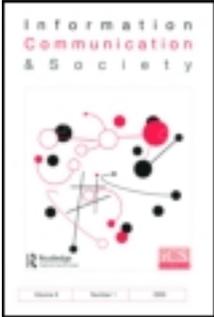


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### THE ETHICAL WORK THAT REGULATIONS WILL NOT DO

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# Annamaria Carusi & Giovanni De Grandis

## THE ETHICAL WORK THAT REGULATIONS WILL NOT DO

*Ethical concerns in e-social science are often raised with respect to privacy, confidentiality, anonymity and the ethical and legal requirements that govern research. In this article, the authors focus on ethical aspects of e-research that are not directly related to ethical regulatory framework or requirements. These frameworks are often couched in terms of benefits or harms that can be incurred by participants in the research. The authors shift the focus to the sources of value in terms of which benefits or harms are understood in real social situations. A central claim of this paper is that the technologies that are used for research are not value neutral, but serve to reinforce some values at the expense of others. The authors discuss databases, modelling and simulation, network analysis as examples of technologies which affect the articulation of values. A view of e-social science as a techno-scientific constellation of researchers, technologies and society, in which values are always already embedded, is put forward as a basis for a view of ethics as reflexive and active engagement, conducted with awareness. Methodological pluralism and proactive openness are also proposed as responses to this view of the ethical dimensions of e-social science.*

**Keywords** e-social science; research ethics; technology; STS; data intensive; philosophy of technology

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When the word 'ethics' is used in an e-social science context, very often it is closely followed by the word 'regulation'. This is understandable, since many of the capabilities of e-social science technologies leave us perplexed as to whether to go on applying existing regulations or whether to make a change, and if so, which changes. As the introduction to this special issue has set out, the stakes relating to law and ethics in e-social science can be high, and the ongoing discussion about what the legal and ethical regulatory framework should be is highly relevant and necessary.

However, the importance of this discussion, together with the high profile of ethics review boards at universities and research institutions, combine to promote an identification of ethics with the ethical regulatory structure (Buchanan & Ess 2009). The process of 'getting through ethics' and getting the necessary stamp of approval from the relevant institutional section is 'doing ethics'. The implication is that whatever is required by the ethical regulations *is* the ethical component of the research; in the case of e-social science and other forms of Internet-based research, a great deal of attention is focused on making the process of ethical review, and the ethical guidelines for researchers to follow, more appropriate for the new technologies and media of this form of social science. While this is no doubt a necessary exercise, it is by no means sufficient to grapple with the ethics of e-social science. In this article, we put forward two reasons for not depending entirely on adherence to legal requirements and the process of ethical review to ensure the ethics of e-social science projects: the first reason relates to the nature of ethical regulations and guidelines and their open-endedness in application to specific situations; and the second relates to the demands of thinking how social science as a techno-science intervenes in social values. We cast the ethical challenge of e-social science in a different way: that is, the challenges of these new technologies for conducting social science bring into relief features of the ethical context that shape our ethical reflection about social science research of any type. These new technologies afford us the opportunity for reconsidering the ethical approaches and standards relevant to the practice of social science. We believe shaking up accepted norms of conduct is a benefit to research in that it pushes us to re-evaluate the less obvious ethical aspects of research and the purposes that research is meant to serve. We see the challenges of the new media and technologies for conducting research as opportunities to take a fresh look at what has become too habitual to elicit ethical appraisals.

Section 1 of this paper considers the necessary indeterminacy that there is between ethical guidelines and the practice of research, exemplified by means of a well-known case in e-social science. Ethical guidelines are part of an institutional and organizational setting which is itself a part of the broader constellation of socio-technical knowledge that e-social science is, and the ways in which it acts on the domain it researchers. In Section 2, we consider the ethics of e-social science as involving a recognition of the values that are always already implicated in these socio-technical constellations of knowledge of social domains.

## **1. Institutional research ethics and the practice of research**

A case which has received a great deal of attention as exemplifying the 'promise and peril of doing social science online' (Parry 2011) is that of the Harvard

researchers who were quick to recognize the potential to social science research offered by the new phenomenon that Facebook was in 2008, and proceeded to download profiles and follow the activities of a class of students on the social networking site. Apart from doing research on the data set themselves, they also shared it with others through a website, after it had been anonymized. However, the anonymization was not sufficient to prevent the identification of the cohort of students whose profiles had been used as the Harvard College Class of 2009, with even individuals class members re-identified. The recent report by Parry (2011) in the *Chronicle of Higher Education*<sup>1</sup> puts forward the different positions in this debate. We use an analysis of this report in order to show the necessary open-endedness of ethical regulations in e-social science, and the active role of researchers in delineating for themselves the ethics of e-social science. The report summarizes the incident, the discussion it generated and some of the stances taken on it. Our analysis of this report focuses on the terms in which the ethical debate is framed and the way that positions are supported and justified, rather than on the specific positions taken.

Framings of ethical situations relate to the terms and concepts used to describe situations, the principles invoked, the ways in which they are applied (or not) to specific instances and the ways in which choices and dilemmas are cast. Our reading of the *Chronicle* report focuses on the framing in terms of private and public.

From the outset, the framing of private and public is used by the Harvard Facebook researchers in the initial data gathering situation, and in the ongoing interpretation of the research situation. The specific action that seems to call for this framing is the use of researchers' own networks with the 'research subjects' in order to download material which would otherwise have been inaccessible due to a privacy setting. It is this framing that forms the basis of the researchers' own interpretation of the situation they are in as an ethical dilemma:

'We faced a dilemma as researchers', Mr. Kaufman said on tape. 'What happens if a student has a privacy setting that says, "You can't see me unless you're my friend", and our undergraduate research assistant who is downloading the data is a friend of that person? Then can we include them in our data?'. (Parry 2011)

This interpretation of there being an ethical dilemma is not inevitable, but rests on an exclusion of other possible framings. For example, a framing in terms of the priority of the intentions of research subjects would have cast the situation in a different light, since it would have placed the onus on the researchers to abide by the implied intentions of a Facebook user's putting up a privacy screen to exclude non-friends. The particular framing of the public/private issue here, instead, puts the power to interpret the public/private boundary on the side of the researcher. It is not self-evident that there is an ethical dilemma

(where two incompatible actions are each supported by valid moral reasons). Rather this interpretation has to be supported by other intuitions regarding the features of the moral terrain, and what weight to give to the different features of that terrain. The same set of intuitions, which placed these particular research subjects in a passive position with respect to the data being gathered about them, also allowed for a decision not to seek informed consent since this would result in ‘frightening people unnecessarily’ (quoted in Parry 2011). Those intuitions, in turn, can be contested: they are not self-justifying. Interestingly, it is also this passivity of the research subjects which is behind the desirability of the data set for scholarship, since the absence of research tools such as surveys, questionnaires or ethnography is seen as leading to a lack of bias. Thus, the perception of the passivity of research subjects in the process of data gathering is at the heart of both the ethical and the epistemological claims around this data set.

There are several other points where the framing of this case is relevant: the understanding of what might constitute a harm to research subjects (e.g. reputational harm, but not the harm of participating without consent); perceptions of the value of the data and the opposition drawn between research and ethics (‘the biggest “victim” in this case may be scholarship’; Parry 2011). Space constraints do not allow a discussion of each of these framings and the interconnections between them. We will instead continue to focus on the central public/private framing as we ask what this case shows about the relationship between researchers and institutional ethics regulators or ethical frameworks. In the case we are discussing, the IRB (Institutional Review Board) was seen as not being up to the task of knowing how to deal with data coming from new media such as Facebook and Twitter, even though researchers do report having turned to the board for advice on whether to seek consent from users whose profiles were being downloaded. Finally, it was decided that consent was not necessary either legally or ethically, and this is claimed to be an agreement for which the IRB and the researchers are co-responsible. We have already seen that this judgement has been contested, but we will not enter into that debate. Instead, we ask what we can glean from this particular example about the way in which such ethical frameworks are used, explicitly invoked, or are implicit background principles in specific situations.

The first point is that principle-based ethical regulations and guidelines perform an important function, but they do not – and cannot – do all of the ethical work, even if they were perfectly formulated. This is in virtue of three characteristics: (1) regulations and guidelines are general so that they can apply to a broad number of cases. This promotes consistency across cases, but by the same token, it means that they cannot cover all the details of specific cases. (2) They are designed to prevent some of the more obvious harms and violations of rights according to current norms and perceptions, and do not directly address a broader construal of harms. (3) They serve as signposts for pointing attention to some of the important ethical features of situations.

From these three characteristics, it follows that regulations and guidelines are – relative to actual research situations – relatively formal and abstract, or ‘thin’, and not sensitive to the rich details of ‘thick’ moral concepts as encountered in concrete instances (Carusi 2008). Even if we were to have the optimal set of guidelines adapted to the Internet age and computational research, these regulations and rules, like other rules, cannot also contain the rule for their application, specifying how they are to be interpreted in specific situations (Wittgenstein 1953, pp. 85–87; Hart 1961, pp. 124–136).

It follows from these considerations that the generality of ethical regulations and guidelines needs to be supplemented by interpretation and judgement in their application to particular circumstances. The fact that they work as signposts implies that they presuppose the existence of a rich normative background that at the same time backs and integrates the substantive content of the regulations. For example, the different concerns in the Harvard Facebook are raised against the background of an understanding of ethics and morality that is structured around the principles of autonomy, and of least harm (non-maleficence) and beneficence. These background principles do not have to be directly invoked or appealed to in order still to be operative when moral reasoning occurs. For example, the principle of autonomy is not directly invoked, yet it is part of the background context that gives meaning to the question raised by researchers regarding whether they should seek consent (otherwise why would the question even be raised?). Similarly, the principle of least harm is acting in the background of the concerns raised about possible harms, and the principle of beneficence is raised as the benefits to scholarship and, implicitly, as its possible positive spillovers for society.

The process of thinking through ethics (from thinking about how to answer the questions on the forms required for clearance, through every stage of data gathering, analysis and writing up) is an ongoing *interpretation* of principles like these, as well as other ethical principles, rules of thumb, concepts, notions that are explicit or implicit in a situation. Trying to understand when a principle is relevant, and how it applies is up to researchers (and this discretion brings with it the possibility of being accountable for one’s judgements to research subjects, colleagues and institutions). This is clearly seen in the Harvard Facebook research case: for example, the framing of the choice of whether to download profiles in friends-only zones as an ethical ‘dilemma’ is not inevitable, but an act of interpretation on the part of the researchers for which they need to account (e.g. in articles aimed at their peers, such as Parry 2011). This exercise of judgement is pervasive, no matter how clear and consistent the regulations and guidelines are.

In the face of the greater uncertainty about what constitutes consent or privacy or anonymization in e-social science, it is no wonder that researchers are increasingly raising questions about the ethics of the research they conduct, and increasingly turning to more situated accounts of their own

ethical practices. This is clearly evident in several of the papers included in this special issue (Beaulieu & Esatelella this issue; Bowes *et al.* this issue; Neuhaus & Webmoor this issue). The deliberations of these researchers in grappling with the ethics of specific contexts of e-social science show that it is in the application to specific, concrete instances that the real challenges lie.

The anxiety over existing institutional ethics procedures is a response both to the uncertainties of new technologies, but also to a new positioning of institutions with respect to the legality and ethics of research. However, what this does is to bring into relief the indeterminacy and open-endedness that there always is in research situations.

## 2. e-Social science as a techno(social)science

In this section, we argue for a broader ethical role played by social science, that is, in contributing to shaping the social self-conception and values in terms of which abstract notions (like harms and benefits) are ‘cashed out’. First, we recall the non-neutrality of social science; second, we discuss the non-neutrality of technologies for carrying out research. We consider one form that this non-neutrality takes: that is, the consequentialist–instrumentalist view of the relation between research technologies and society; and suggest an alternative model in which values are seen as an inextricable factor in e-social science as a techno-science (Latour 1987; Ihde & Selinger 2003), giving three examples of typical social science technologies and associated techniques.

### 2.1. *Non-neutrality of science*

That science is not a neutral and value-free activity is something that scholars of science and technology studies (STS) have left in little doubt, with numerous studies devoted to showing the different forms that the embedding of science in a social, cultural and political context may take. In addition, social science has raised questions about its own neutrality since its inception, so it is hardly new to say that social science itself is not merely a neutral observer of the social field, but an active player in it. Indeed, it is a powerful player in the social field, since it serves to bring the cachet of science and apparent objectivity to what might otherwise appear as mere subjective opinion. However, this reflection is still in the incipient stages in the context of e-social science. There is an urgent need to develop reflections and critiques of the socio-ethical dimensions of e-social science.

In considering this, we can start with something that connects the ethics committee room and this broader field of social science at large in the social world that it studies. We have already seen that principles of least harm and of benefit are cornerstones of research ethics. These are empty notions, which

are filled out by the social, cultural and political values in terms of which we identify specific things as harms or as benefits. In the Harvard Facebook research case, discussed in the previous section, harms were conceived of in terms of reputation, employability and exposure to political consequences. That these are the possible harms that are identified is a fact about the social universe of the Harvard class of 2009, and other similarly constituted social universes, but it is by no means universal and eternal. The values that underpin such harms can and do change, and social science helps to change them.

Social science is an ethical player at least on two counts. First, it puts some phenomena into focus and leaves others in the background and in so doing it alters the perception of social reality and of practical possibilities open to social agents. This has an ethical impact, and it is bound to be a non-neutral one in every society in which resources for research and sociological imagination are not infinite. Most importantly, this would happen *even if* the social sciences were perfectly value free. But of course, this is not the case, and this leads us to the second point: social science *both* brings along with it specific conceptions of values in the social domain *and* contributes to forming those values. In this way, it contributes to the constitution of the sources of what counts as ethical practice and action, as benefit and harm. Social science by any means makes some sources of values easier to articulate and makes others more marginal; and thereby makes more available some ways of benefiting and harming, and others more difficult. Even more radically, it contributes to making some benefits and harms either visible or invisible, mainly through dispelling or confirming the sense that some events and practices are natural and necessary.

## 2.2. *Non-neutrality of technologies and the consequentialist— instrumentalist view*

This also holds true for the technologies that are used for conducting social scientific research. There have been several accounts of the ways in which technologies contribute to shaping social and economic values (Feenberg 1999; Misa *et al.* 2003). Feminist scholarship in STS has played a prominent role here (Haraway 1991, 1997; Wajcman 1991, 2010). Phenomenological ethics has also contributed to this growing body of scholarship (Introna 2008; Verbeek 2011), as well as philosophy of technology (e.g. Mitcham 1994). What we have not yet seen are sustained studies of the ways in which technologies for social scientific research are active role players in ethico-social domains (Beaulieu & Wouters 2009).

The role of technologies in shaping social values as much as being shaped by them is disavowed by the dominant discourse of instrumentalism about technologies. According to the instrumentalist view, human and social purposes and goals are constituted independently of technologies. Technologies are mere instruments, serving pre-existing purposes and goals ever more efficiently

(Feenberg 1999; also see Edwards 1994 on the 'impact model'). How efficiently can ideally be measured? Instrumentalism about technologies has a ready counterpart in consequentialist ethics, in terms of which what is ethical is whatever produces the better consequences.

Consequentialism is often the default way of thinking about ethics, and for several reasons, it is bound to be so.<sup>2</sup> It encourages empirical analysis, in terms of quantifiable costs and benefits that can be calculated to supply an answer to what are often 'intractable' social problems. It is more difficult to meet some of the deontological requirements based on apparently abstract principles that are the basis of the more rights-based model of ethics. Principles such as 'always respect the autonomy of others' or 'never use others only as a means to an end' are more difficult to internalize, and often go against efficiency. Consequentialism's aim instead is one that we can all relate to: it is to make the world a better place. Because the fundamental principle of consequentialism is the requirement always to bring about the alternative that produces the consequences with the overall better net balance of good over evil, of benefit over harm, the consequentialist's aim to improve the world finds easy expression through the systematic application of quantitative measures and calculations. No wonder that this ethical theory goes hand in glove with the privileging of quantitative measures that dominates contemporary sciences and research methods.

Instrumentalism about technologies and consequentialism about ethics are attitudes that are easily coupled and reinforce each other. They are both default positions that lend themselves to the view that means and ends, interests and the reasons behind them are all separable and externally related to one another. Consequentialism ignores the intrinsic value of actions as well as the relevance of the psychological and intentional states that accompany them. For the consequentialist, value cannot be expressed and embodied by an action (or mental state), but only be promoted by it as an output. The expressive value of actions is lost. Similarly instrumentalism is blind to the ways in which tools and instruments affect not only opportunities, preferences and desires, but also the skills, attitudes and aspirations of those who use instruments. Instrumentalism overlooks the way in which instruments transform and 'forge' their users and even their creators and designers. Consequentialism and instrumentalism share the mistake of seeing actions and instruments, respectively, as morally and psychologically inert. Both theories are predicated upon a calculability of interests which can be served by some means or actions. This view is reinforced by the power of computation, which seems to make the calculability easier to accomplish, and at the same time, less dependent on human subjectivity. It is possible that consequentialism will find its apogée in the current computational turn, and its view of human being as *homo computans* will be fulfilled. This is one very powerful way in which the suite of currently available computational technologies for social science research serves to further entrench an

instrumentalist—consequentialist techno-ethics. After all, it comes easily, and is tempting, to see binary sequences as ethically neutral and inert.

### 2.3. *Techno(social)science and values*

A whole domain of potential ethical implications in e-social science then consists in understanding what difference is made to the sphere of social values by the use of computational and digital methods in social science. The particular questions about privacy that emerged in the Harvard Facebook Research case did not float free of the technology, but were a matter of the software capabilities that were enacted in development and in use; moreover, the researchers acted in the new domain that was created by Facebook, availing themselves of the possibilities it offered. They did not leave the domain as they found it, but contributed to the perceptions of privacy in it. As mentioned, epistemic as well as ethical values are at play here: the data set is a treasure to research because it is seen as objective and unbiased, in that it resulted from research subjects behaviour unmediated by surveys, questionnaires or interviews. Processing to obtain the data was not carried out by researchers, *but it was carried out by the Facebook software and the media platform* and has whatever biases are embedded in those, for example, in the choices made available to users.

In the next three sections, we briefly consider three domains where the technologies typical of e-research, social science and the environment of social values are inter-related: databases, modelling and simulation, network analysis. Obviously these are only examples with no claim to be exhaustive.

2.3.1. *Databases.* Databases are the core technology of all forms of e-research. The power and apparent all-inclusiveness of databases are behind the claims that we are currently witnessing a shift to data-driven or data-intensive science and research (Hey *et al.* 2009). There are epistemological issues and questions aplenty. However, there are also several ethical aspects to this apparent data-driven mode of doing research, especially when this involves data relating to people, that go beyond those that are articulated in the concerns expressed in ethical regulations relating to privacy and personal data. Despite the fact that the word ‘datum’ is the Latin for ‘given’, data are never merely given in a neutral and ready-for-research form. Data are always processed, even at the point of gathering and collecting. Data do not merely appear in databases ready for some form of computational processing. Data need to be cleaned, corrected, sorted, organized, classified, weighed and evaluated. And even though there is frequent reference to the so-called data deluge, data are in fact never exhaustive – although they are often redundant or irrelevant. They are always abstracted and selected and therefore exclude some aspects of the domains being researched. The apparent ‘givenness’ and neutrality of data means that much is obscured relating to the value framework around data. Data are gathered

and processed according to implicit selection procedures which relate to the values we hold (Introna & Nissenbaum 2000). Poster (1996) argues that databases are active in the constitution of subjects, who become identified through the classification and aggregation capabilities of databases in a way that allows them to be acted upon, or *interpellated*, that is, addressed (or called upon to act) and positioned. One of the examples he gives is of a marketing research system which divides up the population into types, according to categories of consumer activity (including, e.g. 'black enterprise' and 'furs and station wagon'), which can be used to target marketing at specific groups (Poster 1996, p. 187).

To the database, Jim Jones is the sum of information in the fields of the record that applies to that name. So the person Jim Jones now has a new form of presence, a new subject position that defines him for all these agencies and individuals who have access to the database. The representation in the discourse of the database constitutes the subject, Jim Jones, in highly caricatured yet immediately available form. (Poster 1996, p. 188)

Marketing research values, interests and purposes are obvious enough, yet we must ask what are the values embedded in the ways in which e-social science gathers, manages and processes data? The overwhelming quantities of data typical of e-sciences generally, and their seeming givenness can easily obscure the values embedded in them. They can also obscure the ways in which e-social science, as a techno-science (an inextricable combination of technological and epistemological means of research) constitutes its subjects rather than merely neutrally researching them. Having large quantities of data is not useful without the data being classified and categorized (and if it is to be shareable, according to standardized classifications and categorizations). This has seen metadata emerging as a significant force in delineating the way in which research is carried out, which research questions can be asked, and by whom it can be shared (i.e. only by those who share the same metadata schema). Poster draws upon Foucault, claiming that both database architecture and metadata can be seen as the 'grids of specification', which Foucault claims are 'the systems according to which the different kinds of [objects] are divided, contrasted, related, regrouped, classified, derived from one another as objects of . . . discourse' (1969, p. 42, also quoted in Poster 1996, p. 184). In the social sciences, the objects thus specified are human and social beings (or some features relating to them). The 'data-driven' mode of doing social research depends on organizational, classificatory and aggregative, combinatorial aspects of databases which allow for the formation of different accounts of social beings than are available without them, and which will, like other social sciences, play their role in social self-understanding as well as in social interventions. Introna and Wood (2004) give a powerful example of how interventions are shaped by facial

recognition systems using databases of images and algorithmic techniques for identification, leading ultimately to a reinforcement of racial prejudices, this time black-boxed in the assumed objectivity of computer identification.

An interesting example of alternative classifications is a technique being developed to afford early detection of epidemic outbreaks or bioterrorist attacks. While the enormity of databases and the possibilities of aggregation frequently create concerns about surveillance and privacy infringements, the technique of syndromic surveillance aims to have surveillance over disease symptoms rather than over individuals. It is an example of an alternative classification made possible by data mining and aggregation methods. Syndromic surveillance relies on a broad range of clinical and non-clinical data collected in real time, thanks to electronic networks and databases. Given that in controlling communicable disease outbreaks, a timely alert and intervention are fundamental, the system is designed to react to the spread of relevant symptoms – or, more precisely, pre-diagnostic health indicators – rather than depending on confirmed diagnoses, that would become available only a few days later. Gaining a few days may make a huge difference in containing an epidemic outbreak or a bioterrorist attack, but syndromic surveillance raises many questions. The use of such disparate and crude data involves a lot of background noise and the interpretation of data through aberration-detection methods. How reliable such techniques are is not yet clear and evidence is still pending. Importantly, even with a classificatory system which is geared towards symptoms rather than individuals, the outcome of the actual implementation of syndromic surveillance would be action taken on people, since containing outbreaks of deadly communicable diseases involves restrictive measures – such as isolation and quarantine – and infringements of privacy like contact-tracing. This involves finding out with whom a patient has been in contact and can therefore infringe the privacy either of the patient or of others, especially in the case of sexually transmitted diseases. There are of course a number of ethical questions about the justification of such measures which for the good of the many interfere drastically in the freedom and privacy of individuals. Without diminishing the importance of these questions, in this paper, we are seeking to raise a different point about the process of categorization itself. It is a real question to what extent the nature of the results of techniques like syndromic surveillance is a function of ‘states of the world’ and how much is a function of the data available for collection and of the techniques available for standardizing, filtering and interpreting the data. Might the process of providing data for syndromic surveillance (for example) bias the clinical diagnostic process by the expectations created by speculative forecasts? What consequences for the control of populations will appear to be justified by these techniques?

On the other hand, there should also be the concern that data relate to some, but not all social agents. While some subjects are ‘over-represented’ in databases, there are also those who do not figure in them or are under-represented, just as those who do not have credit cards do not figure in the

market research systems. Who are the over- and under-represented people in e-social science, and what are the implications for them?

For Foucault, power is never simply repressive, but is also productive and opens up possibilities for action too. Access to databases allows one to achieve certain ends that were out of reach without them. There are also opportunities for engagement with data that break out of the moulds and conventions of previous value frameworks. This is the challenge of the Combined Online Information System initiative, which will offer both the public at large and social scientists access to data relating to governance on an unprecedented scale. In principle, this could offer greater transparency, but also the opportunity to process and analyse data in terms of different values and interests and push these to the forefront.

Databases can also offer greater possibilities for interactivity. Social scientists are encouraged and required to deposit their data for possible reuse. This raises several issues relating to anonymity, confidentiality and privacy (Parry & Mauthner 2004; Carusi & Jirotko 2009), not least being the removal of social scientists from the reality of their 'data sources', since in reusing data gathered by others, researchers will not need to be in contact with research participants themselves. The fundamental issues have to do with the relationship between social science and the members of the society it studies. Technically, there is the potential to include these members in the databases in a more active way than merely being passively represented, by giving them access and allowing them to engage with the ways in which data relating to them are used in secondary uses. There are a number of reasons why current databases have not included this capacity, but clearly the existing capacities of the databases reflect the relationship between social science and society, a relationship which has important political, ethical and cultural dimensions.

2.3.2. *Modelling and simulation.* Modelling and simulation are common techniques in natural and social science, and they are currently being boosted by the increasing quantities of data and by the increasing computational power for processing data and therefore for doing the simulations of models of complex systems and the accompanying visualizations. Increased computational power has spurred the use of agent-based modelling, which has a finer granularity than differential equation modelling used for continuous processes or diffusion. Agent-based models are used across the sciences, in physical and biological sciences, as well as social and economic research. However, in social and economic research, it is convenient and even almost obvious or natural to identify the agent with the individual. The combination of computational power and the refinement of agent-based modelling lend support to methodological individualism. Whereas methodological individualism – which claims that the individual is the basic unit of explanation in social sciences, as opposed to social groups – was a strong but difficult to prove position, the

combination of computational power and the refinement of agent-based modelling have provided a new source of support. With agent-based modelling, the tenets of methodological individualism can be proved (at least insofar as a computer simulation can act as proof of anything, see Heath *et al.* 2008). But what is an agent in agent-based modelling, and what understanding, of agency and of individual agency, is implicit? Understandings of agency in terms of rational self-interest lend themselves particularly well to the agent-based modelling approach, as is borne out by its pervasive use in economics. However, these understandings of agency, motivations and the mechanisms of social dynamics as based in individuals is by no means ethically or ideologically neutral (Sen 1988). For example, formal modelling (the mathematical basis of computational agent-based modelling) has been criticized by feminist economists (e.g. Nelson 1995). Barker (2003) points out that formal modelling is both the means whereby economics makes its claim to be scientific and is based on assumptions of methodological individualism and social atomism. At the same time, increasingly powerful computational methods enhance the status of models, further entrenching their assumptions in spite of their inability to acknowledge certain kinds of behaviour. In fact, the very power of the computations, the quantities of data and the compelling visualizations that accompany them could serve to obscure these as assumptions, lending them the appearance of certainty that they do not necessarily have. In this way, they further feed into a system of social values which take the same assumptions to be at the core of the way in which social beings define their desires, wants and needs. Furthermore, in increasingly complex and interdependent societies, the use of models is almost inescapable in solving some planning and coordination problems, but once models incorporating assumptions about individual behaviour are used to shape practices and institutions, there is a strong pressure on individuals to adapt to them.

2.3.3. *Network analysis.* Computationally enabled network analysis has its theoretical basis in social network analysis. Rather than focusing on discrete individuals, it focuses on the relations between them. It has a structuralist rather than an individualist approach. Social network analysts try to distinguish patterns of relation and interaction between whatever entities are identified as the nodes of a network. In principle, these nodes can be anything ranging from individuals to groups (companies or nation-states), human to non-human (objects, technologies, animals or biological organisms). Social network analysis also allows for an interesting pliability in what are considered to be the actors represented by nodes and is used as easily by actor network theory (which claims that the identities of both human and non-human actors are constituted in the networks in which they participate) as by other theories. It is a mode of analysis that is committed to a form of relationalism, which in the social sphere is no more neutral than individualism. As in the case of agent-based modelling, the current availability of

powerful computational means to conduct the analyses lends a plausibility and robustness to theories that have remained speculative and hypothetical.

According to Linton Freeman, the four main features of social network analysis are as follows:

- (1) social network analysis is motivated by a structural intuition based on ties linking social actors,
- (2) it is grounded in systematic empirical data,
- (3) it draws heavily on graphic imagery, and
- (4) it relies on the use of mathematical and/or computational models. (Freeman 2004, p. 3)

This attests to a very close connection between social network analysis and computational methods (in points 3 and 4), which increase the quantity of data, and the complexity and granularity that can be handled by social network analysis. The networks which it is possible to model using these computational means seem to be more complete and, because of their reliance on visual outputs, are moreover far easier to engage and interact with, and thereby gain a kind of ontological reality for their users (Araya 2003), or objectivity (Daston & Galison 2007). The computational means of doing network analysis, and in particular, the visual presentation of networks, also allow the appropriation of the results of the network analysis by individuals who are able to understand where they are placed in a network and act on that understanding. The notion of social capital has a longer history than social network analysis, but it has been given new expression by it. An individual's social capital depends on the quantity and type of relations that he or she has, as a node in a network with other nodes. The visualized networks also seem to make apparent what one's social capital status is, and how it can be increased. There is an apparently easier and more intuitive access to this kind of self-understanding through computational networks, through the (often interactive) visualizations, encouraging the appropriation of these terms. Thus, the very term 'social capital' becomes more pervasive and easier to take on board as indicating a social good. This too is a form of intervention in the sphere of social values.

These three examples point to some of the ways in which the tools and technologies used for carrying out e-social science in the social science arena reinforce some ways of thinking about social being, or open up different ways of thinking. There are emerging ways in which we can conceive of ourselves, which are extremely difficult or impossible without computational means of doing social science. We claim that this is a matter of ethical as well as epistemological significance and needs to come to the fore in the discussion on the ethics of e-social science.

More important is the fact that e-research in the social sciences co-produces the attitudes, anxieties and shifts relating to privacy in the social. The

shifts that are currently occurring in the boundaries between public and private spaces largely due to the more amorphous sense of space that there is on the Internet are a crucial locus of ethical anxiety around notions of the individual, autonomy, accountability, surveillance and so on, all of which are related to privacy. At least in Western cultures, where ethics is broadly individualistic, and where privacy is pivotal for key aspects of social and political life, the issues that arise from the Internet and technologies which converge with it (such as geographic information systems) are highly significant for shaping ethical sensibilities. As researchers in e-social science navigate their way around this terrain, they do so as active social agents in their own right. They may avail themselves of the ambiguity between public and private spheres on the Internet and choose to look upon everything on the Internet that is not password protected as public and therefore as rich pickings for social science research. Or they may choose to try to adhere to a more traditional understanding of privacy. The point is that whatever they do, they will participate in the directionality of the shifts and add to them the legitimation that comes with scientific research.

### 3. Conclusion

In the preceding sections, we have delineated two ways in which researchers are implicated in the ethical dimensions of research beyond their complying to ethics regulations: the first is in the actual application of ethics regulations which always implies interpretation and judgement; the second is in the value assumptions and commitments that are made through the mode of using technologies to conduct social science. These bring with them ontological and ethical views of social existence that are then reinforced through the apparent objectivity of the social science research. Ethics does not become more easily manageable on the view that we are proposing. If anything, the fact that it can be outsourced neither to the research ethics committee, nor to the distant impacts of research technologies makes it even more complicated. But it is not necessarily a bad thing for us to feel slightly uncomfortable in doing research. A residual amount of uneasiness might be the stimulus to save us from complacency, something that is especially important in social science.

We conclude with three general suggestions stemming from our discussion:

First, because of the relative novelty of e-social science, there is a renewed need for awareness of researchers as active ethical interpreters in research contexts, and of the computational technologies of e-social science as active players in the sphere of values, to be nurtured through greater *reflexivity in practice* and *sustained ethico-social critiques* of e-social science.

Second, *methodological pluralism* is the surest way of undermining or preventing the colonization of the horizon of social science by any particular way in

which a set of values may be techno-scientifically expressed and reinforced. Methodological pluralism therefore ought to be encouraged particularly at the level of institutional policy relating to which research to promote. For research activists who fully engage with their own social, ethical and political role, the discovery of different deployments of the e-social science tools and techniques in order to explore and affirm different values and perspectives is a priority (see also Schram 2004).

Third, we advocate *proactive openness* to the interplays between the different components of the research constellation, but particularly to the multiple interactions between society, researchers and the deployment of technologies. If the social power of social science is mostly due to the one-way traffic from science to society, e-social science is an opportunity to explore creative ways to make this more of a two-way conversation.

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### Notes

- 1 See <http://chronicle.com/article/Harvards-Privacy-Meltdown/128166/> (last accessed 6 September 2011).
- 2 There is extensive literature on consequentialism. A good starting point is Scheffler (1988).

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