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Suppressed Subjectivity and Truncated Tradition: A Reply to Pablo Schyfter

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In his review of my book – *Science as Social Existence: Heidegger and the Sociology of Scientific Knowledge* – Raphael Sassower objects that I do not address issues of market capitalism, democracy, and the ‘industrial-academic-military complex’ (Sassower 2018, 31). To this, I responded: ‘These are not what my book is about’ (Kochan 2018, 40).

In a more recent review, Pablo Schyfter tries to turn this response around, and use it against me. Turnabout is fair play, I agree. Rebuffing my friendly, constructive criticism of the Edinburgh School’s celebrated and also often maligned ‘Strong Programme’ in the Sociology of Scientific Knowledge (SSK), Schyfter argues that I have failed to address what the Edinburgh School is actually about (Schyfter 2018, 9).

Suppressing the Subject

More specifically, Schyfter argues that I expect things from the Edinburgh School that they never intended to provide. For example, he takes what I call the ‘glass bulb’ model of subjectivity, characterises it as a ‘form of realism,’ and then argues that I have, in criticising the School’s lingering adherence to this model, failed to address their ‘actual intents’ (Schyfter 2018, 8, 9). According to Schyfter, the Edinburgh School did not have among its intentions the sorts of things I represent in the glass-bulb model – these are not, he says, what the School is about.

This claim is clear enough. Yet, at the end of his review, Schyfter then muddies the waters. Rather than rejecting the efficacy of the glass-bulb model, as he had earlier, he now tries ‘expanding’ on it, suggesting that the Strong Programme is better seen as a ‘working light bulb’: ‘It may employ a glass-bulb, but cannot be reduced to it’ (Schyfter 2018, 14).

So is the glass-bulb model a legitimate resource for understanding the Edinburgh School, or is it not? Schyfter’s confused analysis leaves things uncertain. In any case, I agree with him that the Edinburgh School’s complete range of concerns cannot be reduced to those specific concerns I try to capture in the glass-bulb model.

The glass-bulb model is a model of subjectivity, and subjectivity is a central topic of *Science as Social Existence*. It is remarkable, then, that the word ‘subject’ and its cognates never appear in Schyfter’s review (apart from in one quote from me). One may furthermore wonder why Schyfter characterises the glass-bulb model as a ‘form of realism.’ No doubt, these two topics – subjectivity and realism – are importantly connected, but they are not the same. Schyfter has mixed them up, and, in doing so, he has suppressed subjectivity as a topic of discussion.

Different Kinds of Realism

Schyfter argues that I am ‘unfair’ in criticising the Edinburgh School for failing to properly address the issue of realism, because, he claims, ‘[t]heir work was not about ontology’ (Schyfter 2018, 9). As evidence for my unfairness, he quotes my reference to ‘the problem of

how one can know that the external world exists' (Schwyter 2018, 9; cf. Kochan 2017, 37). But the problem of how we can know something is not an ontological problem, it is an epistemological one, a problem of knowledge. Schwyter has mixed things up again.

Two paragraphs later, Schwyter then admits that the Edinburgh School 'did not entirely ignore ontology' (Schwyter 2018, 9). I agree. In fact, as I demonstrate in Chapter One, the Edinburgh School was keen to ontologically ground the belief that the 'external world' exists. Why? Because they see this as a fundamental premise of science, including their own social science.

I criticise this commitment to external-world realism, because it generates the epistemological problem of how one can know that the external world exists. And this epistemological problem, in turn, is vulnerable to sceptical attack. If the world is 'external,' the question will arise: external to what? The answer is: to the subject who seeks to know it.

The glass-bulb model reflects this ontological schema. The subject is sealed inside the bulb; the world is external to the bulb. The epistemological problem then arises of how the subject penetrates the glass barrier, makes contact with – knows – the world. This problem is invariably vulnerable to sceptical attack. One can avoid the problem, and the attack, by fully jettisoning the glass-bulb model. Crucially, this is not a rejection of realism *per se*, but only of a particular form of realism, namely, *external-world* realism.

Schwyter argues that the Edinburgh School accepts a basic premise, 'held implicitly by people as they live their lives, that the world with which they interact exists' (Schwyter 2018, 9). I agree; I accept it too. Yet he continues: 'Kochan chastises this form of realism because it does not "establish the existence of the external world"' (Schwyter 2018, 9).

That is not quite right. I agree that people, as they live their lives, accept that the world exists. But this is not external-world realism, and it is the latter view that I oppose. I 'chastise' the Edinburgh School for attempting to defend the latter view, when all they need to defend is the former. The everyday realist belief that the world exists is not vulnerable to sceptical attack, because it does not presuppose the glass-bulb model of subjectivity.

On this point, then, my criticism of the Edinburgh School is both friendly and constructive. It assuages their worries about sceptical attack – which I carefully document in Chapter One – without requiring them to give up their realism. But the transaction entails that they abandon their lingering commitment to the glass-bulb model, including their belief in an 'external' world, and instead adopt a phenomenological model of the subject as being-in-the-world.

Failed Diversionary Tactics

It is important to note that the Edinburgh School does not reject scepticism outright. As long as the sceptic attacks absolutist knowledge of the external world, they are happy to go along. But once the sceptic argues that knowledge of the external world, as such, is

impossible, they demur, for this threatens their realism. Instead, they combine realism with relativism. Yet, as I argue, as long as they also combine their relativism with the glass-bulb model, that is, as long as theirs is an external-world realism, they will remain vulnerable to sceptical attack.

Hence, I wrote that, in the context of their response to the external-world sceptic, the Edinburgh School's distinction between absolute and relative knowledge 'is somewhat beside the point' (Kochan 2017, 48). In response, Schyfter criticises me for neglecting the importance of the Edinburgh School's relativism (Schyfter 2018, 10). But I have done no such thing. In fact, I wholly endorse their relativism. I do suggest, however, that it be completely divorced from the troublesome vestiges of the glass-bulb model of subjectivity.

Schyfter uses the same tactic in response to this further claim of mine: 'For the purposes of the present analysis, whether [conceptual] content is best explained in collectivist or individualist terms is beside the point' (Kochan 2017, 79). For this, I am accused of failing to recognise the importance of the Edinburgh School's commitment to a collectivist or social conception of knowledge (Schyfter 2018, 11).

The reader should not be deceived into thinking that the phrase 'the present analysis' refers to the book as a whole. In fact, it refers to that particular passage of *Science as Social Existence* wherein I discuss David Bloor's claim that the subject can make 'genuine reference to an external reality' (Kochan 2017, 79; cf. Bloor 2001, 149). Bloor's statement relies on the glass-bulb model. Whether the subjectivity in the bulb is construed in individualist terms or in collectivist terms, the troubles caused by the model will remain.

Hence, I cannot reasonably be charged with ignoring the importance of social knowledge for the Edinburgh School. Indeed, the previous but one sentence to the sentence on which Schyfter rests his case reads: 'This sociological theory of the normativity and objectivity of conceptual content is a central pillar of SSK' (Kochan 2017, 79). It is a central pillar of *Science as Social Existence* as well.

Existential Grounds for Scientific Experience

Let me shift now to Heidegger. Like previous critics of Heidegger, Schyfter is unhappy with Heidegger's concept of the 'mathematical projection of nature.' Although I offer an extended defense and development of this concept, Schyfter nevertheless insists that it does 'not offer a clear explanation of what occurs in the lived world of scientific work' (Schyfter 2018, 11).

For Heidegger, 'projection' structures the subject's understanding at an existential level. It thus serves as a condition of possibility for both practical and theoretical experience. Within the scope of this projection, practical understanding may 'change over' to theoretical understanding. This change-over in experience occurs when a subject holds back from immersed, practical involvement with things, and instead comes to experience those things at a distance, as observed objects to which propositional statements may then be referred.

The kind of existential projection specific to modern science, Heidegger called ‘mathematical.’ Within this mathematical projection, scientific understanding may likewise change over from practical immersion in a work-world (e.g., at a lab bench) to a theoretical, propositionally structured conception of that same world (e.g., in a lab report).

What critics like Schyfter fail to recognise is that the mathematical projection explicitly envelopes ‘the lived world of scientific work’ and tries to explain it (necessarily but not sufficiently) in terms of the existential conditions structuring that experience. This is different from – but compatible with – an ethnographic description of scientific life, which need not attend to the subjective structures that enable that life.

When such inattention is elevated to a methodological virtue, however, scientific subjectivity will be excluded from analysis. As we will see in a moment, this exclusion is manifest, on the sociology side, in the rejection of the Edinburgh School’s core principle of underdetermination.

In the mid-1930s, Heidegger expanded on his existential conception of science, introducing the term *mathēsis* in a discussion of the Scientific Revolution. *Mathēsis* has two features: metaphysical projection; and work experiences. These are reciprocally related, always occurring together in scientific activity. I view this as a reciprocal relation between the empirical and the metaphysical, between the practical and the theoretical, a reciprocal relation enabled, in necessary part, by the existential conditions of scientific subjectivity.

Schyfter criticises my claim that, for Heidegger, the Scientific Revolution was not about a sudden interest in facts, measurement, or experiment, where no such interest had previously existed. For him, this is ‘excessively broad,’ ‘does not reflect the workings of scientific practice,’ and is ‘belittling of empirical study’ (Schyfter 2018, 12). This might be true if Heidegger had offered a theory-centred account of science. But he did not. Heidegger argued that what was decisive in the Scientific Revolution was, as I put it, ‘not *that* facts, experiments, calculation and measurement are deployed, but *how* and *to what end* they are deployed’ (Kochan 2017, 233).

According to Heidegger, in the 17th c. the reciprocal relation between metaphysical projection and work experience was mathematicised. As the projection became more narrowly specified – i.e., axiomatised – the manner in which things were experienced and worked with also became narrower. In turn, the more accustomed subjects became to experiencing and working with things within this mathematical frame, the more resolutely mathematical the projection became. *Mathēsis* is a kind of positive feedback loop at the existential level.

Giving Heidegger Empirical Feet

This is all very abstract. That is why I suggested that [a]dditional material from the history of science will allow us to develop and refine Heidegger’s account of modern science in a way

which he did not' (Kochan 2017, 235). This empirical refinement and development takes up almost all of Chapters 5 and 6, wherein I consider: studies of diagnostic method by Renaissance physician-professors at the University of Padua, up until their appointment of Galileo in 1591; the influence of artisanal and mercantile culture on the development of early-modern scientific methods, with a focus on metallurgy; and the dispute between Robert Boyle and Francis Line in the mid-17th c. over the experimentally based explanation of suction.

As Paolo Palladino recognises in his review of *Science as Social Existence*, this last empirical case study offers a different account of events than was given by Steven Shapin and Simon Schaffer in their classic 1985 book *Leviathan and the Air-Pump*, which influentially applied Edinburgh School methods to the history of science (Palladino 2018, 42). I demonstrate that Heidegger's account is compatible with this sociological account, and that it also offers different concepts leading to a new interpretation.

Finally, at the end of Chapter 6, I demonstrate the compatibility of Heidegger's account of modern science with Bloor's concept of 'social imagery,' not just further developing and refining Heidegger's account of modern science, but also helping to more precisely define the scope of application of Bloor's valuable methodological concept. Perhaps this does not amount to very much in the big picture, but it is surely more than a mere 'semantic reformulation of Heidegger's ideas,' as Schyfter suggests (Schyfter 2018, 13).

Given all of this, I am left a bit baffled by Schyfter's claims that I 'belittle' empirical methods, that I 'do[] not present any analysis of SSK methodologies,' and that I am guilty of 'a general disregard for scientific practice' (Schyfter 2018, 12, 11).

Saving an Edinburgh School Method

Let me pursue the point with another example. A key methodological claim of the Edinburgh School is that scientific theory is underdetermined by empirical data. In order to properly explain theory, one must recognise that empirical observation is an interpretative act, necessarily (but not sufficiently) guided by social norms.

I discuss this in Chapter 3, in the context of Bloor's and Bruno Latour's debate over another empirical case study from the history of science, the contradictory interpretations given by Robert Millikan and Felix Ehrenhaft of the natural phenomena we now call 'electrons.'

According to Bloor, because Millikan and Ehrenhaft both observed the same natural phenomena, the divergence between their respective claims – that electrons do and do not exist – must be explained by reference to something more than those phenomena. This 'something more' is the divergence in the respective social conditions guiding Millikan and Ehrenhaft's interpretations of the data (Kochan 2017, 124-5; see also Kochan 2010, 130-33). Electron theory is underdetermined by the raw data of experience. Social phenomena, or 'social imagery,' must also play a role in any explanation of how the controversy was settled.

Latour rejects underdetermination as ‘absurd’ (Kochan 2017, 126). This is part of his more general dismissal of the Edinburgh School, based on his exploitation of vulnerabilities in their lingering adherence to the glass-bulb model of subjectivity. I suggest that the Edinburgh School, by fully replacing the glass-bulb model with Heidegger’s model of the subject as being-in-the-world, can deflect Latour’s challenge, thus saving underdetermination as a methodological tool.

This would also allow the Edinburgh School to preserve subjectivity as a methodological resource for sociological explanation. Like Heidegger’s metaphysical projection, the Edinburgh School’s social imagery plays a necessary (but not a sufficient) role in guiding the subject’s interpretation of natural phenomena.

The ‘Tradition’ of SSK – Open or Closed?

Earlier, I mentioned the curious fact that Schyfter never uses the word ‘subject’ or its cognates. It is also curious that he neglects my discussion of the Bloor-Latour debate and never mentions underdetermination. In Chapter 7 of *Science as Social Existence*, I argue that Latour, in his attack on the Edinburgh School, seeks to suppress subjectivity as a topic for sociological analysis (Kochan 2017, 353-54, and, for methodological implications, 379-80; see also Kochan 2015).

More recently, in my response to Sassower, I noted the ongoing neglect of the history of disciplinary contestation within the field of science studies (Kochan 2018, 40). I believe that the present exchange with Schyfter nicely exemplifies that internal contestation, and I thank him for helping me to more fully demonstrate the point.

Let me tally up. Schyfter is silent on the topic of subjectivity. He is silent on the Bloor-Latour debate. He is silent on the methodological importance of underdetermination. And he tries to divert attention from his silence with specious accusations that, in *Science as Social Existence*, I belittle empirical research, that I disregard scientific practice, that I fail to recognise the importance of social accounts of knowledge, and that I generally do not take seriously Edinburgh School methodology.

Schyfter is eager to exclude me from what he calls the ‘tradition’ of SSK (Schyfter 2018, 13). He seems to view tradition as a cleanly bounded and internally cohesive set of ideas and doings. By contrast, in *Science as Social Existence*, I treat tradition as a historically fluid range of intersubjectively sustained existential possibilities, some inevitably vying against others for a place of cultural prominence (Kochan 2017, 156, 204f, 223, 370f). Within this ambiguously bounded and inherently fricative picture, I can count Schyfter as a member of my tradition.

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