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One of the consequences of the widespread use of social media is the equally widespread availability of all sorts of once intimate and private stuff: textual, visual, and affective. From this, a new form of labor arises: the mining of social media data. One type of social media data mining is sentiment analysis, the application of a range of technologies to determine sentiments expressed within social media about particular topics. This article maps out a range of emerging perspectives on sentiment analysis and argues that these sometimes-competing views need to be brought together, so that analyses of new socio-technical phenomena like sentiment analysis can be rich and rounded.

The Rise of Sentiment Analysis

One of the consequences of the widespread use of social media is the equally widespread availability of all sorts of once intimate and private stuff: textual, visual, and affective. From this, a new form of labor arises: the mining of social media data. Sentiment analysis, one particular form of social media data mining, involves the application of a range of technologies to determine sentiments expressed within social media platforms about particular topics, in order to arrive at a measure of the ambient, or general sentiment (Andrejevic, 2011; Arvidsson, 2011). Sentiment analysis uses linguistic and textual assessment, such as Natural Language Processing, to analyze word use, word order, and word combinations and thus to classify sentiments, often into the categories of positive, negative, or neutral.

There has been a rise in the use of sentiment analysis by branding, marketing, and advertising companies in recent years such that it is now a significant site of cultural production. Sentiment analysis has arisen in a context that is said to be characterized by an overabundance of corporate, marketing messages, a decline of trust in advertisements, and a growth of trust in peer recommendations. Markets are conversations, it is claimed (Locke, Searls, & Weinberger, 2000), and through social media, ''the conversations happen in front of millions of people, and they're

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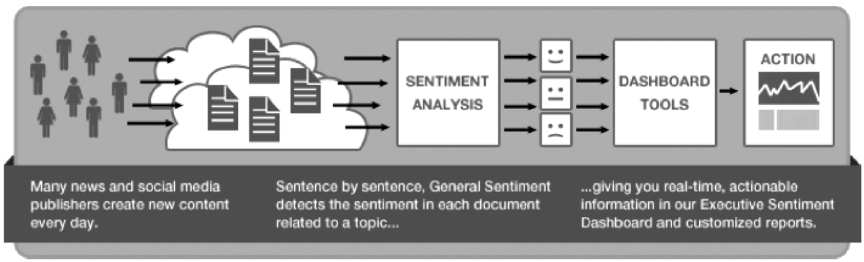
archived for years to come'' (Zarella, 2009, p. 1). Stories abound of companies whose reputations have been made or broken by social media chatter, such as the computer company Dell and the painkiller Motrin (Hunt, 2009).[1] However dubious this set of assertions might be, and however difficult it might be to find examples of bottom line value or prove causal relationships, as a result of such claims and anecdotes, corporations are keen to know what is being said about their products in social media, and what sentiments are being expressed.

It is not only commercial companies that are using sentiment analysis. Academics, politicians, media organizations, and charities also use it or its companion, opinion mining. Data gathered through sentiment analysis are believed to provide detailed information about something to which direct access did not previously exist: public opinion and feeling. Such information could indicate the success or otherwise of a marketing campaign, for example, which may in turn lead advertisers to alter their strategies. So sentiment analysis companies gather and analyze social media sentiment, sell this information to their customers, and this social media intelligence then becomes the basis for action. Figure 1, a graphic taken from the company General Sentiment's Web site, provides a visual illustration of this process. Alongside commercial products, more freely available tools exist, such as Social Mention (http://socialmention.com/), a social media search and analysis platform that ''aggregates global mentions into a single stream of information.''

Given that sentiment analysis is a fairly recent phenomenon, it is not surprising that there have been few studies of it from within any academic discipline. Those who have commented on the phenomenon have expressed concern because of the monetization of intimacy and the extraction of value that results (Hearn, 2010), and because of the role it plays in the modulation and control of affect (Andrejevic, 2011). In this article, I suggest weaving these important critical perspectives together with other perspectives, in order to arrive at rich and rounded understandings of new socio-cultural phenomena like sentiment analysis. These include the perspectives of a range of actors, including sentiment analysts themselves, as well as the people

Figure 1
Visualization of the Sentiment Analysis Process, Taken from General Sentiment's Web Site (http://www.generalsentiment.com/what-we-do.html) and Used with Permission



whose social media activities are mined and monitored. In addition, drawing on the work of Andrew Sayer (2004) and Russell Keat (2000, 2011), I suggest that a ''moral economy'' perspective might also be productive—because of the ways in which it highlights both the ethical complexity and the practical diversity of sentiment analysis.

The remainder of the article maps out this range of perspectives. First, I discuss the issues that concern sentiment analysts themselves, after which I highlight the concerns of scholars working within a critical Marxist tradition who have commented on this emergent field. I then present some preliminary findings from small-scale empirical research with people working within sentiment analysis, which points towards some of the issues revealed by a moral economy approach, highlighting the moral and ethical concerns of sentiment analysts themselves. Finally, I briefly discuss the perspectives of other important players, about whom not much is yet known—social media users.

Perspectives of Sentiment Analysts

Amongst sentiment analysts, key concerns relate to accuracy of analysis, and quantity and ''cleanliness'' of data. Accurately identifying social media sentiments is not easy. This is not only because it is difficult for humans to agree about the sentiment of a text, but also because of the complex ways in which humans express sentiment, using irony, sarcasm, humor, or, in social media, abbreviation. In the field of sentiment analysis, 70% accuracy is considered good—but that is 70% agreement with human judgment about whether a sentiment is positive, negative, or neutral, not 70% accurate identification of sentiments. Less accuracy is common, as a number of my interviewees acknowledged. One respondent stated that 70% inaccuracy would be a more realistic figure. Because of these problems, two of the companies whose workers I interviewed use manual, human analysis, rather than machine analysis, in an effort to achieve a reasonable degree of accuracy.

In this age of big data, the quantity of data analyzed by sentiment analysis companies is inevitably vast, at least in those that carry out machine analysis. Indeed, Mark Andrejevic argues that claims made by sentiment analysis companies about their services refer not to what he calls ''referential accuracy'' (that is, that the data can actually be taken to represent sentiments), but rather to the huge quantities of data analyzed (Andrejevic, 2011). Size makes up for the roughness of the data, he claims. Nonetheless, it is not always the case that limitless quantities of ''sentiments'' are there for the analyzing. An academic sentiment analyst who participated in my research said that he was disappointed by the amount of sentiments he identified on Twitter. He claimed that in his research into tweets about news, he found that ''people don't tweet much sentiment about topics that they tweet a lot about.'' In other words, there is not always a lot of sentiment to be analyzed in news tweets on Twitter.

Sentiment analysts are also concerned about the ''cleanliness'' of data, and talk about ''cleaning up'' sentiments once they have been identified. This is necessary because there is plenty of evidence of ''referential inaccuracy,'' to adapt Andrejevic's term, or of fake or otherwise unreliable data. For example, Fowler and de Avila (2009) point out that there is a ''positivism problem'' in online sentiments and opinions, as the average rating for all things reviewed, from printer paper to dog food, is 4.3 out of 5.[2] They quote Ed Keller of Market Research Group Keller Fay who says that ''there is an urban myth that people are far more likely to express negatives than positives,'' whereas the opposite is true. In their surveys, Keller Fay found that around 65% of reviews were positive, whereas only 8% were negative. Likewise, Fowler and de Avila (2009) point out that some We bsites acknowledge that companies may be submitting reviews of their own products, and that negative reviews may be suppressed, further indication of this ''positivism problem.'' In addition, one of my respondents who runs a reputation services company suggested that more than 10% of online reviews may be falsely negative and therefore may provide further evidence of referential inaccuracy.

From the perspective of sentiment analysts, opinion and sentiment are interchangeable, as the title of Pang and Lee's (2008) overview of the field, ''Opinion mining and sentiment analysis,'' indicates. Thelwall, Buckley, and Paltoglou (2011) also suggest that they are the same thing. Thus there is surprisingly little discussion amongst sentiment analysts about whether what is analyzed actually represents sentiments, or indeed, what a sentiment is. Dictionary definitions of the term sentiment suggest that it is an attitude based on a feeling, this emotive element distinguishing it from opinion, which may be more factually based (although plenty of research has been done to point to the important role of emotions in all kinds of rational decision-making, such as Nussbaum, 2003). For Pang and Lee (2008), the important characteristic of both sentiment and opinion is that they are subjective, private states ''not open to objective observation or verification'' (p. 9), an assertion which disregards the emotional and affective character of sentiments. Instead, there is a rather crude assumption amongst practitioners that, as Thelwall et al. (2011) state, sentiment analysis gives researchers ''the ability to automatically measure emotion in online text'' (p. 408). In response to such assertions, it seems vital to ask whether such a task is possible at all, never mind as straightforward as implied here, given the psychological complexity of emotions, and their equally complex cultural politics (Ahmed, 2004). Such assertions overlook the complex, affective qualities of sentiments—as does the categorization of sentiments into only three simple types: positive, negative and neutral.

Extensive research has been carried out into what social media users think they are doing on social media, which raises further questions about whether we are dealing with sentiments here. In one example, Marwick and boyd (2010) identified extensive self-censorship in their research on Twitter users, in which many of their respondents suggested that they aim for balance in their tweets. Their tweets may therefore reflect more measured and balanced sentiments than they feel, and what appears as sentiment may in fact be its performance. If users of social media like

Twitter self-consciously self-construct, as some have suggested (Hearn, 2008), or if they conceal more than they reveal, as Marwick and boyd found, then whether sentiment analysis is taking place at all is debatable. As Hearn (2010) points out, social media sentiments are conditioned by the systems through which they are expressed, yet further indication of the need to acknowledge their likely referential inaccuracy. Yet these issues are rarely discussed by sentiment analysts.

Critical Perspectives

In this section, I briefly sketch three critical perspectives on sentiment analysis, and then bring these into dialogue with the perspectives of sentiment analysts discussed above. These include Hearn's (2010) view that social media monitoring practices like sentiment analysis represent the extraction of value from feeling, Andrejevic's (2011) argument that it represents a form of affective control, and Turow's (2012) claim that it results in social discrimination.

Alison Hearn argues that the economic valuation of affect through sentiment analysis leads to the monetization of intimacy, feeling, and friendship. For Hearn, sentiment analysis thus represents yet another capitalist mechanism of value extraction. She describes the people doing this work as ''feeling-intermediaries.'' ''Feeling-intermediaries structure feelings into profits for themselves and their clients'' (2010, pp. 435–436), she claims, arguing that their systems ''mark the point at which human feelings are commodified'' (p. 428). For Hearn, the work of feeling-intermediaries is a problem in that it produces value from mined sentiments not for the people who might claim some ownership of them, but for corporations, brand-managers, and marketers:

> what is extracted from the expression of feeling is valuable only to those who develop, control and license the mechanisms of extraction, measurement and representation, and not for the people doing the expressing. (Hearn, 2010, p. 423)

Power in this sector is therefore ''primarily enacted by the media industries'' (Hearn, 2010, p. 424), a fact of which she is critical. Sites like TripAdvisor, she argues, operate ''under the guise of serving consumers' interests'' by providing them with a space to express opinion or sentiment whilst ''their corporate clients are able to access these suggestions, using them to grow brand equity and develop products'' (2010, p. 431).

Similarly, Mark Andrejevic (2011) is concerned about the role played by sentiment analysis in the prediction and subsequent control of affect, which he describes, quoting Massumi (2002), as ''an intrinsic variable of the late capitalist system, as infrastructural as a factory'' (Massumi, 2002, p. 45, quoted in Andrejevic, 2011, p. 609). Andrejevic (2011) argues that affect, ''a circulating, undifferentiated kind of emotion'' (p. 608), is an exploitable resource within affective economies, and

its exploitation results in forms of control described by Clough (2003) as ''a never-ending modulation of moods, capacities, affects, potentialities assembled in genetic codes, identification numbers, ratings profiles and preference listings'' (p. 360, quoted Andrejevic, 2011, p. 608). He proposes that through mechanisms like sentiment analysis, emotions are abstracted from individuals, and instead constitute a kind of background intensity that is of no-one. Marketing strategies focus on the measurement and surveillance of this background intensity, or ambient sentiment. Andrejevic points out that sentiment analysis companies use the language of ''listening'' to describe the services that they offer, but, he suggests, the goal is not really to listen, but rather ''to monitor and oversee''; ''to aggregate and mine [individual voices] in order to trace signals in the noise and to extract information to improve ... marketing campaigns'' (2011, p. 611).

Discussing a broader range of marketing practices than Hearn and Andrejevic, Joseph Turow (2012) locates sentiment analysis and other forms of social media monitoring in the context of the techniques the digital advertising industry has long used to monitor, measure, and understand its target audiences' psychographics, in his book *The Daily You: How the New Advertising Industry is Defining Your Identity and Your Worth* (as does Arvidsson, 2011). Turow's argument is that such practices ultimately lead to social discrimination. They do this by turning ''individual profiles into individual evaluations'' (2012, p. 6): individuals' marketing value is calculated, based on behavioral and other forms of tracking, and each individual is categorized as target or waste. These data define our identity and our worth, suggests Turow, determining not only what marketing firms do, but also how we see ourselves and others. This is because those of us who are considered to be waste receive narrowed options in terms of the advertising messages that are targeted at us, and, according to Turow, these messages constitute a form of social discrimination that impacts upon our sense of self. Of course, as Turow points out, advertisers' notions of individuals depend on the choices they make about the firms from which to purchase data, as data and information are transient and there is substantial variability in how profiles are created.

These critical interventions point to some of the troubling consequences of emergent practices like sentiment analysis. They counterbalance the more celebratory accounts of the democratic possibilities opened up by social media and their acclaimed possibilities for participation (for example in Jenkins, 2008). As Andrejevic (2011) states, participatory culture ''has the potential to cut both ways: the increasing influence of participatory consumers on the production process, and the facilitation of monitoring-based regimes of control'' (p. 612). Thus these critical perspectives do the important job of making visible what is largely invisible—that is, the work of monitoring, mining, and tracking the data, opinion, and sentiment trails that we leave behind as we move through social media. As Turow points out, the decision to make such practices invisible was a conscious one. He quotes Richard Smith of the Electronic Frontier Foundation who asked ''Why are web bugs [used for tracking consumer activity] invisible on a page?'' to which Smith answered ''To hide the fact that monitoring is taking place'' (quoted in Turow, 2012, p. 61).

Combining these critical perspectives with the perspectives of key actors within the field of sentiment analysis, such as sentiment analysts themselves and the people who produce the content that is mined and monitored, can further enrich understandings of the cultural significance of social media monitoring, as it means bringing together structural analyses with a recognition of individual agency within these structures. This might not be quite what Jeremy Gilbert (2012) recently described as a necessary ''synthesis between the classical Marxist denunciation of neoliberalism and the neo-autonomist insistence on recognizing the collective agency of the multitude,'' as sentiment analysts can hardly be described as a multitude, but the productiveness of such as synthesis is clearly applicable here. Many of the issues that concern sentiment analysts point to the limitations in actually doing sentiment analysis, as accuracy and cleanliness of data, to use their terms, are difficult to achieve. Indeed, the interviewee who suggested there is 70% inaccuracy in sentiment analysis hinted at both its lack of reliability and its absurdity (though some practitioners decidedly would not share her cynicism). How significant is it then, as a cultural phenomenon, and how seriously should we take it? What's more, what does the slippage between sentiment and opinion within sentiment analysis mean for the claims that are made about it—for example, can it be described as affective control if there is no affective element? These are some of the questions that emerge from synthesizing critical Marxist perspectives with those that recognize agency. In the next section, I say more about the agency of individual sentiment analysts, through a consideration of the issues that arise from using a ''moral economy'' approach.

A Moral Economy Perspective

In an article entitled ''Moral Economy,'' Andrew Sayer (2004) argues that economic decisions, behaviors, and institutions ''depend on and influence moral/ethical sentiments, norms and behaviors and have ethical implications'' (p. 2). ''Ethical and moral valuation is always either present or latent'' in economic behavior, he claims (2004, p. 4). Sayer is one of several British political theorists and philosophers interested in examining the relationships between ethics and markets. Like him, Russell Keat has written extensively on the intersection of ethics, morality, and markets, for example in ''Every Economy is a Moral Economy'' (2004) and ''Market Economies as Moral Economies'' (2011). In these article, Keat argues that the critical evaluation of market economies must include ethical judgments about the goods and ills of production, consumption, and exchange. Similarly, John O'Neill (1998) asserts that non-economic associations are central to economic life, and that social life ''requires serious commitments which are non-contractual in nature'' (p. 76).

Elsewhere, other writers have highlighted the ethical character of a range of activities, some of them work-related, such as Kathleen Gibson and Julie Graham (2006), in their research into alternative economic models and the post-capitalist politics they represent. Gibson and Graham acknowledge that through their research, their

intention was to make an intervention, to identify and facilitate openings and possibilities, such as ''the ethical opening of persons to one another that conversation provokes and enables'' (2006, p. 135). For me, engaging in conversation with sentiment analysts and other people working in this field about the moral and ethical dimensions of their professional decision-making also represents a search for ethical openings. How do these workers reconcile concerns about the surveillant and monetizing dimensions of sentiment analysis discussed in the previous section within their daily work practices? Addressing these important questions directly with sentiment analysts themselves is an essential part of the kind of moral economy approach I propose here.

The writers discussed briefly here make a convincing case that labor not only results in value for those who own its outputs, but also needs to be understood as a process which involves a series of judgments based on the values of laborers themselves. This assertion that value and values come together in labor applies to sentiment analysis just as much as any other form of work. Value and values merge not only in the sense that value is made out of consumer values, as Arvidsson (2010) suggests, but also because producer values play a role in the ways in which feeling-intermediaries carry out their work. The following paragraphs flesh out this claim by reflecting on interviews with people working in sentiment analysis and other forms of social media monitoring, either as sentiment analysts or in other roles (such as account manager, or head of social media). Eight interviews have been carried out in two European countries, six in sentiment analysis or social media monitoring companies, one with an academic sentiment analyst, and one with the head of an online reputation management company.[3] I accessed interviewees through existing networks, a mailing list, and by contacting social media monitoring companies identified through a Web search. This is ongoing research that clearly represents a modest amount of data, but I draw on it here to indicate the kinds of issues that might emerge from taking a ''moral economy'' perspective.

Before discussing the interviews, a comment on respondents' backgrounds is useful. One had experience in what he describes as ''integrity-led'' communications consultancy and another worked in Web search engine optimization, where she actively opposed unethical practices, prior to her current work in social media monitoring. Three respondents have backgrounds in media and communication studies; during our interview, one actually said that she had recently been asking herself, in relation to the work that she does, ''how would Marx frame everything?!'' These backgrounds in critical media studies and ethical media work are significant, for, as McRobbie (1999) acknowledges, the fact that they constitute part of the formation of today's army of cultural laborers may give us cause to be hopeful about the ways in which such work gets done.

Ethical considerations could be identified in the ways in which respondents' companies access sentiment, use sentiment, and intervene in sentiment. When asked if they have codes of practice regarding which social media sentiments they gather and analyze, all respondents said that they only look at publicly available data. If data are behind a firewall, or are not publicly available, then they are considered

to be off limits. ''If there's an indication that people don't want their Web site looked at, then we don't look,'' said one respondent. This is guaranteed by the fact that the functionality to log-in to closed sites is not built in to her company's technology, although it could be. In such cases, although it would be *technically* possible to breach systems' terms of service and ''walk under the fence,'' as one respondent put it, the decision was made to adopt a more principled practice. Therefore, not all sentiments are examined, mined, and monitored. This decision is clearly commercially wise as well as ethical, as potential clients may be uneasy with more dubious mechanisms for gathering sentiment.

However, it is well established that what is public and private is complex in social media environments. danah boyd (2010) uses the notion of ''being private in public'' to highlight this complexity, comparing social media with corridors. If two people bump into each other in the public space of a corridor, she argues, one might say something private to the other that s/he would not want to have publicized. Instead, the speaker would want ''privacy in context,'' or what Nissenbaum (2009) calls ''contextual integrity.'' I put this to my respondents. Some respondents agreed that deciding what is public is problematic in social media. They acknowledged that some information is public both from a systems point of view and because it is clearly directed at companies and appears to require an answer, but as one respondent stated, ''It's not crystal clear what's public and what is not.'' Not all respondents agreed with this, though. One respondent's company lists amongst its clients a large multinational for whom she tracked its employees online to identify ''what feeling they have'' about the organization. She said it is social media users' responsibility to understand how public their social media messages are. She added: ''If I do a nude photo and upload it on Twitter . . . Whose fault is it? 'Oh! I didn't read that this could be seen by everyone' . . . So, you should have!'' When asked what the ethical limitations of sentiment analysis should be, another respondent replied ''as far as the user allows,'' again suggesting that what is made technically public is fair game to be mined and monitored.

One respondent felt that the use of pseudonyms on forums goes some way towards guaranteeing the privacy of people expressing sentiments in these environments. Another felt that the central ethical issue in relation to accessing data was the widespread ignorance of such practices, suggesting that the ethical ethos of sentiment analysis could be something like ''report that it exists.'' Another interviewee pointed to the responsibilities that forum administrators and Web site owners have in protecting the privacy of their systems' users. The head of the reputation services company was much more explicitly critical of the organizations from whose Web sites sentiments are extracted, questioning who should receive criticism in relation to sentiment analysis, feeling intermediaries themselves, or the firms which make their users' feelings open to intermediation. Such companies benefit both from the opacity of what is public in social media and from the absence of appropriate legislation, he claimed, and they use the absence of legal liability as an excuse for failing to exercise due diligence. It is here that critical attention needs to be focused, he argued, rather than on data miners and sentiment analysts themselves. Thus a

number of social media actors are invoked as having responsibilities in relation to sentiment analysis, not just the feeling-intermediaries themselves. What's more, it is not the case that all social media sentiments are systematically mined regardless of people's wishes—some remain the preserve of the sentiment-expresser.

What happens to sentiments once they have been mined? This is another issue to which some respondents had given consideration. One said that he thought his company had ethical responsibilities in relation to ''what we do with the data when we get it.'' And there are differences in the ways in which sentiment analysis companies operate in this regard. Some companies advise clients on how to engage in social media conversation; others do this on clients' behalves, offering services known as community management. Other companies choose not to offer such advice or services. Instead, the companies' clients decide for themselves what to do with their data. But even those that offer these services do not always do so willingly. One respondent whose company engages in ''community management'' on behalf of clients expressed her ethical unease about her company intervening in other people's conversations, saying that she believed that ''we should let our clients look after their own voice'' because ''as much work as we can do to get under the skin of our clients, we are not them'' and cannot speak with the authentic voice that they can. And just as some commercial companies do not advise their clients on strategies for intervening in social media conversations or targeting key influencers, the academic sentiment analyst amongst my interviewees also used the notion of non-intervention as an ethical justification for his work:

> I don't monitor people, in the sense that nothing that I do is intended to affect the people that I'm getting the texts from. So the end result of my analysis is completely neutral to them. So I won't try to sell them anything, or try to get them to modify their behavior in anyway.

Andrejevic's (2011) claim that emotions are abstracted from individuals in sentiment analysis is echoed in this and other interviewees' comments. Another respondent, for example, expressed the view that what is measured by sentiment analysis is the general sentiment, not individualized emotions: ''We're not going too much into the individual, but trying to catch the feeling,'' he said. As a result of ''trying to catch the feeling,'' as he put it, he felt that his company's practices were not harmful or intrusive to individuals. He continued:

> We do not place too much attention to the individual statements, but more the total picture of what is said in a given time period about a company.... We can identify persons if we want to, but we don't see the relevance of it.

He continued to give an example of a public relations agency that asked his company to cull data from journalists, so that the agency could inform customers of what individual journalists were writing about them. ''And we chose not do that,'' he said, because ''this is not something we want to do. I don't think it would be in conflict legally, but we feel it's one step too far.''

Furthermore, some respondents pointed to the benefits that result from some uses to which their companies' data are put. The academic sentiment analyst amongst my respondents felt that the uses of his data were ethically sound, because through his research, he aimed to generate socially useful knowledge. He said "my justification for doing sentiment analysis would be that I'm trying to get findings that are useful for society." For another respondent, the majority of his company's clients are other media organizations, interested not in growing brand equity or changing consumption behavior, but rather in understanding people's concerns. Another interviewee's company works extensively with a world leading co-operative corporation which promotes ethical business practices. This respondent felt optimistic about the predictive capacities of sentiment analysis that concern Andrejevic, because they may contribute to the development of treatments relating to sentiment-related illnesses such as depression, she suggested. Finally, another respondent commented on how the data her company gathers get put to all sorts of different uses by a range of different organizations:

> charities use social media monitoring to understand how people feel about world events and how they can encourage them to contribute to positive change by donating money or volunteering time.

Because of the opportunities available to engage with and get heard by companies and brands, consumers now have more control over brands, some respondents claimed, as evidenced in the stories of Dell and Motrin, outlined in Footnote 1. "People have more power to impact on how companies behave," said one respondent. Another respondent talked about consumers' refusal to behave on social media sites as companies would like them to, which he saw as a form of consumer power. "I don't see that trying to catch the sentiment from these kinds of data is something that empowers companies more than normal persons," he proposed, because consumers have the power to say "we choose to say something opposite to what they want us to say."

Whilst such views may seem to reflect idealized notions of the empowering potential of participatory cultures which we may want to problematize (and indeed some respondents did just that), they also point to a belief in the possibility of social media users' agency in the production of knowledge about them. Marwick and boyd's (2010) findings also point to the agency of social media users, who make conscious decisions about which sentiments to express or perform, and who are thus not simply and universally the prey of feeling-intermediaries. Recognition of such agency is made possible through the approach I am proposing here, which brings together a range of perspectives on sentiment analysis. These views about the various ways in which consumers may gain from the increased value attached to social media chatter confirm Arvidsson's (2011) proposal that the wrong people might lose out if social media data were not public and collectable. As he puts it, "it is crucial that access to the underlying data remains open and free, so that actors that do not have the economic means to pay for such data, such as activist groups,

consumer cooperatives or other non-profit organizations are able to benefit from its uses'' (2011, p. 22).

In addition to these reflections from social media monitoring actors, the appearance of bodies that aim to regulate this emergent sector points to broader, industry-wide concern with ethical questions. These include, for example, WOMMA, the Word of Mouth Marketing Association in the US and the UK, which describes itself as ''the leading voice for ethical and effective word of mouth and social media marketing'' (WOMMA, 2012). WOMMA offers, amongst other things, ethics codes and ethical resources, such as social media disclosure and privacy guides, guides relating to honesty about return on investment, and ethical assessment tools. The development of organizations like this and the reflections of individual practitioners point simultaneously to differences in practice, differences in ethics, and to the moral economy of sentiment analysis. This is another perspective that contributes productively to our understanding of it.

Perspectives of Social Media Users

What do social media users think of social media monitoring? Do they consider it to be more ethical for companies to inform them of their practices, which some respondents argued should be the guiding ethical principle of sentiment analysis, or to keep these practices from them, as the academic sentiment analyst amongst my interviewees does? Little research has been done on this topic, and this is a gap that needs to be filled.

There are nonetheless resources that provide us with some insight into this question. As stated above, there has been a great deal of research exploring what social media users think they are doing when they use social media, such as the boyd and Marwick study already cited. Such studies enhance knowledge about what we can take social media content and activity to represent—feeling, self, identity, performance?—which in turn contributes to analyses of sentiment analysis practices. Similarly, Turow and others (Turow, Feldman, & Meltzer, 2005; Turow, Hoofnagle, King, Bleakley, & Hennessy, 2009) have carried out a number of surveys in the US exploring consumers' views of the online tracking activities of digital advertising companies. These studies offer insight into attitudes to such practices, although perspectives on social media monitoring may vary, given the specific contexts and purposes of these media. Turow et al. (2005) argue that people reject digital data tracking: in one study, 79% of 1500 adults agreed with the statement ''I am nervous about websites having information about me.'' However, most other statistics from these studies point to ignorance rather than concern. For example, the 2005 report stated that around half of respondents did not know that Web sites are allowed to share information with affiliates (Turow et al., 2005), and the 2009 study found that 62% falsely believe that if a Web site has a privacy policy, it means that the site cannot share information about them with other companies (Turow et al., 2009). Finally, Mark Andrejevic is undertaking a study of public attitudes toward measures

to regulate the collection and use of online personal information, which again may offer some indication of social media users' attitudes to social media monitoring, but which, at the time of writing, is only just beginning.

Bringing Together Perspectives on Sentiment Analysis

This article is a kind of manifesto for studying sentiment analysis and other forms of social media monitoring. Companies offering such services could be described as intermediary social media industries, mediating social media content and activity on behalf of their clients. Such companies play an important role in the technologically mediated affective economy (Andrejevic, 2011), and should not be bypassed in favor of analyses of the Facebooks, Twitters, and other major players in our wired culture. The article proposes that a range of perspectives can usefully come together in order to develop rich understandings of such contemporary phenomena. It has suggested that these might include: the perspectives of sentiment analysts themselves; critical perspectives deriving from Marxist-influenced structural analyses; a moral economy perspective examining ethics and agency in sentiment analysis decision-making; and the perspectives of the social media users without whose activities social media intelligence could not exist. Bringing together these varied perspectives makes it possible to acknowledge both the agency of social media (monitoring) actors of all kinds, and the constraining structural conditions in which these practices take place. Synthesizing structure and agency in this way, Gilbert (2012) suggests, ''is not just possible but necessary if we are to understand the genesis and the full complexity of our historical moment.''

The concerns of sentiment analysts provide insight into the empirical practicalities of the field. Their discussions of analytical accuracy and of quantity and cleanliness of data point to the difficulties inherent in accurately analyzing sentiments, and the limited availability and reliability of sentiment in social media. This in turn suggests that the spread and impact of sentiment analysis may be relatively limited and the need for some caution in what we claim about it.

The critical perspectives of Hearn and Andrejevic to some extent represent Gilbert's ''classical Marxist denunciation of neoliberalism'' and, along with Turow's detailed analysis, do the important work of drawing attention to both the capitalist structures within which practices like sentiment analysis cannot help but take place, and the troubling social consequences of such practices. They remind us of the importance of being critical, and of taking a normative position that highlights the ways in which power, control, and discrimination reproduce themselves in innovative ways within innovative socio-technical systems.

Returning to questions of actor agency, a moral economy perspective highlights the ethical considerations that can be identified in the decisions that are made within sentiment analysis practices about how to access data, how to use data, and whether or not to offer advice about intervening in social media conversations as a result of data analysis. This article paints an ethically complex picture of how

sentiment analysis gets done. Feeling-intermediaries' histories inform their practices, from their educational backgrounds in critical media and cultural studies, to their experiences of various forms of ethical work. Sentiment analysis practices differ; some are ethically informed, and some appear to be less so. Some sentiment analysts make decisions about the ways in which they create value—for themselves and for their clients—that are based on their values. Some of the time, these decisions limit their own potential to create value, in ways that practitioners and companies find ethically acceptable. Social media sentiments also differ—some are meant to be heard, mined, analyzed, and appear to invite responses. This perspective, then, points to the importance of being precise about which (kinds of) companies and sentiments we are addressing in our analyses. This article has dwelt longest on this perspective, as it is under-represented in debates on sentiment analysis to date.

The views of the social media users whose sentiments are analyzed do not figure prominently in discussions of sentiment analysis. We simply do not know the opinions of social media users about the monitoring of their social media activity. Further research is needed here. The research undertaken by boyd and Marwick (2010) and others, which aims to unearth the perspectives of social media users themselves, offers a further perspective that can enhance our understanding of sentiment analysis. Further research is also needed into the range of practices carried out under the rubric of sentiment analysis, how the people making and deploying the related systems think about their work, who their customers are, and what is done with sentiment analysis data.

These varied perspectives on sentiment analysis attach different meanings to social media data, sentiment, and activity, which, in turn, contribute to the political, social, and cultural claims that are made about them, claims that may surprise their producers, social media users. This points to a bigger question: What is social media content (or data, sentiment, activity), and what meanings *should* be attached to it? Despite widespread research on the topic, the answer to this question remains unclear. Bringing the perspectives outlined here together, and carrying out further empirical research with social media users and producers of various kinds of social media intelligence might help us to arrive at clearer answers. In order to do so, in this age of e-research, big data, and digital research methods, what is needed is some old-fashioned and somewhat unfashionable empirical sociology.

The reflections in this article raise broader questions than those that relate to the best ways in which to make sense of sentiment analysis. The research on which one part of the article is based adopts an approach which acknowledges our ethical responsibilities as researchers to enter into dialogue with the people who are the object of our studies, to put to them some of the criticisms of their work that are appearing in the pages of academic journals. Such dialogues might be understood as the kinds of conversations that Gibson and Graham (2006) claim enable "the ethical opening of persons to one another" (p. 135). In my research, a willingness to reflect on ethics, to collaborate on future research into the views of social media users and to consider what these views might mean for their operations, present amongst some participants, might constitute such an ethical opening.

Notes

[1]In response to negative blog posts about poor quality customer service and fearful of losing market share, Dell set up Direct2Dell to encourage customers to share their frustrations directly with the company. Initially, they received many negative comments, but their responses to these comments were seen to re-build trust with customers over time. In another incident, painkiller Motrin released an advertisement targeting mothers carrying their babies in carriers, which was not well received because of its flippant tone. Negative commentary spread rapidly on Twitter, after which Motrin removed the ad and apologized. The original advert can be found here http://www.youtube.com/watch?v=XO6SlTUBA38 and a response here http://www.youtube.com/watch?v=LhR-y1N6R8Q

[2]In the US, it's even higher, at 4.4.

[3]I thank Cristina Miguel for assistance with some of these interviews.

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