

Is sociology an effective tool in assisting pupils to overcome unreflective scientism and develop 'epistemic insight'?

And today? Who—aside from certain big children who are indeed found in the natural sciences—still believes that the findings of astronomy, biology, physics, or chemistry could teach us anything about the meaning of the world?

Max Weber – *Science as a Vocation*

Max Weber was in a provocative mood. He was fully aware that a statement such as this would irritate the 'big children' in his audience at Munich University in 1917. Of course, he was not entirely serious. Weber (1968) simply wants us to query the 'objective validity' of science and to recognise, as *Epistemically Insightful* children (big or small) might, 'that only a hair's breadth separates faith from science'.¹ In an *enlightened* world, Weber's fear was that a society that failed to exercise moral caution towards 'reason' would emerge completely unable to properly make sense of itself (*ibid.*), and the antinomies of its existence.

'Science is meaningless', says Weber invoking Tolstoy, only insofar as it "gives no answer to [the] only question important for us: What shall we do and how shall we live? The only question that remains is the sense in which science gives 'no' answer, and whether or not science might yet be of some use to the one who puts the question correctly" (*ibid*: 143). In this research assignment, this is my task: *to consider how we should put the question* – and, in doing so, to consider some of the obstacles that might confront our attempts to encourage young people and teachers in UK schools to put that question *correctly*.

In the first section, I provide a theoretical overview of the key ideas underpinning my project, and my concern with the complex relationship between sociology and science. In the second section, I outline a rationale for undertaking the project – including an outline of the key terms, methods and

¹ Here, Weber (1949: 110) is asking us to acknowledge the social context and presuppositions that underpins scientific knowledge: that 'belief in the value of science' is, in itself, a 'product of certain cultures and not the product of man's original nature'. Our disenchantment is enchanted.

epistemological ideas that would have guided my empirical research. In the 'reflective' third section, I discuss some of the barriers to epistemic insight and causes of unreflective scientism in UK schools in 2020. I conclude by suggesting that a partial recovery of the principles of sociological thinking – in particular Bourdieu's (2004) notion of 'epistemic reflexivity' – are required if we are to address some of the imbalances that are emerging in UK education – in both the science classroom, and beyond.

Sociology and Science: The 'Proper Function' of Sociology?

To start, it is worth clearly reiterating that Weber's opposition isn't to 'science' itself. Rather, his objection is to what we might call, following Billingsley et al (2018), 'uncritical scientism': 'Naïve' 'faith' in the explanatory power of a science that delivers us a 'pure' form of transcendent knowledge 'free from presuppositions' (Weber, 1968: 142). In recent years, CCCU's Epistemic Insight project has uncovered the extent to which uncritical scientism is a strong current in relationship many pupils in the UK hold towards science (Billingsley & Nassaji, 2019). Similarly, they argue that a lack of epistemological awareness – 'epistemic insight' – of how various subject disciplines interact and produce knowledge claims leads pupils to adopt a deterministic orientation towards science where core skills of argumentation and inquiry are omitted or sidelined (see Billingsley & Nassaji, 2019: 105; Claussen & Osborne, 2012; Archer et al., 2015;). As a consequence, pupils are often unable to recognise that scientific knowledge is produced in a 'dialectical' process between construction and critique (Ford, 2008). This lack of recognition impedes the development of crucial domain-general critical reasoning skills, 'moral education' (Alexander, 2010: 26), and an adequate appreciation of the 'limits' of 'scientific thinking' (DfE, 2014). In turn, this absence of insight reduces their understanding of all subject and represents a loss of the critical 'habits of mind which the practice of science develops' (Claussen & Osborne, 2012: 68).

Weber, among others, tells us why this is a problem. It is obvious, then, that we must consider ways to overcome it (see Billingsley et al., 2018). My suggestion is that a greater degree of sociological awareness amongst teachers and pupils is one tool we should utilise in this project.

There is good reason for considering sociology for this purpose. In fact, for many in sociology and social theory, this is the expressly 'moral purpose' of social research (see Wilkinson & Kleinman, 2016). As Weber makes clear, sociology and 'science' have long been locked in a two-step dance. The relationship is terse. The debates are exhaustive and full of *mauvaise foi*. At this point, I do not want to fully rehearse these debates here, nor the attendant epistemic and ontological divisions. These arguments are well-known, well-trodden, and not likely to be fruitful when addressed in a cursory way (see Berger & Kellner, 1982; Said, 1996; Jacoby, 2000; Burawoy, 2005; Loder et al., 2016). In the context of sociology of education, Young (2009) offers a comprehensive account of these debates and their implications.

Having said this, a partial rehearsal of some of the specifically *ethical* divisions and *moral* implications of these debates are worthwhile and relevant to the discussion at hand. To give a crude gloss: In contemporary sociology and empirical social research, there is a fault line – semantic, institutionalised, and philosophical – between those who seek *objective understanding*, and those who align their sociological work with questioning 'objective' knowledge claims, and an attendant commitment to praxis. In the former, there is often a concerted attempt to extirpate notions of 'subjective judgment' from their analysis and to pursue an extractivist practice and imitates the 'external signs of rigour' pursued in the 'most established scientific disciplines': chemistry, biology, physics etc (see Bourdieu, 1999: 607; Miller, 2015: 357). Often, *but not always*, these researchers utilise quantitative methods aligned with some iteration of a realist ontological framework. In the latter, there is a concerted attempt to make presuppositions and values part of the process of analysis. Often, *but not always*, these researchers pursue qualitative methods aligned with some iteration of a *constructionist* or social realist ontological framework (see Nash, 2005).

This division, completely flawed, is cut through with systematic misunderstandings of each other.²

The division is in part semantic. It does not exist as I have described it. Nevertheless, the differences that are 'institutionalised', 'legitimised' and made intelligible by this division are deeply rooted and broadly recognised (see Nash, 2005: 186). Underlying this division is an unresolved and sometimes unspoken tension in social research that relates to normative questions about the point and purpose of what it is we do, why we do it (see Wilkinson & Kleinman, 2016). *What is sociology for?* Is its purpose to deliver a 'science' of the social world and its core processes?³ Alternatively, is its purpose to give meaning and assist its object (society) to overcome the antinomies of its existence? In other words, is the job of sociology to *render*, or *resolve*? What, if anything, is sociology's response to Weber's question of science: What shall we do, and how shall we live?

Our responses to these moral questions about social science matter. Hannah Arendt, for example, famously warned that social science enters into a 'parasitic' relationship with its object if it neglects its moral purpose, and imitates the 'extractivist' approach of sciences that deal with non-human entities in its attempts to provide explanations of social processes (see Baehr, 2010: 4). Taking aim at behavioural psychology and functionalist sociology, Arendt (1962: 86) argues that extractivist social science perpetrates a violence when it *transforms* experience rich human subjects – 'intersubjective' actors, 'co-constituted' in 'gesture and countenance' – into 'dehumanized objects' (see Kleinman, 1995: 96-7). Interestingly, in Weber and Arendt (ibid; see Pitkin, 1998: 21-3), attention is drawn to how 'science' is necessarily *creative* and transformative practice. In this format, science belongs to the domain of *poiesis* (invention) above *praxis* (doing). By recourse to its models that 'rationalise, conceptualise and idealise', it transforms concrete reality in order to record and represent it (see Jackson, 2015 :227). Arendt and others take issue with efforts to pursue quantification and objective

² I am minded of Moore's (2013) comment about the extent to which 'positivism' cannot really be said to exist as it is alleged to do so, except in the accounts of critics of positivism, who find positivists 'lurking behind every tree'.

³ In, say, the manner of a physicist towards gravity.

understanding in 'social' science because it invariably neglects the elements of social life that 'resist categorisation in analytically precise terms' (Wilkinson & Kleinman, 2016: 149).

As a result, a large amount of contemporary sociology and social theory has founded itself in direct opposition – rhetorically and philosophically – to a social science that aligns itself with these extractivist principles. Among this work is a growing body of scholarship led by practitioners who explicitly conceive of social research as an intrinsically moral practice (see Wilkinson & Kleinman, 2016). Rather than seeking to pursue an 'objective' orientation towards their object, these researchers actively embrace a 'moral entanglement' with contemporary society. They do not seek to 'transform' it (see Kleinman, 1995). Rather, Wilkinson & Kleinman (2016: 6) emphatically oppose any mode of professional social inquiry that attempts to "[transmute] itself into a 'science' that [aspires] to the objectivity and reductions of the science of inanimate, unentangled entities". Instead, in research and writing on social suffering, the 'object' of study is precisely these entanglements: the hesitations, antinomies and contradictions that characterise social life as it exists (Bourdieu et al., 1999: 607 - 632). In dialogue with Weber, these scholars speak of the profound deficit of cultural meaning that afflicts people who suffer the worst effects of disenchantment and rationalisation. In the first instance, this work seeks to bear witness to this suffering: to give voice to these pains and to bring 'sociological legitimacy' to the ways of speaking that people utilise in 'the struggle to make sense of who they are and what they do' (Wilkinson & Kleinman, 2016: 149-151)..

At this point, the *slip* between theory and praxis is clear. This is the work of *morally entangled* sociologists who do not impose such a distinction. Pierre Bourdieu, famed leader of this expressly moral conception of sociology,⁴ goes as far as to suggest that the role of the sociologist is to practise a kind of social maieutics in their pursuit of truth (Bourdieu et al., 1999: 621).⁵ The moral equation is simple: If there is a lack of meaning attached to society's suffering, it is the job of the sociologist to

⁴ These arguments appear in Bourdieu's later work, but they are apparent as early as *Distinction*.

⁵ He also uses a 'loudspeaker' metaphor (Bourdieu et al., 1999: 616) and, in a recurring theme towards the end of his career, a reference to 'symbolic judo' wherein sociology is conceived as a 'martial art' to be adopted by participants (Bourdieu, 2015: 51).

exercise a *care for society* (see Wilkinson & Kleinman, 2016; Farmer, 2013; Addams, 1998). Acting in the manner of a 'midwife' towards their object, these scholars see it as their duty not to observe, measure, and accumulate presentable data about social subjects, but to support subjects develop a reflexive disposition: to 'bring to consciousness [the] real bases of discontent and dissatisfaction' (Boudieu et al., 1999: 621). These scholars pursue a form of sociology *as* critical praxis: a means of bringing to consciousness the relationship between personal troubles and public issues (see Wright Mills, 1959).

This 'critical praxis' of sociology is founded in opposition to extractivist approaches (Wilkinson & Kleinman, 2016: 2 – 6), and sees itself as an expressly moral accompaniment, and critical friend, to science. As Weber (1968: 144) puts it, 'science gives us an answer to the question of what we must do if we wish to master life technically. It leaves quite aside, or assumes for its purposes, whether we should and do wish to master life technically and whether it ultimately makes sense to do so'. For many following in his wake, this is the moral – and philosophical (see Billingsley & Nassaji, 2019: 205) – question sociology should help address.

In this pose, sociology of this nature demands that we do not, as Billingsley et al (2018: 1120) warn that *uncritically scientific* pupils might, 'underappreciate the complexity of reality and to overestimate the extent to which science has ready access to determining how reality works'. Weber also draws attention to the idea that, as in Paul Rabinow's (2009) phrasing, 'the object itself will never yield the basis for empirical science'. Ours is a fundamentally enchanted world. It is 'infinitely buzzing', complex, and intersubjective (ibid: 35). As a consequence, it will permanently resist articulation by science alone (see Nash, 2005: 191). In response, Weber is pleading for moral education and, in turn, what we might now call epistemic insight – knowledge about knowledge, contextualised by knowledge about disciplines and how they might interact with each other (see Billingsley et al., 2018: 1121) – in the face of uncritical scientism. This is how we arrive at my research question.

Rationale and Methodology: Misrecognition, Critical Dispositions and ‘Uncritical Scientism’ in School

Now, for Weber – as for many sociologists (see Bourdieu et al., 1999) – the means by which ‘uncritical scientism’ would be overcome is by recourse to moral experience, sociology and, in turn, a critical philosophy of science.⁶ In the context, ‘sociology’ necessitates identifying and locating the values and presuppositions – and therefore the ‘limits’ (see DfE, 2014) – that underlie our attempts at scientific explanation. This understanding and appreciation of the ‘limits’ of science is what the science curriculum for England (DfE, 2014) demands that pupils must possess. In addition, as Billingsley et al (2018: 1121) outline, this awareness has implications not just for pupils’ understanding of science, but for their broader understanding of *all* disciplines. As they write, ‘The possibility that school education is influencing students’ developing perceptions of the nature of reality and of the power of science in ways that dampen their curiosity and sustain misperceptions is a matter that deserves attention’ (ibid.). Indeed, it should be a matter of deep concern to teachers of *all* disciplines if pupils sustain a deterministic and uncritical view of science and do not develop the epistemic insight necessary for them to make sense of knowledge claims across subject boundaries (see also Chappell, 2017). If we fail to do this, we perpetrate and *reproduce* what Bourdieu calls ‘scholarly naivete’, or the ‘scholastic illusion’; a lack of a critical disposition of mind that leads scholars to ‘confuse the things of logic’ – our models of reality; theories – ‘with the logic of things’: reality as it exists (Grenfell, 2010: 97; see Maton, 2003). Interestingly, this ‘scholastic illusion’ is akin to what Billingsley & Nassaji (2019: 90) identify in their account of ‘uncritical scientism’. For example, consider the 10-year-old pupil who claims

Well, if it wasn’t for science we wouldn’t know much about the world or anything, really. I only believe science and logical answers and theories.

⁶⁶ Both Weber and Margaret Archer (2017: 293) remind that it is impossible to ‘do sociology’ without ‘doing implicit or explicit philosophy of science’.

In Bourdieu's terms, our 10-year-old has confused the things of logic with the logic of things. In her disenchantment, she has *misrecognised* the extent to which the models of science are, indeed, models. She has misunderstood the iterative nature of science and shown no awareness of the limitations of the field in relation to other subjects, nor any acknowledgement of the existence of phenomena that resist articulation via science.

If it persists beyond aged 10, this illusion is damaging because it inhibits critical understanding of how the world works, how knowledge claims are made, and how the knowledge claims of science exist in relation to those of other disciplines. The latent resistance to 'the possibility of there being forms and sources of knowledge, evidence, enquiry, or reason that are not scientific in character' (Billingsley et al., 2018: 1121) leads to pupils developing an essentialist view of *why things are so, rather than otherwise*. Self-evidently, this has broader consequences for our pupils' view of reality outside of the science classroom and, in turn, represents a deficit in their 'analytic ability to make logically deductive arguments from simple premises, to identify salient variables, patterns in data, numerical fluency, and the **critical disposition of mind** that is the hallmark of [scientific thinking]' (Claussen & Osborne, 2012: 68).

In Bourdieu's terms, this lack of a 'critical disposition of mind' represents its obverse: a dampened dispositional state of *misrecognition*. In Bourdieu's (1984: 559) conception, misrecognition (or 'meconnaissance') refers to two things that happen at once:

- 1. When we believe (misrecognise) something to be 'natural' that is, at least in part, socially determined.**
- 2. When, in our misrecognition, we legitimise the causes and effects of inequality.⁷**

This two-fold definition is crucial. It is sometimes forgotten in secondary scholarship on Bourdieu (see James, 2015). Misrecognition is less a lack of recognition or mistaken understanding, but more

⁷ When we believe subjective judgments to be objective.

to do with a condition of what we might call *functional blindness*. It is not purely cognitive.⁸ It is a pre-reflective ‘disposition’ – a term also used in the context of UK science education by Claussen & Osborne (2012; see also Archer et al., 2015). Much like the insight and ‘naturalised’ advantage afforded by ‘cultural capital’ (see Bourdieu & Wacquant, 1992: 248-52), it is a tacit and embodied orientation. It is no less consequential for being such. With reference to the UK pupils’ understand of science, Claussen & Osborne (2012: 67) suggest that the ‘lack of attention to reasoning and thinking skills’ in science education ‘is not surprising’ since it is these skills – distinct from the factual and operational knowledge that constitutes a significant portion of the science curriculum (see Billingsley et al., 2018; Bourdieu, 1984: 389) – that are most valuable in assisting pupils to question the dominant ‘cultural arbitrary’: That is, why are things *so*, rather than *otherwise*. As they put it:

If students do not acquire the intellectual capabilities required to access, comprehend, and question the ideology of the dominant classes, which are largely conveyed in such texts, then there is little chance that they will engage critically with science.

In such a social context, it follows that there is little chance that they will develop *epistemic insight* and critical dispositions of mind central to effective science education. This will consolidate cultural and economic disadvantage (ibid.).

Framing ‘unreflective scientism’ in this way is useful, insofar as it draws our attention to the specific *social context* in which such misrecognitions take place. By articulating unreflective scientism in the Bourdieusian language of misrecognition, we begin to consider how we might come to overcome this lack of epistemic insight by encouraging pupils to consider the foundations, constructions and limits of curricular knowledge. In turn, it also encourages to think about the practical role of sociological epistemologies in this process, and to clarify the reference to ‘sociology’ in my research question. To this end, I want to deploy his basic sociological supposition:

Social agents do not have an innate knowledge of what they do: more precisely, they do not necessarily have much access to the central causes of their discontent and the most

⁸ This is why the translation of ‘meconnaissance’, Bourdieu’s term, as ‘misrecognition’ is misleading.

spontaneous declarations can, without aiming to mislead, express quite the opposite of what they appear to say.

(Bourdieu et al., 1999: 621)

If put into practice, the methodological and ethical implications of this statement are substantial.

This idea runs throughout Bourdieu's work: *social agents are only half-aware of what it is they do*.

He chastises modes of theorising – rational choice theory, Marxist orthodoxy, unreflective realists –

that ascribe an improbable cognitive self-awareness to social agents (Nash, 2002: 283). For the

purposes of this project, this is how I am conceiving of sociological epistemology. This is a broad-

brush stroke. However, it is uncontroversial insofar as it is a position that unites a range of schools of

prominent thinking in sociology and the sociology of education: 'constructionism', dialogism

(Alexander, 2020), social realism (Young, 2015). All would agree, to some extent at least, that the

statement is true.⁹ It also enables us to pose a challenge, albeit gently, to the child that presents

with unreflective scientism: Sociology conceived in this form demands that we consider the extent

to which we, even in science, are not always rational arbiters of what it is we do and why we do it.

So to my **methods**. If we are to use Bourdieu's theoretical work in empirical research, we must

retain the epistemological and ontological suppositions that underlie his 'way of seeing' the social

world. We especially must do this if we are concerned with increasing pupils' reserves of epistemic

insight. As I have outlined above, one of the strengths – and weaknesses – of Bourdieu's theorising is

that he rejects 'any simple distinction between the conscious and unconscious' (James, 2015). This

has significant methodological implications. For Bourdieu, we exercise a *scholastic illusion* when we

fail to take into account the social presuppositions that underlie the research encounter and, in turn,

we assume that our participants won't simply repeat some version of what they think we might

want to hear (see Yanos & Hopper, 2008). We perpetrate the *biographical illusion* if we assume our

participants can produce, on demand, a storied account of their own life choices and decisions (see

Jarvinen, 2013). In Bourdieu's framework (1993: 32), the researcher is only capable of overcoming

⁹ Many would agree until they are told it is Bourdieu who is saying it.

these illusions if she recognises that social experience and knowledge is constituted by dispositions that are pre-reflective and embodied. As such, the methods we deploy must foreground pre-reflective dispositions; the internalised external social conditions (*habitus*) of our participants, and those of ourselves as researchers (Bourdieu et al., 1999: 615). In Bourdieu (2004: 44), the ability to undertake this latter task – to exercise *epistemic reflexivity* and conscious awareness of one's own suppositions and values (Maton, 2003) – is what distinguishes *habitus*, from the trained scientific and critical disposition of the researcher; the one who has undergone *metanoia* (see Grenfell, 2010).¹⁰

In-step with this, I intended to deploy a series of qualitative methods focussed on eliciting these 'pre-reflective' dispositions: photo-elicitation and auto-ethnographic observation. These qualitative methods have a long history and, under the repressed tyranny of the word count, it is not useful to fully rehearse them here. Importantly, they would have been appropriate for this project because they enable a minimising of the 'interactional problems' that afflicts face-to-face social research (Roulston, 2014) – where participant responses are encouraged and guided according to the 'the degree of concord of the interpretive framework of the interviewee and the socio-political horizon of the study' (Jarvinen, 2000: 389) – and make possible a greater rendering of pre-reflective/dispositional ways of thinking that would not be fully accessed via conventional qualitative methods, such as those favoured by Holstein and Gubriem (1995).

There was to be an interesting *double-play* to this research. In the first instance, I wanted to render attitudes towards science. I would do this by following the lead set by the epistemic insight research project, and record KS4 pupil responses to various activities and questioning.¹¹After, I planned to record and evaluate their change in attitude towards the explanatory power of science *following* a

¹⁰ This is, of course, a controversial suggestion (see Maton, 2003; Bourdieu et al., 1999: 607 – 632; Bourdieu, 2004).

¹¹ In groups, pupils were to be tasked with undertaking the 'spaghetti experiment' (see Bi) after which they would be explicitly tasked with reflecting on the limits of the explanatory power of science.

collaborative series of activities, led by myself, on ‘sociological epistemology’.¹² In this respect, my project also inhered within it a recognition of the principles of ‘action research’ (Koshy, 2009) and, alongside, a conception of social research as ‘critical praxis’ (Wilkinson & Kleinman, 2016; Bourdieu et al., 1999: 607). Using the existing findings and workshops utilised by the epistemic insight project as a buttress (see Billingsley & Nassaji, 2019: 105), I wanted to render misrecognition (unreflective scientism), and help respondents overcome it in the research process (see Bourdieu & Wacquant, 1992: 251). This was unlikely to succeed on the very small scale and timeframe I had available. This was likely to form the basis of a ‘limitations’ section that, in the absence of the research, the reader might now simply imagine.

Reflective Discussion: Why ‘Uncritical’ Scientism?

Is sociology an effective tool in assisting pupils to develop ‘epistemic insight’ and overcome unreflective scientism?

COVID-19 and consequent national school closures put pay to my attempts to produce an empirical answer.¹³ My hypothesis, as above, is that the answer is *yes*. In the following section, I outline why this might have been the case and, alongside, why I think the question is worth pursuing – with urgency.

I came to this project for both analytical and personal reasons. Prior to starting my teacher training, I taught in higher education – lecturing in cultural studies, research methods and various aspects of social theory. As an ESRC-trained social researcher and card-carrying sociologist, I have been struck by both the neglect of domain-general thinking that dominates in some UK schools. I have also been struck by the antipathy towards sociological insight, and attendant lack of epistemic ‘reflexivity’ (see Bourdieu et al., 1999: 607- 632; Miller, 2015: 358), that accompanies some of the most prevalent

¹² Via a series of accessible activities I had designed, I planned to introduce and explain the concept of ‘habitus’, sociology and ‘critical praxis’, and encourage pupils to ‘think sociologically’ about the spaghetti experiment and, later, science more broadly.

¹³ I was to conduct research at two schools between March 31st – April 3rd.

pedagogical practices. This inhibits the development of epistemic insight amongst pupils. Here, I share Billingsley et al's (2018: 1118-9) concern with the 'entrenched compartmentalisation' of subject disciplines and the 'fragmentation' of key subject topics. There are other related obstacles, too.

From my experience – first-hand teaching at 30 different schools, conversation with experienced teachers and researchers, and my reading of the field – it is apparent that there is now a growing adoption in schools of 'knowledge-rich' curricula (see Ofsted, 2019), aligned with a pedagogy that rejects allegedly naïve 'discovery-based' learning in favour of 'direct instructional guidance' where the teacher is framed as 'the expert' leading tightly scripted lessons (see Strickland, 2019; Enser, 2019; Didau, 2019). Sometimes this is regarded as a resurgent 'traditional' pedagogy (see Young, 2013; Christodoulou, 2014: 125), emergent following the Coalition Government's sweeping 2010 curriculum reforms. In schools, this resurgence is due in part to a fierce backlash against once ascendant constructivist pedagogies and curricula (see Grenfell, 2010: 98) that, for many, do not sufficiently foreground the essential role of factual knowledge in the teaching process.

There are several prominent thinkers of varying sophistication who lead this development. Among them, Daisy Christodoulou (2014: 130) gives an account of the *toxic* legacy of constructivist ideas and the need, now, to 'stop promoting completely discredited ideas and give more space to theories with much greater scientific backing'. She describes 40 seemingly appalling 'discovery-learning' lessons wherein 'only a limited proportion of the time involves teachers teaching the content and pupils thinking about it; much more time is spent on pupil-led activities designed to try to make the new knowledge relevant to their lives' – such as 'making puppets' and finger painting (ibid: 114). In response to these perceived extremes of constructionist pedagogy, these writers and teachers refer to the need for a 'greater input of scientific thinking into teaching' (Powley, 2018) for, as Didau (2014) puts it, 'we can't rely on experience alone to keep the profession free of pseudoscientific ideas'. Kirschner et al (2006) offer an illustrative account of this position in their article entitled,

instructively, ‘Why Minimal Guidance During Instruction Does Not Work: An Analysis of the Failure of Constructivist, Discovery, Problem-Based, Experiential, and Inquiry-Based Teaching’:

Direct instructional guidance is defined as providing information that fully explains the concepts and procedures that students are required to learn as well as learning strategy support that is compatible with human cognitive architecture. Learning, in turn, is defined as a change in long-term memory.

A critical reader will notice the definition of learning as memory; a conception, shared by Ofsted (2019), that eschews any non-cognitive, dispositional, or ‘experiential’ conception of understanding that is central to a large amount of pragmatist, phenomenological and later sociological theorising (see James, 2002; Weber, 1949; Bourdieu et al., 1999; Merleau-Ponty, 1962).

In any case, there is a fairly clear rhetorical strategy at play here: ‘constructionist’ approaches are not sufficiently ‘scientific’ (see Grenfell, 2010: 98). I do not have the space here to make an extended comment on the merits of this approach. However, it does mean we neglect the dialogic processes central to subjectivity development (see Arendt, 1962: 68; Alexander, 2020). It leads us down a path that inevitably sidelines the insights provided by sociology, its attendant discourses and warnings. We return to issues of ontological construction.

The other issue is that these principles are often misunderstood and enacted in cruder forms when they reach the classroom (see Grenfell, 2010).¹⁴ Increasingly, this means many pupils in UK state schools¹⁵ are being taught in accordance with quasi-behaviourist principles that emphasise subject-specific knowledge, a ‘teaching as transmission’ monological model (Alexander, 2010), and consistent rhythms of routine, recall and retention (see Sherrington, 2019; Hutchings & Kazmi, 2015). As far as ‘domain-general’ learning and ‘epistemic insight’ goes, this leads to enormous problems. Learning in these classrooms¹⁶ is anchored around subject-specific knowledge that – far

¹⁴ This is not surprising, for it is exactly the same problem that afflicted constructivist approaches – such as those of Vygotsky, Piaget and Bakhtin. Ironically, it is exactly this problem – the one that now afflicts the research she promotes – that Christodoulou (2014: 114) is bemoaning with regard to the extremes of ‘discovery-based’ learning.

¹⁵ Rarely, however, does this occur in grammar schools or public schools (see Bourdieu, 1984: 389; Beadle, 2014: 1 - 6)

¹⁶ I have observed them myself – extensively (50+ KS3 lessons in a near identical monologic format).

from transcending both the classroom and subject in the form of ‘generalisable’ ‘powerful knowledge’ as in Young’s (2015: 834) conception – is ‘scholastic’ and ‘pedantic’ (see Bourdieu, 1984: 389). Learning is, then, dominated by the rehearsal the subject-specific ‘elementary’ skills and knowledge at the expense of exploring ‘big questions’ (ibid; Billingsley et al., 2018). In part due to the increasingly ‘perverse incentives’ brought forward by the imposition of post-2012 accountability measures (see Hutchings & Kazmi, 2015), this monologic approach is preferred in many schools. In the newly published Education Inspection Framework, Ofsted (2019) themselves acknowledge the extent to which ‘what pupils learn too often comes second to the delivery of improved performance table data’.¹⁷ In these classrooms, critical and domain-general skills are lost here to an allegedly knowledge-rich curriculum that is ‘full of details’ but, for pupils, ‘lacks coherence’; leading to ‘a knowledge not of its broad overarching themes but of a large body of detailed facts’ (Claussen & Osborne, 2012: 65).

This knowledge is less ‘powerful’, more *arbitrary*. Consequently, pupils are left with ‘an illusion of knowledge’ rather than ‘the sort of flexible, durable learning that ought to be our aim’ (Durran, 2016). To extend Hutchings and Kazmi’s (2015) ‘factory’ metaphor, we risk entering a situation where pupils, as in Bourdieu’s (1984: 389) phrasing, are ‘dominated by the machines and instruments which they serve rather than use’, having learnt “respect for useless, disinterested knowledge and establishes relationships invested with the ‘natural’ authority of scientific and pedagogic reason”. This is, of course, antithetical to the development of epistemic insight and the critical, questioning dispositions of mind necessitated by science.

There are many ironies at play here. In my view, it is not at all surprising that pupils are prone to scientism, because increasingly this is precisely the attitude and rhetorical orientation that their teachers and senior managers are taking towards the ‘scientific evidence’ – evidence drawn from a partial reading of research, mostly from cognitive psychology, that fuels a ‘mechanistic’ attitude

¹⁷ Ironically, they misappropriate Bourdieu’s notion of ‘cultural capital’ in this same document.

towards teaching that is committed to the arbitrary demands of their GCSE examination (see Durran, 2016: 46-7), as opposed to facilitating the development of domain-general critical dispositional skills or, indeed, epistemic insight. If we continue to do this we are likely, as in Didau's (2019) words, to reproduce in our pupils the same 'lack of curiosity and blind adherence to a set of partially understood principles': *a state of misrecognition*. With direct reference to Bourdieu, Grenfell (2010: 85) frames it as follows: 'bad research' – research that does not sufficiently interrogate its suppositions and is constructed and imposed without recognition of the full breadth of 'educational phenomena' – "gives rise to 'bad' policy, or policy with unexpected outcomes undermining its effectiveness'. In the sustained absence of *epistemic reflexivity* (Bourdieu, 2004), this is the situation afoot.

As a result, we cannot simply labour under the banal pretence, as Christodoulou (2014: 114) suggests we must, that we should simply teach a curriculum comprised of 'rational' answers to the question 'What knowledge yields the greatest cognitive benefit?' (see also Miller, 2015: 356). There are similar issues with Mayer's (2004: 18) oft-cited assertion that 'we must move educational reform efforts from the fuzzy and unproductive world of ideology—which sometimes hides under the various banners of constructivism—to the sharp and productive world of theory-based research on how people learn'. Mayer ascribes to a 'sharp' and 'productive' cognitive psychology a disinterested capacity to move beyond ideology and 'fuzzy' things. This constitutes a scholastic illusion: through the sheer disinterestedness of our science, we assume we can simply strip out social suppositions, the 'fuzzy', from the equation (see Bourdieu, 2005). On the obverse, I argue we need to get to grips with the vague (see James, 2002) and 'fuzzy' – values, suppositions, assumptions that underlie and underpin our science – and render it visible. Alas, the reluctance to exercise epistemic reflexivity is political (Bourdieu, 2004). As Grenfell (2010: 97) argues, there is an extent to which these researchers and policymakers "do not 'know' and do not want to 'know' about this reflexive check on their work since it relativises their own truth claims and thus legitimation". As I have presented it here, sociology tells us why we should not – and cannot – cede to this. Neither should our pupils.

This final claim is not a call for cloudy romanticism or a tedious relativism. It is an expressly moral call for critical questioning and, in turn, humility that is supported by an enormous and long-standing body of sociological research and theory (see Wilkinson & Kleinman, 2016; Weber, 1968; Bourdieu et al., 1999). In partial support of this conclusion, Michael Young (2015: 825) reminds us that ‘any curriculum must consider epistemological questions about its claims to truth because it is on the basis of such claims that the authority of teachers relies’. At the same time, a curriculum also demands that we consider “sociological questions about the specialist ‘communities of enquiry’ which provide guarantees that these ‘truths’ are the best we have in the interests of the next generation of children”. In the context I have laid out here, Young’s social realist framing is useful. He asks us to tackle epistemological *and* sociological questions about the composition and limits of disciplinary knowledge together. In doing this, we need to exercise a reflective humility towards science: the exact same humility we want our pupils to develop. Insofar as it demands that we relocate our values and suppositions in the process of producing knowledge, sociology offers us a way of doing this. Young lucidly outlines the necessity of posing sociological questions about the curriculum and engaging teachers and pupils alike in the process, for ‘if we do not start with such questions [we] cannot address the questions that any democracy has to address about making knowledge available to all’ (ibid.). In a small way, this is what I intended to do in this project, and I still believe it is worth doing.¹⁸

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¹⁸ Apologies for the length of this assignment. In the context, I wanted to make the most of the opportunity to explore develop some of these ideas in writing. They are at a very early stage. As it stands, I think Bourdieu’s notion of ‘epistemic reflexivity’ is useful, and it may warrant further exploration in relation to the EI project (see James, 2015; Bourdieu, 2004; Nash, 2002; Moore, 2013; Grenfell, 2010; and, critically, Maton, 2003).

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