

Doubt and Denial: Epistemic Responsibility Meets Climate Change Scepticism

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Abstract

The analysis in this essay is indebted to the analysis of climate change scepticism developed in Naomi Oreskes's and Eric Conway's *Merchants of Doubt* where they expose the vested interests that produce a degree of doubt with respect to climate change science. The argument addresses the appeal to an inflated conception of human freedom – Liberty – that is allegedly threatened by injunctions to control pollution in the interests of ecologically conscious behaviour across a range of human practices of consumption. The essay draws on and advocates rethinking issues about epistemic responsibility and testimonial injustice in working toward developing ecologically informed climate change advocacy.

Key words

Ecological thinkers; climate change sceptics; subjectivity; testimony; epistemic responsibility

Resumen

El análisis de este ensayo está influenciado por el análisis sobre escepticismo ante el cambio climático desarrollado por Naomi Oreskes y Eric Conway en *Merchants of Doubt*, donde exponen los intereses creados, que producen un grado de duda en relación a la ciencia del cambio climático. El argumento se refiere a la apelación a una concepción exagerada de la libertad humana - la Libertad - , presuntamente amenazada por medidas cautelares para controlar la contaminación en los intereses

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de la conducta ecológicamente consciente a través de toda una gama de prácticas humanas de consumo. El ensayo se basa en, y aboga por repensar las cuestiones acerca de la responsabilidad epistémica y defiende replantear las cuestiones acerca de la responsabilidad epistémica e injusticia testimonial en el trabajo hacia el desarrollo ecológicamente informado de la defensa del cambio climático.

Palabras clave

Pensadores ecológicos; escépticos del cambio climático; subjetividad; testimonio; responsabilidad epistémica

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1. Introduction

Three themes run through the questions I will address in this essay: my purpose is to suggest some insights that emerge from exploring their interconnections. First, I will read a stand-off between ecological thinkers/activists, climatologists, and climate-change sceptics as one way of indicating how questions central to the epistemology and politics of testimony bear, directly and indirectly, on debates surrounding climate crisis, gender justice, and development projects. In so doing, I use the label “ecological thinkers” to refer to theorists and activists who work from an ecologically-informed stance toward understanding climate change, where thinking ecologically encompasses broad considerations of the implications and effects of historical-geographical “situatedness” for citizenship and politics, broadly conceived. It is about critically imagining, crafting, and endeavouring to enact principles of ideal cohabitation with one another, and in and with the wider world. In taking my point of entry from a contrast between climate-change sceptics and ecological activists, I am not presuming that this contrast alone is definitive of the matters I will address, but that framing the questions thus facilitates one plausible way of approaching the specificities and generalities of these multiply tangled issues.

In the stand-off I refer to, the debate often comes down to a contest – to fighting science with science – and, for lay persons, to a contest between/among conflicting expert testimonies in which decisions about where it is reasonable to place belief and trust are at once epistemologically and ethically-politically fraught. Secondly, then, I will propose that evaluations of testimony prompt vital questions about subjectivity and agency, and in this case also about freedom. Yet the climate-change-sceptical positions I will address presuppose an abstract, impersonal conception of autonomous gender-neutral subjectivity, which despite the neutrality of its generic presentation, is inevitably raced, gendered, and otherwise socially-politically-economically inflected and situated in ways that, I will suggest, are philosophically significant. The implications of their situatedness require closer scrutiny. Thirdly, to illustrate one way in which these lines of thought come together, I will briefly revisit Rachel Carson’s ongoing *ad feminam* treatment by the science sceptics of her time, and still in ours. Her ‘case’, and the contest of testimonies it continues to generate, exposes some of the sexed-gendered specificities concealed beneath the façade of the presumptively generic epistemic and moral subject.

2. “Manufactured uncertainty” – *Merchants of doubt*

Climate-change sceptics stand in a starkly oppositional relationship to ecological thinking (Code 2006), to larger commitments to environmental sustainability, and to assumptions about subjectivity and the politics (and ethics) of knowledge that inform these modes of thought. Their scepticism trades on a certain cynicism about knowledge, the earth/the world and people’s lives, in the name of a profit-driven but also curiously conceived *freedom*-promoting and -preserving instrumentalism. I intend “cynicism”, to capture a generalized, if tacit, distrust of professed ethical and social values in mass society, especially in circumstances where high expectations of institutions and human authorities seem often to go unfulfilled. It can manifest in a generalized disillusionment and distrust of putatively ameliorative social movements, organizations, and authorities; and it is commonly animated by and animates a starkly atomistic, self-contained and detached conception of subjectivity in practices and rhetoric that oppose ecologically informed social-political regulatory measures to evaluate and limit climate change, from a conviction that they are designed to tamper with, and indeed jeopardize, individual human freedom, itself cast as an incontestable entitlement and goal.

In what follows, I take as my point of departure a single text: Naomi Oreskes’s and Erik M. Conway’s 2010 *Merchants of Doubt*, which is pivotal to this discussion for its

analysis of scientific questions in ways that speak to specialists and to an informed "general public" alike, and for how its analysis is situated within an extensive yet subtle critique of capitalist free market society.

Concentrating on this book makes sense for the position I will take because of its unusual approach, through the history of science, ethics, politics, while foregrounding American exceptionalism. For epistemology and the politics of knowledge, the book is startling in its exposure of the curiously delusionary insistence, by certain deniers among US scientists and politically invested others, on assigning equal weight to "both sides" of climate-change debates, before approving regulatory measures. Yet Oreskes and Conway show that the "sides" do not have equal claim to credibility, epistemic responsibility (the dominant issue here), or scientific integrity. Hence there is a need, at once, to understand and address the science, and to address the weight of an ideological opposition masked as a commitment to fairness and equality – dressed up in a uniquely American fear of governmental "interference" with a quintessential US value: Liberty.

Sparked by Frederick Seitz's contention that global warming was simply a scare tactic, the result of pandering to irrational fears of environmental calamity by scientists seeking fame and fortune, the authors document a quintessentially neutral cognitive stance that trades on a conception of "science" – homogenized and reified. This conception dispassionately sustains a level of doubt, and indeed ignorance, in a dominant, predominately white western society and population. For this populace the claim "science has shown" carries a cachet enhanced by such presumed neutrality, which suggests that the facts alone are so compelling that reason cannot withhold assent. The veil of neutrality behind which this impersonal claim is articulated screens out any idea that specifically situated, and not disinterested, human subjects have produced the "science" invoked, or that the effects of what "science has shown" will be enacted in specifically situated, thence not disinterested or homogeneously implicated lives. Such inquiry works from a taken-for-granted assumption of human sameness. Yet no articulated conception of epistemic or moral-political subjectivity informs the inquiry; and the epistemic practices the authors depict are coldly inhospitable to examining how subjectivities are differentially constituted and enacted in this bleak picture of a social-ecological order where it is hard to see how anyone could be "at home".

That climate-change deniers are motivated by financial gain will come as no surprise. More striking, philosophically, are their fears about the *loss of freedom* ecologically-informed regulatory measures will presumably entail. According to the Oreskes and Conway account, such fears tend to override financial concerns in significance, in the twenty-first-century USA and indeed throughout the affluent populations of the western/northern world. The going concern (albeit with regional and demographic variations) is that if threats to "the environment" require regulatory measures, then they interfere intolerably with human freedom – with Liberty – and should not be contemplated. The conception of freedom operative here is at the core of the autonomous self-contained and self-sustaining individualism that infuses the liberal democracies of the white capitalist western-northern world, whose masculinist-patriarchal enactments and effects – its demeanour of neutrality notwithstanding – have long been the subject of feminist critique. In a free society, the argument goes, "we" will – *ex hypothesi* – refuse to be constrained in our freedom to smoke, pollute, or to use pesticides when and as we will. This refusal attests to a governing conception of subjectivity according to which, generically and neutrally, there can be no contestation of the freedom at issue, no question about its attainability, its everyday observance, and its viability as a sacrosanct human value. There is no interest in who these perfectly free subjects are, or in what ways sexed, racial, class-specific or any other differences from a white sex-gender-neutral norm could have played a constitutive part in shaping the communities, environments, and interactions where such freedom is defended. This conception of freedom is sharply individualistic – the freedom of the

"buffered self" (Lloyd 2003, p. 322) of masculinist modernity – born of the imagined self-sufficiency integral to a frontier mentality. It is nourished not by an imaginary of mutuality and responsible dwelling, but of entitlement, acquisition, and instant gratification. Such freedom is unsustainable in itself, especially in looming crises of scarcity, and it is a freedom without the resources to sustain even the subject who adamantly affirms it as his.

According to Oreskes and Conway, a conviction has prevailed in post-1970s America that there could be "no freedom without capitalism and no capitalism without freedom" (Oreskes and Conway 2010, p. 64-5). When it began to emerge that industrial emissions were damaging human and ecosystem health and that "regulating" such emissions – which, allegedly, "flew in the face of the capitalist ideal" (65) – could be the only responsible response, the struggle turned into a battle of science against science. Thus for example against the (US) Environmental Protection Agency's efforts to expose the harms produced by tobacco smoke, the argument was made that such proposals merely allowed "bad science to become a poor excuse for enacting new laws and jeopardizing individual liberties" – "It wasn't just money at stake, it was individual *liberty*", "Today, smoking, tomorrow ... who knew? By protecting smoking, we protected freedom" (Oreskes and Conway 2010, p. 145). In the controversy over multiple forms of pollution, the argument was advanced that if science was working against "the blessings of liberty" "they would fight it as they would fight any enemy. For indeed", Oreskes and Conway observe, "science was showing that certain liberties are not sustainable – like the liberty to pollute." (p. 239). It is in this climate of resistance to knowing/acknowledging immanent threats of climate disaster that the politics of testimony I will discuss are being enacted, in what amounts to a struggle for ascendancy between an ecological imaginary and what Val Plumwood aptly characterizes an epistemology of mastery.

3. Ecological thinking

A systemic prejudice against disrupting the complacency of the status quo is embedded in charges that climate-change scientists are promulgating irrational fears. Such scepticism is a powerful force, perpetuated and insulated against condemnation by those for whom there are no immediate rewards for critically re-examining settled convictions that science-as-usual has all the answers, or for critically reevaluating their everyday practices. For members of a social-economic elite, acknowledging and acting to minimize the injustices climate-change scepticism condones would entail significant personal "losses", not only of physical comfort, but of the myriad privileges and self-certainties that structure their entire ways of being. They need not take measures to reduce consumption, or to consume "more sustainably" or more carefully, for the world has always "healed" itself, and is bound to go on doing so. Why would people whose lives are constructed around the illusions such unsustainable practices uphold be prepared to relinquish these privileges that have long been theirs? This is the urgent question: it is at once epistemological, ethical, and political. Charges to the effect that climate change scientists are promoting "irrational fears" highlight the intensity of the struggle between people who think and act within a hegemonic imaginary of mastery and entitlement and those committed to interrogating and unsettling it. The struggle is portrayed as being about fighting science with science, where "good science" and "bad science" tend to be categorized less according to the quality of the knowledge they produce, and more according to the interests they serve. In such circumstances, questions about epistemic responsibility rarely arise, and despite their being germane to these inquiries, it is not easy to introduce them into the on-going deliberations (Code 1987).

Consider one pertinent example: into a 1990s debate over risks posed by Environmental Tobacco Smoke (ETS) in North America, a publication *Bad Science*:

A Resource Book was inserted.¹ (Oreskes and Conway describe it as “a how-to handbook for fact fighters”, p. 6). Its intent was to challenge the authority and integrity of the US Environmental Protection Agency’s (the EPA’s) research into the effects of second-hand smoke. The contest is thus represented to the public as a debate between adherents to two equivalent, commensurable lines of scientific inquiry, where an awkward background presupposition prevails that “science”, curiously aggregated, is nonetheless a source of certainty. Nonetheless each “side” is driven by a specific agenda, neither of which most members, even of a well-educated lay public, are well qualified to judge. Yet, in western societies, non-scientists have little choice but to look to and endeavour to evaluate testimonial findings such as these to inform and animate their/our beliefs and conduct. The power of the “narrators” is undeniable.

As Oreskes and Conway read them, the articles in the resource book, taken together, create an “impression of science rife with exaggeration, mismanagement, and fraud” (Oreskes and Conway 2010, p. 146). Hence it is no wonder that the judging process for non-scientists is confusingly complicated, reliant as it is on multiple layers of conflicting testimony on the way to determining whom or what to trust. At best, in the conflict Oreskes and Conway detail, an ecologically committed lay reader may be able to discern a dispassionate if not disinterested approach in the EPA scientists’ research, whereas *Bad Science* seems, at least in the reading the authors present, to rely on cautionary quips and throwaway lines about betrayals of public trust and costly policy decisions, infused before the fact with the very political beliefs the deniers are seeking to establish. (One “MESSAGE” reads: “Proposals that seek to improve indoor air quality by singling out tobacco smoke only enable bad science to become a poor excuse for enacting new laws and jeopardizing individual liberties” (144-5, italics in original)). Such impressions scarcely suffice as a basis for informed judgement. Oreskes and Conway acknowledge that *Bad Science* does quote “experts”, noting however that many of these experts were paid consultants to industry: an involvement that is rarely, and then often obliquely, announced in their assessments. In the main, though, the text adopts “a more sophisticated strategy: reminding readers of the fallibility of science” (Oreskes and Conway 2010, p. 146). A similar strategy is evident in some of the essays in the aptly-named text *Agnology: The Making and Unmaking of Ignorance* (Proctor and Schiebinger 2008) whose purpose, with variations from essay to essay, is to expose and unmask corporate and other attempts to promote and sustain ignorance of the effects of anti-ecological thought and action. Such attempts trade on that margin of fallibility, of uncertainty, to promote a level of doubt that would caution against initiating or endorsing regulatory measures. The tobacco industry, pharmaceutical companies, and climate change deniers figure prominently in these analyses. Thus for example, in the chapter from which I borrow the title of this essay, David Michaels contends “[u]ncertainty is manufactured. Its purpose is always the same: shielding corporate interests from the inconvenience and economic consequences of public health protections” (Michaels 2008, p. 96). Either way, and this is the crucial point, the judicious response cannot plausibly be to conclude that because science is frequently marked by a degree of uncertainty, is indeed fallible, there are no good reasons to heed its warnings. Further inquiry, deliberation, debate has to remain on the agenda.

For non-scientists and members of the larger population who often, despite their best efforts, cannot claim a level of scientific literacy sufficient to enable them to evaluate the contradictions between climate-sceptical and “science as usual” positions, the issues are frustratingly puzzling. One possible approach in addition to

¹ Oreskes and Conway (2010, p. 147) observe: “The phrases ‘excessive regulation,’ ‘over-regulation,’ and ‘unnecessary regulation’ were liberally sprinkled throughout the book. Many of the quotable quotes came from the Competitive Enterprise Institute (CEI), a think tank promoting ‘free enterprise and limited government’ and dedicated to the conviction that the ‘best solutions come from people making their own choices in a free marketplace, rather than government intervention.”

on-going individual and collective investigation, I am suggesting, is indeed to initiate public conversations, consultations, and collaborative debates toward developing better informed *advocacy* processes which could facilitate navigating a world that is increasingly incomprehensible to non-specialists, non-experts. Such a proposal will meet with resistance from those for whom advocacy is by definition a tainted practice: Michaels, for example, asserts: "Opinions submitted to regulatory agencies by corporate scientists... must be taken as advocacy, primarily, not as science" (Michaels 2008, p. 102). Yet this comment presupposes a false dichotomy between science as knowledge-conveying and advocacy as mere propaganda, where surely the problem under consideration is about advocating responsibly or otherwise, and where *epistemic* responsibility, the responsibility to know well in order to advocate honourably, must figure largely. Learning where and how, reasonably, to trust testimonial evidence that one may understand only partially is the hardest task: advocacy can contribute well or badly to the project of doing so, but it cannot be presumed villainous or virtuous before the fact. Clearly, at the very least, communal, collaborative deliberation has to be an open option here, for epistemic individualism comes up against its limitations in such endeavours.

Against the backdrop of a tacit yet widespread conviction that the epistemological questions in these debates are generically *human*, to which neither sex, nor race, nor any other specificities of "identity" pertain, I turn to my second concern: about subjectivity and agency which, I will propose are constitutive, if often silently so, of practices of giving and receiving testimony. Sex-gender issues may seem to be quite irrelevant to these debates: the *Merchants of Doubt* text tacitly presents them thus; it is not unusual in so doing, and its political motivations are nonetheless laudable for ecological thinking. Still, I am contending that there are valuable, activism-informing insights to be gained from taking subjectivity into account in these matters, especially given the tenacity of a residual, unreconstructed public image of "science" as impersonally objective. The "subject" – hence the subject seeking to defend *his* freedom – makes few explicit appearances in the *Merchants of Doubt* text, even though the scientists on both "sides" are mentioned by name and credentialed accordingly. Yet the recurrent worries about freedom that run through this story expose the effects of a tacit conception of subjectivity that merits closer investigation. It is too rarely observed that at least in white western societies, the freedoms abstractly invoked and zealously defended by the climate-change deniers are not equally distributed across the sex/gender – or any other – social-political order. (Recall Val Plumwood's reminder that women "...provide the environment and conditions against which male 'achievement' takes place, but what they do is not itself counted as achievement" (Plumwood 1992, p. 22). In these debates, tacit conceptions of "freedom" and "achievement" are so closely aligned as to be co-constitutive.) The point, too tersely put, is that expectations of and assumptions about freedom and constraint take for granted and are informed by certain enactments of subjectivity that are neither neutral, nor universally realizable, nor politically innocent. Even when such enactments of subjectivity remain tacit, they are integral to producing and sustaining social-epistemic practices to such an extent that they cannot be left unaddressed.

Feminists and other marginalized Others from an unmarked white affluent masculine norm have long insisted that all freedom is someone's freedom, just as all knowing is someone's knowing, where someone can be singular or plural – or singular because plural – but either way, it matters for the production, circulation, uptake, and evaluation of knowledge claims. Feminist epistemologists have been engaged since the early 1980s in showing, to varying degrees, how the "sex of the knower" plays a constitutive part in these processes:² it is within the space

² Space does not permit an elaboration of these claims, but feminist epistemologists have, since the 1980s, advanced sophisticated, nuanced arguments in support of this assertion. For state-of-the-art analyses, see the essays in Grasswick, ed., (2011). This reference to "the sex of the knower" is to Code (1981).

their/our analyses open that I am reading Rachel Carson's life and work. Evidently, the freedom the merchants of doubt are determined to protect is principally available, in affluent western societies, to propertied heterosexual not-yet-old white men. Hence, "taking subjectivity into account" (Code 1993) in thinking about how ecological matters are known requires taking gendered/raced/classed subjectivities into account critically and genealogically, in the specificities of their time and place. It requires examining how the doing, knowing, being, dwelling at issue are enacted, there, and analysing the implications of "situatedness" for knowledge projects. As Plumwood also reminds us, integral to the social imaginary that sustains mainstream Anglo-American philosophy is an assumption that "the human" is implicitly masculine, not just conceptually but in its effects, "while the feminine is seen as a derivation from it" (Plumwood 1993, p. 23). Likewise, the contestable ideal of "autonomy" underlying the pleas for freedom Oreskes and Conway report has, throughout the history of western liberal political thought, derived from and celebrated possibilities afforded by and to affluent white male/masculine lives.³ Even after decades of feminist theory and practice these considerations remain urgently under-acknowledged. I am proposing that they need to be critically revisited, especially when appeals to a generic *freedom* are invoked to excuse or condone ecologically destructive practices. As to how this revisiting would evolve and what its effects might be, it will in large part be a deconstructive and genealogical project of exposing the sources and power-infused social-political effects of tacit yet entrenched assumptions about whose knowledge matters and can claim acknowledgement, what kinds of knowledge achieve hegemonic status, and which knowledge claims rightly count as exemplary for epistemology and beyond. Such questions are posed in several articles in the *Agnotology* volume (Proctor and Schiebinger 2008).⁴ They may not seem to matter for such self-contained, detached examples as the cups on tables or cats on mats beloved of classical empiricist inquiry, or for the fake barn facades of the new empiricism, but they do matter for social knowledge that informs or thwarts ecological thinking and practice, in ways that reinforce entrenched injustices; and they do matter for projects of critical engagement with the politics and epistemology of testimony.

From an ecologically-informed stance Mick Smith, in *An Ethics of Place*, sums up the troubling situation I have been discussing. I quote him at length:

As modernity's offspring we... tend to understand our own identities and social relations ... [through an] atomistic ideal/ideology of autonomous, bounded, individuality... [as] concrete and isolable individuals each on their own disparate trajectories, each with *particular* identities derived from ... certain essential, quantifiable, and infeasible properties. We are born under the sign(s) of one-dimensional *man*; *Homo economicus*, that self-contained and self-serving caricature of modern humanity, a parodic recapitulation of the instrumental order of capitalism and phallocracy. ...Only 'man' is intrinsically valuable. Women and nature are made subject to reason's cold calculations, their reality recognized only insofar as they become hard currency to be valued and traded according to their use. (Smith 2001, p. 171, italics in original).

Taking such thoughts seriously for their ethical-political and epistemological import, as I am proposing we do, calls for critically renewed conceptions and enactments of subjectivity at a social, collective level: enactments distantly yet pertinently analogous to late-twentieth-century consciousness-raising practices. They require rethinking/re-enacting who *we* are, in ways sufficiently discerning to unsettle such deeply sedimented convictions. This is the hardest requirement: it is easier, more imaginable, to think and engage in revisionary ways of doing, thinking, knowing. But to practice a philosophy which requires rethinking and re-enacting basic assumptions about *who we are* is ontologically and epistemologically radical, upheld

³ For a pertinent critique of autonomy see Code (2000).

⁴ Relevant in this regard are the articles by Charles Mills, Londa Schiebinger, Nancy Tuana, and Alison Wylie in Proctor and Schiebinger (2008).

as these assumptions are by an instituted social-political-epistemic imaginary in which as inhabitants of the affluent west we (often unconsciously) live and think, however obliquely or contrarily. Nor is the issue quite as Smith puts it in urging an "*alternative* conception of subjectivity" (Smith 2001, p. 173, my italics) for the language of "alternatives" is misleading in its implication that all ways are up for grabs: *we* can opt for one or another, interchangeably and intermittently, as we would select from a smorgasbord of edibles. An activism that follows from Smith's recommendations would work singly and collectively to unmask, discredit, and displace that "caricature of modern humanity", exposing it for the dangerous illusion it is through on-going, piece-by-piece deconstructions of its contributions to producing the ecologically unsustainable conditions that prevail in affluent parts of the western/northern world: to undermine its ontological and – in consequence – its epistemic credibility. In my view, feminist theory and practice, both singly and in their alliances with other post-colonial movements of the late twentieth and early twenty-first centuries, are engaged in just such displacement projects, and at their best are indeed aware that they have to contest who *we* are as fundamentally as they contest the social-economic structures we make and are made by. They/*we* have not yet completed this project, but they/*we* cannot desist.

Finally, as I have suggested at the beginning of this essay, the example of Rachel Carson is instructive for examining connections between expertise, testimony, and subjectivity. In *Ecological Thinking*, I introduce her as an exemplar of *ecological subjectivity* whose way of inhabiting the world confers content on the idea and the practice in ways consonant, among others, with Verena Conley's claims for ecological subjectivity as "relating consciousness of the self to that of being attached to and separated from the world" (Conley 1997, p. 10). For Conley the task for ecological thinking is to unmask "mass-produced subjectivity in societies of control with their consequences for natural and social ecology" (Conley 1997, p. 74-5). As I enlist them here, these thoughts also contest unexamined ontological presumptions of human sameness, freedom, and the autonomous liberal unified self: in so doing they are as normative as they are descriptive. Yet it should also be borne in mind that even though the natural world, to a considerable extent, constrains the approaches and points of view that can achieve consensus within a discipline, in interpreting and understanding ambiguous data and managing uncertainty, as Eric Biber rightly notes: "[w]here reasonably possible, scientists tend to interpret their observations as consistent with whatever theory currently commands the most adherents, even if other interpretations are equally or even more plausible." (Biber 2012, p. 503) As theories of ecological subjectivity recognize, such perspectives are as often influenced by the values of the members of the discipline as by situational factors. Those values, too, have to be held open to analysis and critique, but the fact of the influence is not in itself reprehensible.

Carson is not just the ecological subject but, in ways pertinent to the claims I am advancing here, she is also (to borrow Luce Irigaray's term) the *sexuate* subject albeit, in the climate of her times, often silently, tacitly, and with positive and negative implications (Irigaray 1991, p. 50).⁵ It is clear that Carson herself regarded neither her way of life nor her scientific practice as shaped or indeed otherwise influenced by her female/feminine being. Indeed, no conceptual-discursive space was available for addressing such issues, either during her lifetime, or for some years after her death.⁶ Yet within the discourse of feminist and post-colonial epistemology and philosophy of science now, her scientific practice,

⁵ Consider Margaret Whitford (1991, p. 50): "... to speak or write like a man is to assert mastery, to claim truth, objectivity, knowledge, whereas to speak like a woman is to refuse mastery, to allow meaning to be elusive or shifting, not to be in control, or in possession of truth or knowledge. So to be assertive, to make claims, to be 'dogmatic', which means to have a thesis, a meaning, a political position, is to take up a 'male' stance, whatever one's sex."

⁶ The allusion is to Michel Foucault's observation "Mendel spoke the truth, but he was not dans le vrai (within the true) of contemporary biological discourse..." (Foucault 1972, p. 224).

for all the regularity of its approach and competence, hovers on the edge of attesting to a feminist standpoint, and is often discredited accordingly (see Wylie 2003, and also Doremus 1997). Some of her best, most ecologically sophisticated work sits just here, in a not-yet-realized sex-gender-specific frame and style of reasoning.⁷ It is she who exemplifies the power and the perils of an informed advocacy that, I have insisted, is a crucial piece of sound ecological practice. (Her style contrasts sharply with the *Bad Science: A Resource Book* agenda.)

For a time, Carson achieves impressive scientific and public legitimacy and acclaim, if only uneasily and precariously. She dies from breast cancer: from one of the ecologically most powerful (putative) effects of the substances she studies (Sideris 2008). She is the only epistemic subject who claims a fully narrated place in the *Merchants of Doubt* text: one who is (ambivalently) celebrated in her time yet is after the fact vilified: castigated as a murderer.⁸ In ways I will explain, she is again even now being cast out as the sacrificial subject. That said, it must be noted that Carson is not the only scientist identified by name in the Oreskes and Conway text, nor the only one whose qualifications and training are cited to validate their testimony: the climate-change defenders and deniers, too, are identified with their credentials. Yet their place-holder status in claiming “truth, objectivity, knowledge” is neutrally assumed, despite bitter disagreements about their findings; and they appeal to or deplore threats to a freedom that is presumptively everyone’s and no one’s, individualistically and impersonally defended.

What then is my purpose in singling Rachel Carson out for discussion? Although, as I have said, most of the scientists whose work is discussed in the *Merchants of Doubt* text are indeed named and their credentials and allegiances detailed (even some of those they try to conceal), Carson is the only one who *in herself* – as contrasted with *for her work* – becomes a focus of attention. In the politics of knowledge, this contrast is significant. It can scarcely be a coincidence that the only female environmental scientist discussed at length in the book is one who appears to have been judged as much by her ‘person’ as by her work: that analyses, both critical and otherwise, seem unable to avoid reference to her sex or to refrain, implicitly or explicitly, from factoring it in to their evaluations, usually negatively, if often only obliquely. I emphasize this point not to charge Oreskes and Conway with having offered a sexist reading, but to note, if cautiously, that Carson herself is more plainly visible in her work than are many of the scientists they discuss, that her gender in this respect is pertinent, and that in the scientific circles where she was active it could as readily have been presented as the focus of laudatory as of condemnatory or silently dismissive discussion.

It need scarcely be said that there is a peculiar vulnerability to the situation of a woman in science even more than a full decade into the twenty-first century, and dramatically more so for a woman of Carson’s time. Such *personal* vulnerability, again, is well known and not difficult to imagine. Less well known and, I suggest, still more significant, is the *epistemological* vulnerability that attends it or grows out of it. Sex-specific charges against Carson’s work and thought were usually covered over in her time, yet they were there, if sometimes veiled; as they are again now in critiques too numerous to recount. Accusations of hysteria proliferate. In the Oreskes and Conway chapter, where the charges are multiply detailed, such accusations have as much to do with Carson’s sex as with epistemically

⁷ “Styles of reasoning” is Ian Hacking’s phrase (1982).

⁸ For example: Oreskes and Conway note (as of 2007): “The Internet is flooded with the assertion that Carson was a mass murderer, worse than Hitler. Carson killed more people than the Nazis. She had blood on her hands, posthumously. Why? Because Silent Spring led to the banning of DDT, without which millions of Africans died of malaria” (Oreskes, Conway 2010, p. 216). Noting that “her legacy has been characterized as ‘Rachel Carson’s Ecological Genocide’.” Maguire (2008, p. 194) cites the relevant article: “...let there be no mistake: Rachel Carson and the worldwide environmentalist movement are responsible for perpetuating an ecological genocide that has claimed the lives of millions of young, poor, striving African men, women, and children, killed by preventable diseases.”

irresponsible accusations that she was doing bad science – yet where, on closer examination, it becomes apparent that the irresponsibility has less to do with the substance of her research and more to do with the attackers' and discreditors' failures to base their charges on adequate investigations of the on-going, evolving complexities of the effects – for example, of DDT – which are neither as uniform nor as static as the “evolution” of rocks might claim to be. Still more germane to the dismal quality of the critics' assessment of her research than their having made a scapegoat of Carson herself is their failure to take into account such effects as “the well-documented and easily found (but extremely inconvenient) fact that the most important reason that DDT failed to eliminate malaria was because insects *evolved*... a truth that those with blind faith in free markets and blind trust in technology simply refuse to see” (Oreskes and Conway 2010, p. 236, italics original). This rush to judgement is epistemologically reprehensible. Oreskes and Conway observe, for example, that to know whether the deleterious effects of DDT for female reproductive health were significant enough to support continuing to ban it, it was vital to engage in longitudinal studies, for example, of women who had been exposed early in life, “when environmental exposures were high” (Oreskes and Conway 2010, p. 229). One such study, conducted in 2000-01 on women then in their 50s and 60s, who had been exposed to DDT as children or teenagers “showed a fivefold increase in breast cancer risk among women with high levels of serum DDT or its metabolites” (Oreskes and Conway 2010, p. 229). If such findings can translate across the weakened effects of DDT in malarial districts now, then they contribute to vindicating Carson's longitudinal approach even as they urge a further departure from the instantaneous spectator epistemology of standard empiricism toward “horizontal” as contrasted with vertical, top-down analysis: to taking a longer view across terrains and time-frames, when the subject-matter is appropriate.

By contrast, characteristic of Carson's scientific ‘style’ is her wariness of too-ready translation from one domain or species to another. Although in her scientific practice she undoubtedly understands the allure of mastery and control, her ways of achieving it often require painstakingly following up narrow and precise local hypotheses that differ significantly for each of the species she studies – as is apparent in her research on the Japanese beetle, the gypsy moth, Dutch elm disease; as the hypotheses differ also for investigating the short- or long-term implications of chemicals for human health. Catching a central contrast between an overarching ethos of mastery and an ecological ethos, Carson deplores a stubborn corporate and more widespread resistance to taking a longer view – to waiting “an extra season or two” (Code 2006, p. 42) – when a quick (chemical) fix is ready to hand. Ecologically, thinking as she does requires factoring time, place, and history, into responsible scientific investigations. As I understand it, this is a large, not a small epistemological claim: it bears directly on her thinking about causality, where she also departs from standard epistemological assumptions, and challenges them in so doing. And it points toward the need for closer investigations of issues of *time* in philosophy of science, ecological thought, and climate change epistemology. This is a delicate point to endorse unequivocally in climate change discussions, for despite the claim's initial plausibility, climate change supporters insist, and rightly, upon the urgency of immediate action. They argue that whatever the uncertainty, action is required, now, based on the best available predictions. ‘We’ may not have even a season to wait. Carson, in the 1950s and 60s was working from the (perhaps tacit) conviction that causal connections may not be immediately obvious to people neither informed – nor prepared – to look ecologically. Thus it is easy to discount causal claims that extend temporally and geographically away from a chemical application; and that require imagination, conjecture, patience and time for confirmation or falsification. Her ecological approach vindicates just such a longer view. Yet the hypotheses she works from can, in some situations, guide inquiry whose empirical generalizations stand up well against the quick and dirty solutions proposed by the chemical industry and its champions.

Whether Carson's diverse achievements can be attributed to her being a woman is a different and more complex question. Many aspects of her scientific practice and her writing style, some of which I have mentioned, contrast sharply with the orthodoxy of received 'scientific' practice. But attributing gendered significance to them is not a straightforward matter, even though her work displays affinities with explicitly feminist epistemological inquiry. More to the point, however, and again germane to some of the after-the-fact gendered claims, is the extent to which Carson was often criticized for her *styles* of research and reasoning rather than for its substance; and the extent to which the negative consequences of the substance of her research were laid at her feet as explicitly *ad feminam* charges. Carson, as Oreskes and Conway note, "documented at great length both the *anecdotal* and systematic scientific evidence that DDT and other pesticides were doing great harm" (Oreskes and Conway, p. 219, my italics). Ironically, her respect for the "anecdotal", which is also integral to her practice, has contributed to the fluctuating respect and easy vilification in the condemnatory rhetoric of her detractors. It connects with the rhetorical, conceptual architecture of the epistemological-scientific world where Carson worked, structured as it was by hierarchical divisions between fact and anecdote, truth and narrative, reason and feeling, of which the first item in each pair claims greater public and professional credibility, authority, and reliability than the second. The division locates anecdote, narrative, and feeling on the negative, subjective, feminized side where meaning can be "elusive or shifting", while for epistemologies of mastery it is in *facts* alone, dispassionately discovered, that truth is to be found. In her respect for down-on-the-ground experiential reports commonly dismissed as merely *anecdotal*, Carson's epistemic practice unsettles these distinctions – and earns her the label "subversive" in so doing (Lytle 2007). The larger issues in thinking about testimony in conflict are about how credibility plays out in the politics of knowledge; how credibility has been tacitly coded "masculine", and how thought styles, styles of reasoning tainted with feminine associations can claim a place within "the credible", "the rational" only by following its formal, disinterested dictates. Rereading Carson's work in 2013 and evaluating its struggles to achieve acknowledgement and uptake when the epistemology and politics of testimony are animating vibrant new developments in social epistemology, suggests that her reliance on what was dismissively labelled 'anecdote' might now more readily have assured her a "respectable" place in new approaches to public knowledge and ecological investigation (in this regard, see Code 2010, Fricker 2007).

Although in her time such discrediting as I have mentioned was less often conveyed in sexed/gendered terms than it subsequently has been, the flavour was unmistakable. Now, it is less carefully masked. So for example, Michael Smith, in an article tellingly titled "Silence, Miss Carson" (a title he borrows from an "unbalanced" review of *Silent Spring*) notes a "prevailing attitude" for which she was "an uninformed woman who was speaking of that which she knew not. Worse, she was speaking in a man's world, the inner sanctum of masculine science in which, like the sanctuary of a strict Calvinist sect, female silence was expected" (Smith 2008, p. 172). Nor is it merely a coincidence that the most damning website devoted to discrediting Carson, which comes from a 2009 Competitive Enterprise Institute project, is called rachelwaswrong.org.⁹ Apart from the contents of the items on the site, the chastising "bad little girl" tone of naming it thus is egregiously insulting: a woman too insignificant to be referred to by her full adult name has ventured too far on to territory that should not be hers, and is sternly reprimanded. This is the woman who in her time and still frequently in ours is dismissed as hysterical, or scare-mongering. In short, to understand Carson as "a human being" and as a woman struggling to be a scientist in an inhospitable environment is to understand something of the *dis*-ease, the *un*-ease of that

⁹ <http://rachelwaswrong.org/> For a fuller account of Carson's scientific practice see Code (2006, especially chapter 2, 2012).

position: she is both an exemplary ecological subject – in part to her triumph – and an exemplar of a sexed-gendered being, if neither one always in her own eyes.

4. Interim conclusion

In concluding I will again draw my three lines of thought together to confirm my reasons for pursuing them. First, as I understand it, the growing significance of testimony in social epistemology creates spaces for epistemologists and moral-political theorists to engage philosophically with situations in the division of intellectual-epistemic labour in western societies where 'we' are commonly reliant on other people to 'know' for us and where often, by this very fact, we do not and perhaps cannot know well enough to know whether they are knowing responsibly or to judge how to place our trust wisely. These thoughts engage with some of the most challenging issues in present-day epistemology. Thus as I note at the beginning of this essay, I have been reading the Oreskes and Conway text, together with analyses of Carson's scientific practice, as events in the epistemology of testimony (see, for representative texts, Coady, 1992; Lackey and Sosa, 2006). The chains of analysis can be long and interwoven, and certainty may be elusive. But such is the consequence of breaking away from an individualistic picture of knowing toward a community or communal one, where neither the composition of the community nor our capacities to evaluate it well can be presupposed before the fact. Hence secondly, I have urged acknowledging the need for critical analysis of some of the taken-for-granted assumptions about subjectivity that prevail in epistemic communities, and ascertaining the place of those communities in constructing and circulating public knowledge. Thirdly, when certain subjectivities stand out either as positive epistemic exemplars or as the reverse, it is instructive to examine, genealogically, how and why they claim or fail to claim that status, and by what warrant or withholding of respect. Thus as I have noted, advocacy too has in many respects been a feminized practice; and it too meets with resistance whenever its combative, legalistic (masculinist) truth-denying reputation drowns out its emancipatory potential, as if people were too stupid to practice, judge and evaluate it well. People will argue for – advocate for – what they care about and/or fear to lose: both the deniers and the convinced engage in such practices, and advocacy good of its kind requires epistemically responsible, on-going investigation to inform it. It has to be kept open to justification or contestation at various levels. Yet the response need not, and I maintain *should not* be to condemn advocacy *tout court*, but to be vigilant for, engage critically with, and deplore, its blindly aggressive and/or wilfully ignorant instantiations. As educators we need to learn and teach how to advocate responsibly, knowledgeably, and humbly – paradoxical as this may seem – in the minutely informed and ethically/politically respectful way Oreskes and Conway investigate: to show how zealously the deniers seek to defend places and putative values that are simply unsustainable. Part of the bad press advocacy encounters has to do with an entrenched philosophical division between epistemology and ethics-politics that allows no space for the urgency of epistemic responsibility. Such a division, I suggest, is no longer plausible, now that social epistemology is demonstrating its effectiveness.

For the merchants of doubt, impersonal gender-neutral 'facts' are marshalled to promote or defend an impersonal, dislocated freedom. They can effectively be countered only in a complexly textured tale where, epistemologically, the task is at once phenomenological and hermeneutic. It is also empirical, but it is more effectively empirical when it is at the same time phenomenological and hermeneutic. There, the epistemological and social-political cannot be held apart. A doubled consciousness such as may have been Carson's but must also be ours will come insistently but differently to bear on each of the many subject matters, subjectivities, and issues that have to be investigated if sustainable futures are to be promoted against the insistence of merchants of doubt who are determined to gainsay them in the name of a freedom that is destructive at the core, even of the

subjects who champion it.¹⁰ Whether the denials can continue in the face of the 2013 IPCC report remains to be seen; the deniers will have to work relentlessly to manufacture levels of uncertainty sufficient to counter the force of these findings. Yet as Will Hutton observes: “[I]t will be met by a barrage of criticism from the new ‘sceptical’ environmental movement ... which, while conceding that global temperatures are rising, insists that there is still insufficient scientific proof to make alarmist predictions.”¹¹

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¹⁰ Some sections of this essay are drawn with only minor changes, from my chapter entitled, "Manufactured Uncertainty": Epistemologies of mastery and the ecological imaginary". In: P. Rawes, ed. *Relational Architectural Ecologies: Architecture, nature and subjectivity*. London: Routledge, 2013, 73-90. They are reproduced here with permission of Peg Rawes and the Editors.

¹¹ Will Hutton, "Our planet needs us to fight for its survival".

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