S|S|S

Social Studies of Science
41(1) 85–106

DOI: 10.1177/0306312710380301
sss.sagepub.com
SAGE

Matters of care in technoscience: Assembling neglected things

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Abstract

This paper aims to encourage an ethos of care in the study of science and technology. It starts with a reading of Bruno Latour's notion of 'matters of concern' as favouring an awareness of the ethico-political effects of constructivist accounts in STS. Introducing attention to *concern* brings us closer to a notion of care. However, there is a 'critical' edge to care that Latour's politics of things tends to disregard. Drawing upon feminist knowledge politics, I propose to treat matters of fact and sociotechnical assemblages as 'matters of care' and argue that engaging with care requires a speculative commitment to neglected things.

Keywords

care, constructivism, feminist thought, knowledge politics, 'matters of concern'

Our beautiful planet is sore, and bearable living conditions continue to be inaccessible to many. The joint fortune that all forms of life share with human technoscience is no longer news. Developing more scientific research and technological solutions continues to be the dominant response to problems, both globally and locally – whether they concern climate change, economic recession, hunger, infertility, access to healthcare or to information. Science and technology studies (STS) of all kinds thrive in this environment. From the everyday life corners of laboratories, households and gardens to the most arcane and techno-hyped spaces, our world has become a research space for network ethnographies and constructivist theories. In these circumstances, this paper aims to encourage an ethos of care within the study of science and technology.

Today, calls for care are everywhere, from the marketing of 'green' products to discussions of moral philosophy on the 'ethics of care'. Here I will be thinking through possible meanings of care for knowledge politics in STS. How can an ethico-political

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concern such as caring affect the way we observe and present technoscientific agencies, things and notions? Can care count in this context as more than the responsible maintenance of technology? Is it just a moral value added to the thinking of things? These questions require exploring an idea of care that goes beyond moral disposition or a well-intentioned attitude to consider its significance for knowledge construction within technoscience. I draw upon feminist thinking to envision care as an ethico-political issue – one that is more complex than it might initially seem to be. In particular, the politics of caring have been at the heart of concerns with exclusions and critiques of power dynamics in stratified worlds. It is with this tradition in mind that I discuss ways in which care can count for STS's engagement with things and its critical interventions in technoscience.

Questions regarding the social and ethico-political implications of the interdisciplinary field of STS have been present throughout its formation and development. This is not only an 'externalist' problem. Social studies of science and technology were established on the idea that sciences and technologies are not simply used or misused by socio-political interests *after* the hardware is stabilized in aseptic 'neutral' labs (for example, see Collins and Pinch, 1993; Latour, 1987; Shapin and Schaffer, 1985). But responses to questions such as 'Do artefacts have politics?' (Winner, 1986) are not just matters of producing more accurate studies of technology by including politics in accounts and cartographies of networks and concerns. The constructivist insight in STS analyses goes beyond the identification of politics inside labs: it also pertains to the meaning-producing technologies of the field, its methods and theories, its ways of telling stories (Haraway, 1997). Our modes of thought as well as our research ethos affect the politics we attribute to our objects. This means that, ultimately, every *Dingpolitik* – Bruno Latour's (2005a) name for the politics of things – denotes a *thinkpolitics*. Ways of knowing, theories and concepts have ethico-political and affective effects on the perception and re-figuration of matters of fact and sociotechnical assemblages, on their material-semiotic existences (Barad, 2007; Haraway, 1991). Ways of studying and representing things can have world-making effects.

It is with regard to these legacies that I explore how constructivist accounts of science and technology can help turn matters of fact and sociotechnological assemblages into 'matters of care'. The notion reveals the connection of this discussion with problems stirred up by Bruno Latour's idea of 'matters of concern' and with the knowledge politics underpinning it. In the first part of the paper, I read Latour's shift in focus from matters of fact to matters of concern as responding to aesthetic, ethico-political and affective issues faced by constructivist thinking and its critical approach to things. Latour's notion represents a particular way of conceiving STS's knowledge politics, but also introduces the need to care. However, the implications of care are thicker than the politics turning around matters of concern. In the second part of the paper I present aspects of a feminist vision of care to both encourage and problematize the possibility of translating ethico-political caring into our ways of thinking and representing things.

When concerns come to matter

The notion of matters of concern extends the early insight that scientific and technological assemblages are not just objects but knots of social and political interests. This vision has

gained in subtlety, notably where constructivism is no longer 'social' but has become 'ontological' (Mol, 1999; Papadopoulos, forthcoming). Here mediations are not described as mastered by human/social subjects controlling non-human agents. In the same direction, it is not so much that 'social' interests are added to the non-human world by acting upon the course of natural phenomena and technological development, but rather that interests and other affectively animated forces – such as concern and care – are intimately entangled in the ongoing material remaking of the world (Barad, 2007). The ethico-political sensibility of accounts dedicated to these intricate agencies is well represented by the re-baptism of matters of fact into 'matters of concern' (Latour, 2004b; Latour, 2005b, c). This naming can help to emphasize caring responsiveness in technoscience in an integrated way, within the very life of things, rather than through normative added values.

Things are matters of concern

The notion of matters of concern (MoC) is relatively new, but the concerns that support it are not. MoC makes a difference for three sets of problems that are familiar to philosophical discussions of STS practice in general and constructivism in particular.

In the first place, MoC prolongs the early awareness of the liveliness of things. It is situated in a continuity of conceptual efforts aimed at de-objectifying scientific matters of fact (Latour, 1993, 1999). Latour's work is rich with diplomatic efforts to convince sociologists and humanists that machines and other non-humans are not soulless matter, and also to convince scientists, technologists and engineers that their facts and artefacts are embodied sociality (Latour, 1996). Often Latour praises STS for a mode of presentation that does not objectify the work and products of science and technology: 'when agencies are introduced, they are never *presented* simply as matters of fact, but always as *matters of concern*, with their mode of fabrication and their stabilizing mechanisms clearly visible' (Latour, 2004b: 246, emphasis added). Latour (2008) has also described this as an 'aesthetic' question, referring to the 'staging' of matters of fact. But it is also a problem of knowledge politics: how we present things matters. MoC provides here a new conceptual tool for a well-explored task: the re-staging of things as lively. It helps to resist what A.N. Whitehead called a 'bifurcation of nature' that splits feelings, meanings and the like, from hard core facts (Latour, 2008; Whitehead, 1920). Calling 'social' our constructivism perpetuated this split between the natural of facts and the social of concerns. So, the problem MoC encompasses is known. However the notion indicates a subtle, yet meaningful, displacement. By contrast with 'interest' – a previously prevalent notion in the staging of forces, desires and the politics sustaining the 'fabrication' and 'stabilization' of matters of fact – 'concern' alters the affective charge of the thinking and presentation of things with connotations of trouble, worry and care.

This way of presenting matters of fact has significance for a second familiar theme: the inclusion of things in politics. STS has helped objects become 'free citizens' by exhibiting them as 'mediators – that is, actors endowed with the capacity to translate what they transport, to redefine it, redeploy it, and also to betray it' (Latour, 1993: 81). These agencies were invisible to human-centred politics that excluded them and saw them as mere objects – either threatening or serviceable. The target of this critique is humanist morality, oblivious to how matters of fact and technical things 'gather', to how

they can transform the composition of a world. Instead, thing-oriented politics give them a political voice. They ask in a more democratic fashion: 'How many are we?' in order to include in this 'we' the often misrepresented non-humans, who are also participants in public life (Latour, 2004a). With regard to this problem, MoC translates the political life of things into a language compatible with contemporary majoritarian democracies dealing with 'issues' of 'public concern'. In addition, concern stresses the troubled and unsettled ways, the more or less subtle tremors, by which a gathering/thing/issue is constructed and holds together. And here also replacing interests by concerns as the force of political claims and their inclusion alters in a significant way the material-semiotic perception of things: interests are something that the inheritors of agonistic modern politics have learned to approach suspiciously – or that we are supposed to jealously preserve when they are our 'own' interests. Concerns, in turn, call upon our ability to *respect* each other's issues, if we are to build a common world.

Respect is also at the heart of a third impulse for thinking things as MoC: the disempowering effects of constructivism when it concedes too much to 'critique' and ends up turning the insight that 'facts are constructed' into 'disbelief' (2004b). Here, Latour appeals to a sense of self-protection of our 'own' concerns: would you really appreciate your concerns being reduced, deconstructed or dismantled? (2004b: 240). Affirming that matters of fact are matters of concern encourages awareness of the vulnerability of the facts and things we set out to study and criticize. One major symptom of critical excess is the abuse of notions of power, used as causal explanations 'coming out of the deep dark below' to undermine what others present as facts (2004b: 229). The disavowal of critical descriptions that stress power and domination as key social forces that make science and technology – a 'lust for power' (Latour, 2005b: 85) – is not new to Latour's work.[1] These explanations, still according to Latour, are technically inadequate for 'good' actor network theory (ANT) accounts (which preferably would not impose 'ready-made' explanations upon the cartographies of actors and networks). The introduction of MoC further stresses these explanations' ethico-political and affective effects, not only on things, facts and the world, but on those who set out to research them. This is well staged with the funny figuration of a tired (social) constructivist who has learned a lesson: a tragicomic 'Zeus of critique' who *knows* how things really work but reigns in a desert alone, loved by none, as he has criticized everything; his locomotive has 'run out of steam' (2004b: 239). Critical constructivism is wracked with weariness, suspecting that it has contributed to the ongoing dismantling of the world.

As I introduced earlier, I read MoC as representing a vision of STS's knowledge politics. First, an aesthetics: the way STS presents things doesn't split affects of concern and worry from the staging of their lively existence. Second, a thingpolitics: its representation of things gives them a voice as embodied concerns in the 'we' of the democratic assembly. Third, a respectful ethos of knowledge production: its critique when *explaining* things doesn't reduce technoscience to a struggle for domination. In this sense to account for concern is a material-semiotic gesture of inseparable thinkpolitics and thingpolitics. The ethico-political difference made here with MoC pertains to knowledge politics, not to an additional morality. However, my reading of the genealogy of MoC stresses also the differences made by introducing concern across these issues. From an ethico-political and affective perspective these pertain to an ethos of research. My interest here

is in how the assessment of a critical thinking that 'runs out of steam', and the proposition of naming facts and things as MoC responded to serious concerns about how things can be misconceived, misrepresented and mistreated, and to the consequences of this in a worrying world.[2]

It is important to note that MoC was first developed in an intervention addressed to critical thinking in general, rather than to critical STS in particular. But at the time, Latour reviewed critical constructivism in the light of what STS had learned from the Science Wars – mainly the fact that scientists reacted to social constructivism as to an aggression – and how these wars affected the ways in which STS scholars could feel about the effects of their work. In this context, the Zeus of critique appeared as passé, a straw-like figure in a fable's moral rather than an actual problem. STS has not only moved beyond humanist socio-political explanations of material and technoscientific worlds, but also beyond excessively suspicious critiques of agonistic interests and power strategies. Latour proposed to critical thinkers in general to do what STS has already learned to do: to treat matters of fact as MoC.[3] According to Latour, STS is at its best when it adopts a respectful and, we could say, constructive way of exhibiting matters of fact as processes of entangled concerns. The purpose of showing how things are assembled is not to dismantle things, nor undermine the reality of matters of fact with critical suspicion about the powerful (human) interests they might reflect and convey. Instead, to exhibit the concerns that attach and hold together matters of fact is to enrich and affirm their reality by adding further articulations.

This discussion raises the issue of how 'we' are contributing to the construction of the world. How does respect for concerns in the things we re-present encourage attention to the effects of our accounts on the composition of things? Exhibiting entangled concerns at the heart of things increases the affective perception of the worlds and lives we study beyond cartographies of interests and practical engagements. In this sense, the staging of a matter of fact or a sociotechnical assemblage as a MoC is an intervention in its ethico-political becoming. And in the context of a troubled and strongly stratified world, do we not still need critical approaches to play a role in the assembling of concerns? The notion of 'matters of care' attempts to respond to these questions. Caring involves a notion of doing and intervening. To start asking what care can actually mean for the thinking of things, I approach the relations between Latour's notion of concern and a notion of care. If staging things and matters of fact as MoC thickens their reality, how does care affect MoC?

Adding care to our concerns

Concern and care can mean similar things – both come from the Latin *cura*. But they also express different things. So care does not replace concern at the heart of the politics of things; it does something else. For the purpose of this paper I have stressed the capacity of the word 'concern' to move the notion of 'interest' towards more affectively charged connotations, notably those of trouble, worry and care. Understood as affective states, concern and care are thus related. Care, however, has stronger affective and ethical connotations. We can think on the difference between affirming: 'I am concerned' and 'I care'. The first denotes worry and thoughtfulness about an issue as well as the fact of belonging to those 'affected' by it; the second adds a strong sense of attachment and

commitment to something. Moreover, the quality of care is more easily turned into a verb: *to care*. One can make oneself concerned, but 'to care' more strongly directs us to a notion of material doing. Understanding caring as something we do extends a vision of care as an ethically and politically charged *practice*, one that has been at the forefront of feminist concern with devalued labours. I develop this point in the next part of the paper. For now, it is important to say that from this perspective to care signifies: an affective state, a material vital doing, and an ethico-political obligation.[4] Also, because care as practice is involved in a range of different activities, STS offers different entries to it.[5] Finally, if 'matters of concern' can function as a generic notion for the politics of things (that is, everything can be thought as a potential matter of concern) 'matters of care' might not. Even for those who agree that to care is vital in the worlds of naturecultures and technoscience, and who want to bring it to our concern in the representation of things, caring might not necessarily have the same connotations. I further elaborate on this by commenting on Latour's invitations to care in technoscientific universes.

In a funny-though-serious dialogue that stages himself talking to a concerned environmentalist angry with sport utility vehicle (SUV) drivers, Latour affirms that we need to care for our technologies, even those that we see as pernicious, as *Frankensteinian* – here SUVs (Latour, 2005c; see also Latour, 2010).[6] Similarly, it is not a technology that is unethical if it fails or becomes a monster, but rather to stop caring about it, to abandon it as Dr Frankenstein abandoned his creation. Here we can recall Latour's inspiring 'scientifiction' of Aramis (a promising transport system in Paris) where he tells the story of the collective troubles that led to the abandonment of the project (Latour, 1996). This version of caring for technology carries well the double significance of care as an everyday labour of maintenance that is also an ethical obligation: we must take care of things in order to remain responsible for their becomings.[7] A second correlative argument that Latour opposes to the angry environmentalist is that, instead of just criticizing SUVs, if we really want to affect their use we must also engage with the concerns that animate those who support them. This means that to effectively care for a thing we cannot cut off those with whom we disagree from the thing's political ecology. This version of care is animated by the purpose of treating things as MoC: to engage properly with the becoming of a thing, we need to count all the concerns attached to it, all those who care for it. If we cut off the SUV user by demonizing him/her, not only do we objectify, by detaching elements of the SUV thing-gathering (machine, producers and users), but we also become irresponsible: left to represent a threatening object, we help to construct SUVs as monsters. Here, care is mobilized to serve a gathering purpose: to hold together the thing. This has political consequences. In this sense, advocating for care complements the respect for things or MoC with an ethical doing: the practical responsibility to take care of the fragile gathering they constitute.

This re-staging of the 'SUV issue' goes further than an understanding of care as responsible maintenance of technology. It exhibits an apparently ecumenical version of the 'cosmopolitics' of things and of political ecology. The point of this advocacy for care is not a concern for maintenance and development of SUVs – beyond their role as particular detectors of concerns – but the broader issue of how to do *dingpolitik*. This mode of representing concerns doesn't seem to have a specific stake with respect to the use of SUVs. But then why is the environmentalist staged as self-righteous and dumb with

anger? This specific advocacy for care also puts forward two related problems that Latour has approached elsewhere, too. First, there is a concern that political ecology could remain a marginalized issue, neglected as the problem of a bunch of activists instead of a major problem of contemporary participatory democracies (Latour, 2004a). Second, Latour is concerned by the problems posed in this context by those who very radically oppose powerful interests sustaining certain technologies – for example, here the car industry. When such oppositions become 'fundamentalist' – for example, SUV haters – it becomes difficult, if not impossible, to give them a say in an assembly of representative democracy (Latour, 2005a). Finally, it can be argued that this argument for caring, like the one to respect concerns, is a response to the agonistic politics of incompatible interests and power relations associated earlier with critical (social) constructivist depictions of technoscience. Read in the wake of Latour's ongoing critique of critique, this type of caring is presented as an obligation for the (environmental) activist to replace excessive critique and the suspicion of socio-political interests with a balanced articulation of the involved concerns. Admittedly, if we are thinking from the perspective of these problems it appears crucial to promote care not only of the technology, but for all those concerned, that is, including those who 'care' for SUVs.

My problem here is with how the problem is presented, and how the argument for care is mobilized to protect the SUV issue from its objectification by a critical participant – an angry and fairly disrespectful environmentalist. Respect for concerns and the call for care become arguments to moderate a critical standpoint. The kind of standpoint that tends to produce divergences and oppositional knowledges based on attachments to particular visions, and indeed that sometimes presents its positions as non-negotiable – what Latour has named 'fundamentalism'. This dialogue thus also exhibits mistrust regarding minoritarian and radical ways of politicizing things that tend to focus on exposing relations of power and exclusion – here the angry environmentalist. To be fair, in terms of knowledge politics the problem that preoccupies Latour – and for a long time now (see, for example, Latour, 1996: 19) – is wider: the too-eager addition of ready-made causal explanations to local descriptions of a network. This technical argument becomes a tool to oppose descriptions and explanatory strategies that support minoritarian critical standpoints and visions on power dynamics in technoscience. Those that become identified, for instance, to an 'eulogy of margins' obsessed with the power of 'the centre' or, worst, associated to humanistic technophobia or calls for saving 'being' from technology (Latour, 1993: 122–124). Such offhand judgments contribute to form a reductive vision of critical constructivism by ejecting a whole set of concerns from the politics of thinking things. However, such concerns are also part of STS, and can relate to a non Zeus-like form of critical constructivism that would welcome an increase of awareness regarding ethico-political and affective concerns. In any case, these are voices required to support a feminist vision of care that engages with persistent forms of exclusion, power and domination in science and technology. To promote care in our world we cannot throw out critical standpoints with the bathwater of corrosive critique.[8]

A feminist notion of care would add layers of concern to this staging of the SUV issue, which are not necessarily incompatible with MoC's mediating purpose, but would represent and promote additional attachments. First, 'care' sounds charged to people trained to ask critical questions about *who* will do the work of care, as well as *how* to do

it and for *whom.* These are questions related to concern for forms of agency related to labours of care, which are often devalued. Correlatively, care connotes attention and worry for those who can be harmed by an assemblage but whose voices are less valued, as are their concerns and need for care – for example, trees and flowers, babies in prams whose noses stroll at the level of SUV's exhaust pipes, cyclists or older people. An account affected by this sense of caring could note that it is not all of 'us' who have created the SUV and who are to be considered responsible for abandoning its technology to monstrosity. Finally it would somehow include, in the staging of the issue, the researcher's own cares and concerns about SUVs and their broader ecological impact: what are *we* encouraging caring for? From this perspective, if an STS scholar is concerned by SUVs requiring care, s/he could stage them in a way that makes others care for their existence: this is what is meant by a contribution of knowledge to the production of a standpoint (Harding, 1994). In sum, this account would intervene in how a matter of fact/concern is perceived.

Posing similar questions, feminist and other critical modes of thought in STS, thicken the signification of caring. The second part of the paper expands on possible ways for doing this.

When care comes to matter

When introducing MoC, Latour called upon a feminist counterpart, Donna Haraway, to confirm that MoC need 'protection' and 'care' (Latour, 2004b: 232). This might not be surprising. Not only has Haraway argued against corrosive critique in the study of science and technology, but caring also is a longstanding concern of feminist thinking, as are the objectified beings and the material-semiotic effects of our knowledge politics.[9] Feminist research is not alone in holding these concerns, but it offers interesting resources to explore how thinking with care can affect the problems approached above: the staging of the life of objectified things, their ethico-political representation, and the disempowering affective effects of disrespectful critique. The following instances are extracted from work in STS. They do not blend together under a general theory of better 'caring knowledge', but give some clues as to what it can mean to represent matters of fact and socio-technical assemblages as matters of care.

The petty doings of things

Feminist interest in care has brought to the forefront the specificity of care as a devalued doing, often taken for granted, if not rendered invisible. What can this change in the aesthetics of exposing the lively life of things? One way can be explored with Lucy Suchman's study of projects to develop 'smart' interfaces in software 'assistant technology'. Here she shows how the search for 'autonomous machine agency' and for the artefact that 'speaks for itself' contributes to an erasure of 'artifactuality'. In general, what disappears is 'the human labour' involved 'in technological production, implementation [and] maintenance'. Notably, her account is concerned with designs that reinforce the relegation to the shadows of what is considered 'domestic', re-enacting traditional binaries on the perception of mediating agencies (for example, life upstairs/life

downstairs). These technologies put the needs of the 'service economy' at the forefront, reinforcing the 'ideal of the independent, self-motivated, entrepreneurial worker' (Suchman, 2007: 219). Smart assistant interfaces are mostly developed to support this ideal by incarnating a 'just visible enough worker', who 'gets to know us intimately' in order to better accomplish 'superfluous' work so that we can focus on what really counts: the 'busy working life'. Such designs re-inscribe a world where the frailties of assistants must not be noticed: 'The litmus test of a good agent is the agent's capacity to be autonomous, on the one hand, and just what we want, on the other. We want to be surprised by our machine servants, in sum, but not displeased' (Suchman, 2007: 217–20).

On the one hand, this staging of the liveliness encapsulated in a sociotechnical assemblage provides an insightful account of assistant technology, by showing its re-enactment of classic distributions of domesticity. Suchman looks out for mediating agencies that would not easily appear in descriptions that foreground the success of the technology. On the other hand, her account shows a particular ethico-political attention: 'Our task is to expand the frame, to metaphorically zoom out to a wider view that at once acknowledges the magic of the effects created while explicating the hidden labours and unruly contingencies that exceed its bounds' (p. 281). This also is an aesthetics of staging matters of fact. But how do we account for effects that exceed the explicitly gathered concerns of smart assistants, users and conceivers? Suchman's work asks questions such as: 'what kind of social relations are assumed to be desirable, ... whose interests are represented, and whose labours are erased' (p. 224). Who or what is or is not counted or assembled here and why?

This account turns a sociotechnical issue into a matter of care in two ways. First, from a feminist standpoint, care is a signifier of devalued ordinary labours that are crucial for getting us through the day. From this perspective domestic labours are labours of care, not reproductive natural mediations but productive doings that support liveable relationalities. The agencies of care are not reserved for a particular practice, occupation or expression. They are also material and affective tasks related to communication, the production of sociability, and capacity of affect 'without which our lives do not work out', the complexity of which makes them difficult to value, to reduce to a schedule, or to enclose in fixed tasks that 'start here and end there' (López Gil, 2007). So what is understood as care? Joan Tronto and Berenice Fisher proposed a generic notion: 'everything that we do to maintain, continue and repair "our world" so that we can live in it as well as possible. That world includes our bodies, ourselves, and our environment, all that we seek to interweave in a complex, life sustaining web' (Tronto, 1993: 103; see also Fisher and Tronto, 1990). In the world as we know it, this involves tasks that make living better in interdependence, but which are often considered petty and unimportant, however vital they are for liveable relations. The doings of care are not restricted to what it is more obviously visible to STS, such as in topics like healthcare or the responsible maintenance of technology. Potentially, matters of care can be found in every context; exhibiting them is valuable especially when caring seems to be out of place, superfluous or simply absent.

Second, and correlatively, Suchman shows how assistant technologies confirm certain everyday tasks as superfluous compared with the valuation of 'autonomous agency'. She notes that particular forms of design recall images of slavery: through a skilful (self) erasure, some technologies perform mediations but do not let us know how vital that

work is or how much we depend on it.[10] Feminist insistence on the pervasiveness of care makes a crucial ethico-political and affective matter patent: caring constitutes an indispensable living ground to the everyday 'sustainability of life' (Carrasco, 2001) and for the survival and 'flourishing' of everything on this planet (Cuomo, 1997). This work is necessary and vital, but we predominantly continue to value more highly the capacity to be self-sufficient, autonomous and independent from others (López Gil, 2007). Suchman's account transforms a sociotechnical assemblage into a matter of care because it creates interest and concern about how particular new human–machine associations might further train us to dismiss relations of care.

Of course, attaching the notion of 'matters of care' to such a socio-political vision is a thinkpolitics. Staging and representing a sociotechnical assemblage in this way can provide a better account of a thing, but it also gives ethico-political significance to particular socio-material practices by generating care for undervalued and neglected issues. Indeed, other concerns could make such questions irrelevant: Why should we care about these particular erasures? What is wrong with leaving boring domestic care to an 'assistant' technology, so that we can give attention to important things? Something might be wrong for those who are or make themselves concerned when technology reinstates interdependency as expendable, when promising labour-saving devices just displace human labour to somewhere else,[11] or for a world in which most labouring 'others' have not been replaced by smart digital machines and their assemblage with things signifies plain objectification.[12] Turning a thing into a matter of care doesn't need to be about technology dominating humans or about ready-made explanations for blaming oppressive powers, but rather about how a sociotechnical assemblage can reinforce asymmetrical relations that devalue caring. This does not so much denote an obsession with power and domination, but instead a concern about the powerlessness of more or less 'unloved' others (Rose and van Dooren, 2010). And yes, in the world as we know it, paying attention to care as a necessary doing still directs attention to devalued doings that are accomplished in every context by the most marginalized – not necessarily women.[13] Caring, from this perspective, is a practice that most often involves asymmetry: some get paid (or not) for doing the care so that others can forget how much they need it. To represent matters of care is an aesthetic and political move in the way of re-presenting things that problematizes the neglect of caring relationalities in an assemblage. Here the meaning of care for knowledge producers might involve a modest attempt to share the burden of stratified worlds. This commitment is the political significance of representing matters of care.

Engaging neglected things

Representing matters of fact and sociotechnical assemblages as matters of care is to intervene in the articulation of ethically and politically demanding issues. The point is not only to expose or reveal invisible labours of care, but also to generate care. In strongly stratified technoscientific worlds, erased concerns do not just become visible by following the articulate and assembled concerns composing a thing, nor does generating care happen by counting the participants present in an issue. In the perspective proposed here, generating care means counting in participants and issues who have not managed or are not likely to succeed in articulating their concerns,[14] or whose modes of articulation

indicate a politics that is 'imperceptible' within prevalent ways of understanding (Papadopoulos et al., 2008). Intervening in the count of whom and what is ratified as concerned affects the representation of things. This gesture invokes more than 30 years of discussion in feminist science studies, famously crystallized by an argument associated with standpoint theory: thinking from marginalized experiences as political (that is, as problematic) has a potential to transform knowledge (Hartsock, 1983; Harding, 1991). However, in technoscience it is not only knowledge but also practices and sociomaterial configurations that are affected by this gesture.

It is important to stay close to the material signification of caring when insisting on giving marginalized issues a voice in the staging of technoscientific mediations. Care can be easily idealized as a moral disposition, or turned into a fairly empty normative stance disconnected from its critical signification of a laborious and devalued material doing. This purpose was made clear by a radical science studies scholar, Hilary Rose, when she made the case that thinking from experiences of caring exposes the need for changing how science and technology are produced. Rose expanded the meanings of care from women's marginalized experiences of everyday caring to the complex articulations required by minoritarian movements confronting destructive tendencies in technoscience – from anti-militaristic struggles to scientific workers' collectives. In this way, she argued for more attention to concerns and affects voiced by oppositional movements, and for supporting the divergence they produce from the mainstream production and representation of science and technology. Rose showed how caring is not a romantic endeavour, nor an exclusive affair of motherly love, but a matter of earthly survival: 'hand, brain *and heart'* have to work together *now*, not only in a future utopian world (Rose, 1983, emphasis added; also see Rose, 1994).

This position brings me back to Latour's critique of critical constructivism. How is commitment to care for marginalized or neglected issues not a suspicious debunking that finds power everywhere? Is care a matter of fitting the accounts of things into ready-made humanist explanations? Is the thinkpolitics of care simply a detection of exploitation, exclusion and injustice in technoscience? Thinking through universes of care does invoke memories of exclusion and persistent objectifications that might not appear directly relevant in certain gathering-things. Insisting upon counting them in can then seem as an imposition of ready-made explanatory strategies. Yet I believe that the representation of things in contemporary technoscientific worlds needs these critical memories. There are poisons we cannot just do away with as if they had never existed (Haraway, 1994b), nor can we wash their material consequences away with the bath of humanist politics.[15] However, I do want to take into account the problems detected in critical constructivism: the use of totalizing explanatory visions as well as corrosive cynicism and disbelief. The ethico-political weariness and disempowerment that this type of self-righteousness generates can only be aggravated if commitments to oppose forms of power and domination in science and technology are reduced to simplistic (dis)articulations of the world. Invoking absent concerns is not simply adding 'ready-made' explanations for their absence in terms of, for example, capitalism, gender or race. Caring should not become an accusatory moral stance – if only *you* would care! – nor can its knowledge politics become a moralism in epistemological guise – show that you care and your knowledge will be better.

Many discussions of the production of standpoints have indeed turned on whether care can be considered an epistemological or methodological path to include marginalized voices, one that would make knowledge more accurate (for an account of these discussions see Harding, 2004). Here I am not proposing to make of care an epistemological standard. Producing standpoints involves more than creating more accurate knowledge. In addition, epistemological discourse could confuse commitment to care with normativity. These moves would be misleading: producing a standpoint is not necessarily proposing a normative vision. It can be said that standpoints manifest visions that have *become possible* by learning to care for some issues more than others. They stand for a transformation of habits of thinking and seeing that happens through attachment to particular concerns, interests and commitments. Standpoints also signify attempts to add something to the world, something that, we hope, will connect to the gatherings we study and make a difference. This involves not only detecting what is *there*, what is given in the thing we are studying, but also to think about what is not included in it and about what this thing *could* become – for instance if other participants were gathered by/in it. In that sense, standpoints are not fixed, as they depend on material configurations *and* on our participation in (re)making them. A feminist ethos of representing care is not reduced to the application of an established theory but it has to be constantly rethought, contested and enriched.

Thinking of matters of fact as matters of care does not require translation into a fixed explanatory vision or a normative stance (moral or epistemological), it can be a speculative commitment to think about how things would be different if they generated care. This is a commitment, because it is indeed attached to situated and positioned visions of what a liveable and caring world could be; but it remains speculative as it won't let a situation or a position – nor even the acute awareness of pervasive dominations – define in advance what *is* or *could* be. In this sense, too, what care can mean in each situation cannot be resolved by ready-made explanations. It could be said that introducing care requires critical standpoints that are *careful*. It could, for instance, transform a suspicious debunking question such as the Hobbesian cui bono into a subtle critical detection of the consequences of categorizing some experiences as 'residual' (Bowker and Star, 1999; Star, 1995). Susan Leigh Star taught us ways of asking cui bono that do not set us out on a crusade to uncover conventions and interests sustaining the establishment of exclusions in things. These not only invite us to ask 'For whom?', but also 'Who cares?' 'What for?' 'Why do 'we' care?', and mostly, '*How* to care?' These queries can leave open the detection of specific needs for caring in each situation, instead of presupposing there is only one way of caring. As such, they do not totalize but *challenge* specific assemblages. In this sense, the commitment to show how forms of domination affect the construction of things and lead to exclusions is not necessarily directed to the disarticulation of the world, or to the negation of the reality of matters of fact and the materiality of technologies. Rather it adds an urge to further engage with the material-semiotic becoming of things.

These knowledge politics are far from the virtuousness often associated with caring. Caring is connected with awareness of oppression, and with commitments to neglected experiences that create oppositional standpoints. An account of a thing produced with and for care can indeed create divergence and conflict by criticizing the way an issue is assembled. It can produce visions that 'cut' differently the shape of a thing, the extension

of a network (Barad, 2007; Suchman, 2007) – it can even advocate cutting off components in a matter of concern. Critical sensibility plays a part here, but not in the sense of the enlightened unveiling of hidden powers or the real causes of things, not in the sense of critical distance of a sceptical aspirant to the role of Zeus. A cut does not necessarily generate scepticism and disbelief, it can generate more 'interest'. This is not interest in a parochial agonistic sense, but in the sense emphasized by Isabelle Stengers (1993: 108): something is interesting if it situates itself in-between – inter-esse – not to divide, but to relate. This way, the significance of standpoints committed to care is not limited to their critique of power, but also to creating a relationship through that critique. In the perspective proposed here, foregrounding care at the heart of critical constructivism reminds us that, in order to be liveable, a critical cut into a thing, a detachment of a part of the assemblage, involves a re-attachment. This means, on the one hand, that we become able to cut in a certain way because of our own attachments, because we care for some things more than others. And it means, on the other hand, that to produce a caring account, critical cuts shouldn't merely expose or produce conflict but should also foster caring relations. Such relations, thickening Tronto and Fisher's generic definition, maintain and repair a world so that humans *and non-humans* can live in it as well as possible in a complex life-sustaining web.

Re-affecting objectified worlds

Re-presenting things as matters of concern responded to a bifurcation of nature, a splitting of meanings from matter, the social from the natural in the life of things. A final meaning I will associate with the re-presentation of things as matters of care is a response to a related 'bifurcation of consciousness' (Smith, 1987): the splitting of affective matters from the researcher's experience. Is there something embarrassing in exposing what we care for? Not only politically embarrassing, but also affectively? The closer we come to the worlds of science and technology, the more we confront something like what Leigh Star has called 'The Wall of Transcendental Shame'. The wall is particularly high 'when we try to speak of our technological lives in a philosophical manner which includes experience, suffering, or exclusion'. We feel it when 'we are silently shamed – either within academia or within the swamps of convention' (Star, 2007: 225). Historically, the 'literary technologies' (Haraway, 1997; Shapin and Schaffer, 1985) used in accounts of scientific 'matters of fact' sanitize things. This silencing not only applies to speculative folly, the political, the personal, the petty and the domestic, but also to embarrassing affections ridiculed in scholarly contexts. Feminist research has often confronted these longstanding habits and their effects in the way science and technology are presented. Affective engagements become an explicit part of the representation of things. I end this paper with examples that modify the affective charge of objectified things. These have to do with caring as a loving connection, another form of attachment traditionally neglected in the representation of things.

One example is Haraway's (2003, 2007) work on interspecies relations, in particular her accounts of human–dog relationships. To support the importance of care in naturecultures and technoscientific worlds, we also can recall Haraway's (1997) well-known engagement with cyborgs and other hybrid beings, such as transgenic animals. This

engagement extends meanings of caring beyond normalized forms of kinship to embrace unfamiliar forms of life emerging in technoscience (Puig de la Bellacasa, forthcoming). It is not difficult to see how Haraway's work is exemplary of caring engagement with Frankensteinian technologies. I choose, however, a more 'domestic' piece of work because I have often seen scholars, including feminist scholars, mock the idea of placing personal care for a 'domestic' animal at the centre of ethico-political commitment in a scholarly project. Not only is a bifurcation of consciousness at play in these dismissals, but they also neglect interesting lessons that complicate the affects and responsibilities of ordinary caring. Haraway describes the care involved in everyday experiences of interspecies intimacy. Here, also, care is a doing necessary for significant relating. Care is required in processes through which humans and dogs train each other to live, work and play together. Haraway's stories about the relations of dogs with humans show that liveable relating requires particular care, especially when one of the involved beings depends mainly on the other to survive (Haraway, 2007). Caring also can confer power to a caretaker. Caring for a non-human in a way that doesn't objectify it appears as a particularly non-innocent process, one that 'cobbles' together 'non-harmonious agencies and ways of living that are accountable both to their disparate inherited histories and to their barely possible but absolutely necessary joint futures' (Haraway, 2003: 7). This is a specific way to create a relation at the heart of the asymmetrical relationalities that traverse naturecultures.

Such an account adds a layer to our thinking with care. It brings us back to the joint fortunes of all forms of life under socio-technological becomings that I earlier posed as the background in this paper's introduction. In naturecultures, the affective world of care as an everyday practice is not equivalent to innocent love or the protection of those in need. Taking responsibility for what and whom we care for doesn't mean being *in charge*. Adequate care requires knowledge and curiosity regarding the needs of an 'other' – human or not – and these become possible through relating, through refusing objectification. Such a process inevitably transforms the entangled beings. I believe that Haraway's accounts of these co-transformations are made stronger by the way they engage a personal relationship with the dog she mostly cares for, Cayenne, and how she exposes her own transformations in this relationship. For me, this way of representing helps to generate matters of care. This is not meant to promote a general rule – for some commentators, accounting for these personal intimacies can seem 'self-indulgent' (Cook, 2009). My point is not that every account of things should re-present care in this way, but that this kind of affective engagement has a specific value that shouldn't be dismissed as accessory. It is part of the representation of a matter of care. Troubling the critical distance typical of scholarly work transforms the affective charge of things, challenging our relationship with the 'objects' of research.

Another example of thinking of things with care is Natasha Myers's work on the bodily engagement and attachment of molecular biologists to their 'objects'. Myers shows the crucial affective labour and care involved in 'giving life' to a molecular model (Myers, 2008). What she exposes is that for this 'thing' to exist, it needs active care and affection, not after it is out there but throughout the process of revealing it. With attention to this specific experience of naturocultural relating, she alters the vision that scientists are dispassionately manipulating objects. Playing with Evelyn Fox Keller's (1983) famous phrasing – a feeling for the organism – Myers (2008: 165) says that 'they have a

feel for the molecule'. I couldn't say that this vision results simply from ethnographic observation of the human-molecule assemblage or from a cartography of the entangled concerns. I allow myself to speculate that it is affected by what Myers cares for. I have enjoyed seeing her presenting this piece of work in academic contexts. A dancer as well as a scholar, she performed gestures of embodied attachment that scientists do to stage the virtual forms of their molecules. In her work, Myers cares about bringing these affected bodies into the staging of things. Here a transmission of embodied affect results from the care, love and passion of the observer of things in the making. It changes our perception of the engagements of molecular biologists and of their matters of fact.

From this affective perspective, transforming things into matters of care is a way of relating to them, of inevitably becoming affected by them, and of modifying their potential to affect others. This meaning of care, translated here into a way of conceiving knowledge about science and technology is about finding ways to re-affect an objectified world. Ultimately, as Vinciane Despret puts it, 'to "de-passion" knowledge does not give us a more objective world, it just gives us a world "without us", and therefore without "them"' (Despret, 2004: 131). Here she refers to the observations of scientists working with animals: the 'us' is the human (here a scientist), the 'them' the animal. The passion involved, she says, is not about a 'parasitic supplement to some sweet story of love' it is about making an 'effort to become interested in the multitude of problems presented' to others, interested in what it means 'to care'. Despret shows also how those who see themselves as carers and not only as scientists are affected by the bodies for which they care. Here, we exhibit the ways others care. Can we think of our transformation of matters of fact into matters of care as a specific kind of caring? This way of doing care can take different meanings, but in all of them we become entangled with the matters of fact and the matters of concern. As is the case with most feminist attempts to re-affect the objectified world, this way of knowing/caring in our staging of things relates to a politics of knowledge, in that it generates possibilities for other ways of relating and living, it connects things that are not supposed to reach across the bifurcation of consciousness, and transforms the ethico-political and affective perception of things by the way we represent them.

Conclusion: For an ethos of care

I started this paper by asking how an ethico-political concern such as caring could affect the way we observe and present things. I wondered if care in technoscience and nature-cultures could mean more than the responsible maintenance of technology, and still not become just a moral value added to the thinking of things. These questions, I have argued, pertain to problems of knowledge politics. They are important if we consider that our ways of studying and representing matters of fact and sociotechnical assemblages have world-making effects. Latour's notion of matters of concern addresses the ethico-political relevance of constructivist approaches beyond social constructivism and humanist ethics. It also brings us closer to include the importance of care in the life of things, including the affective attachments they involve. However, there is a critical edge to care that Latour's politics of 'gathering concerns' tends to neglect. I have tried to convey this with the notion of 'matters of care', inspired by feminist contributions to problems akin to those Latour identified in the aesthetic, ethico-political and affective

presentation of the life of things. The notion of 'matters of care' aims to add something to matters of fact/concern with the intention of not only respecting them, but of engaging with their becoming. In that sense, this notion of 'matters of care' stands for a version of 'critical' STS that goes further than assembling existing concerns, yet resists the pitfalls identified by Latour: ready-made explanations, obsessions with power, and the imposition of moral or epistemological norms.

I have tried to show how different modes of feminist thinking on care both unsettle and enrich the perception of objectified matters of fact. These are all instances that have been developed within STS research, which I read as manifesting an ethos of care. Caring in this context is both a doing and ethico-political commitment that affects the way we produce knowledge about things. It goes beyond a moral disposition or wishful thinking to transform how we experience and perceive the things we study. Here care stands for a signifier of necessary yet mostly dismissed labours of everyday maintenance of life, an ethico-political commitment to neglected things, and the affective remaking of relationships with our objects. All these dimensions of caring can integrate the everyday doings of knowledge construction in and about technoscience.

The notion of 'matters of care' is a proposition to think with. Rather than indicating a method to unveil what matters of fact are, it suggests that we make of them what is needed to generate more caring relationships. It is thus not so much a notion that explains the construction of things than a suggestion on how those who study things can participate in their possible becomings. I have said that the commitment to care can be a speculative effort to think how things could be different. Here it follows also a constructivist gesture in the sense advocated by Isabelle Stengers (2004) of 'constructing a response to a problem'. My problem was: Can we contribute, by carefully staging how things hold together, to more sustainable caring relationalities and life conditions in an aching world? Ultimately, what is perceived as a problem is always situated, a partial intervention. Mine was affected and shaped by feminist interventions in STS. So is the response: I believe that caring is not an option but a vital necessity in our technoscientific world, and that nothing holds together in a liveable way without caring relationships.

The way in which caring matters is not reassuring. It doesn't open the door to a coherent theory, or to the comforting feeling that worries about technoscience would be solved ... if only we would *really* care. Care eschews easy categorization: a way of caring over here could kill over there. Caring is more about a transformative ethos than an ethical application. We need to ask 'how to care' in each situation. This is attuned to STS's ways of knowing on the ground. It allows approaching the ethicality involved in sociotechnical assemblages in an ordinary and pragmatic way. But formulating the necessity of care as an open question still adds a requirement to constructivism: cultivating a speculative commitment to contribute to liveable worlds. As a transformative ethos, caring is a living technology with vital material implications for human and non-human worlds.

Acknowledgements

I want to thank the anonymous reviewers of this paper, the editors of SSS, as well as Hywell Bishop, Nathalie Loveless, Clea Kore and especially Dimitris Papadopoulos for valuable readings and editing advice. Previous versions of this paper were presented at the Center for Cultural

Studies, University of California, Santa Cruz and at The Groupe d'Etudes Constructivistes, at the Université Libre de Bruxelles. I thank the people in these uniquely inspiring places for challenging discussions and for encouraging me to develop this paper.

Funding

This paper was supported by a Marie Curie International Outgoing Fellowship of the European Commission [grant number MOIF-CT-2005-22363].

Notes

1. The explanatory use of 'power' is recurrently criticized by Latour (1993: 125; 2005b: 85).
2. This intervention opens with the scene of the 9–11 attacks and Latour's dismay regarding conspiracy theorists who put forward wild scenarios to debunk the 'real' causes of the attack. Latour also was expressing regret here over how scepticism about science and the 'deconstruction' of facts were now being put into practice not only by the scholars who had 'denaturalized' facts but also corporate think tanks and climate sceptics working with powerful governments (I thank SSS's editor for reminding me this aspect). Interestingly, though Latour and Harry Collins hold very different positions, they have both shown concern with the contribution of SSK and social constructivism to mistrust about facts. Collins recently responded to what he sees as an undermining of science by the STS's 'second wave' with a call to renew confidence in science as a 'moral' choice (Collins, 2009).
3. Among the critical intellectuals quoted by Latour in this paper are: Jean Baudrillard, Stanley Fish and Pierre Bourdieu. Latour's diagnosis could be different today given the renewed presence of Bourdieu's thinking in Anglophone social sciences, including in STS. (I thank SSS's editor for bringing this aspect to my attention).
4. I have developed this further in Puig de la Bellacasa (2010), in contrast with the Foucauldian notion of care of the self.
5. In the context of STS, care is a major feature in the study of the health sciences and its technologies (Latimer, 2000; Mol, 2008; Oudshoorn, 2008). It has also been addressed and theorized by feminists as a political vision – in relation also to epistemological concerns, in the domains related to environmental sciences and scientific choices for development (Cuomo, 1997; Nair, 2001; Rose, 1994).
6. I thank an anonymous reviewer for bringing this reference to my attention.
7. We could discuss this vision of care as a diffraction of Heidegger's pastoral care, ironically redirected towards technology.
8. See Haraway (1994a, b). Latour (2007) borrows the notion of cosmopolitics from Isabelle Stengers (2005) to designate his politics of things. However, Stengers's cosmopolitical proposal gives a prominent space to the 'victims' – those who retain no power to represent themselves; to groups who disrupt, or fall out of the cycle of representative politics; and to the 'idiots', who don't want to be 'included' and cannot 'contribute' because they feel that 'there is something more important' than the proposed issue.
9. Speculating, with some enjoyment but no irony, I could read in this increasing awareness about 'concerns' a belated response to problems articulated in Haraway's intervention in her essay 'Situated Knowledges' (1991). This intervention articulated concerns of feminist

scholars engaging in STS (also acknowledged, for example, by Hess, 1997). Haraway also deplored totalizing explanatory theories and the corrosive cynicism resulting from mixing deconstructive critique with social constructivism. This included the quest to unmask the truth about how 'scientific knowledge is actually made' in power-oriented explanations of scientific and technological success in Latour's and other early ANT work: an emphasis on interest preservation, competition and agonistic politics in the struggles to settle 'the' matter of fact. These might have produced good accounts of the workings of science and technology, but following *so well* the technoscientific networks they ended up telling their story in the same way (Haraway, 1991: 184; see also Haraway, 1994b). Haraway's intervention also allows us to recognize in Latour's early descriptions, a variant of the 'view from nowhere': a Zeus of critical distance, enacting a god's-eye view, uninvolved and untouched by the wars it describes. As a response, 'situated knowledges' did not simply mean that knowledge is social, but also that 'our' knowledge is intrinsically politically and ethically situated in its purposes and positionalities, that is, standpoints (Harding, 1991). However, Latour has ridiculed the essentialism implied by the notion of 'standpoint' by pointing out that 'standpoints never stand still' (Latour, 2000: 380). This criticism ignores the complex ways in which the concept of standpoint has been discussed by feminist theorists as a non-essentialist, moving, notion. The potential essentialism of standpoints is one of the major unsettled discussions within feminist epistemology and knowledge politics. For an anthology of 30 years of discussions on the topic see Harding (2004). In 'Why Has Critique Run Out of Steam?', Latour (2004: 227) counts the idea that 'we always speak from a particular standpoint' among those notions taught in universities through which STS and critical thinking more generally could be contributing to disbelief in science. But from a feminist perspective, the alternative wouldn't be to teach STS students that for the task of staging the networks 'all this opposition between standpoints and the view from nowhere you can safely forget' (Latour, 2005b: 145).

10. Special skills of intimacy to the needs of the owner that Patricia Hill Collins showed as required from the black domestic caretaker, slave or descendant of a slave (Collins, 1986, 1991).
11. Thanks to Hywell Bishop for reminding me of this.
12. Kalindi Vora shows how technologies of transnational IT allow to offshore affective labour to call centres based in India where people work overnight dedicated to the 'customer care' of busy North-Atlantic people (Vora, 2010).
13. For instance, waged care work is mostly done by migrant women without legal 'visible' citizenship (Alvarez Veinguer, 2008). The conception of care exposited in this section owes enormously to the Spanish feminist collective Precarias a la Deriva (2004, 2006).
14. I am thinking with Alexa Schriempf's analysis of how certain auditory technologies perpetuate the inaudibility of deaf people's communication devices under a dominant regime of speech based on 'articulatedness' (Schriempf, 2009).
15. These memories are also encapsulated in the word 'thing', especially if we think of what postcolonial thinkers such as Aimé Césaire (2000) have named *thingification* or Achille Mbembé 'the body-thing' (2001: 27).

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