Weber as a Swimmer in the Current of his Time:

An Object Lesson in how not to get Washed Away by the Tide

Steve Fuller

When I began to write this testimony to Max Weber's significance a century after his death, I thought I would focus on the core intuition of *The Protestant Ethic and the Spirit of Capitalism*, namely, that Calvinism 'wot done it', in British slang. This would have led into a discussion of Weber's dual use of 'selection' (*Auslese*) to cover both what scientists deliberately do before they advance a hypothesis and what nature or the market spontaneously does when confronted with a surfeit of variety. A key transitional figure from sacred to secular senses of 'selection' was Reverend Thomas Malthus, the radical Calvinist precursor of Darwin's theory of natural selection, who basically reinvented 'divine providence' as demography. On top of that, I would add the evangelical Christian background of Frank Knight, doyen of the Chicago School of Economics and the English translator of Weber's *General Economic History* (Nelson 2001). And while I plan to return to this line of thought in the future, I will suspend the plot in this state of Borgesian compression. In what follows, however, I will focus on what I take to be the exemplary seriousness with which Weber took the natural sciences of his day, not least their increasing embrace of probabilistic reasoning.

Max Weber famously highlighted the role of Calvinism as the core 'Protestant Ethic' that generated the 'Spirit of Capitalism'. The thesis was provocative because it proposed an explanation for the rise of capitalism that arguably matched the self-understanding of the capitalists of his day. Applied Calvinist tracts from the seventeenth and eighteenth centuries, the original 'self-help' books, sound rather like early twentieth century capitalist self-presentation. In that respect, Weber's approach is comparable to Nietzsche's in *The Genealogy of Morals*, which starts with easily recognized attitudes in the contemporary world and then reaches back in time to find their origins -- echoes of a distant past, if you will. The charm of such a 'genetic' approach is that you start by adopting a semi-estranged view toward the present (Why do we think and behave *this* way?) and then arrive at answer that is so uncanny that it forces you to re-think distinctions and connections that you had thought were clear. In Weber's case, as in Nietzsche's, the spiritual is implicated in the material, the religious in the secular, the irrational in the rational, etc.

This general sensibility crystallised at the turn of the nineteenth to the twentieth centuries, when the traditional interest and uses of genealogy acquired a new look in light of what would become the science of 'genetics'. Even before the rediscovery of Mendel's pioneering work, there had been much discussion among Darwinian biologists about the relationship between what is persistent and what is transient in an organism's makeup – what August Weismann originally called the 'germ' and the 'soma' level, which later became 'genotype' and

'phenotype' – and have after the mid-twentieth century molecular revolution in biology has been cast in many other ways. Henrik Ibsen had imported this way of looking at things into dramaturgy with revolutionary effect. He created a form of dialogue in which what was said onstage at the moment ('soma') shadowed unseen larger forces from a distant past ('germ'), such that understanding those offstage forces might allow the audience to foresee the outcome of the onstage action. Moreover, unlike the popular melodramas of the day, the exact relationship between the onstage signifiers and the offstage signifieds remained profoundly uncertain until the very end – and sometimes even after the final curtain has drawn. In this way, Ibsen enabled an unprecedented level of dramatic tension, characterised by a sense of haunting, foreboding and suspense in which the audience focused on the words spoken onstage, ignoring the stage, which was at first an ordinary bourgeois household but rendered increasingly stark as Ibsen's influence took hold in twentieth century drama.

This strong genealogical self-understanding has been translated back into popular science with the rise of genomic scanning firms, such as the Silicon Valley-based 23andMe, which are capable of not only retrodicting the likely geographical origins of one's genes but also predicting the life-threatening diseases that they might contain. Perhaps predictably, for those who fancy living their own life as a full Ibsen drama, knowledge of the latter commands a premium price – yet you won't be around to learn whether the genomic portents were indeed correct! Nevertheless, once confronted with such scans, most of a person's normal lived experience suddenly drops out of sight and a bare stage is revealed in which the relevant genetic forces are playing themselves out. In this respect, Ibsen's biggest British booster, George Bernard Shaw, might be seen as having 'streamlined' Ibsen's dramaturgy toward just such a world, in which the 'genetic code' might be seen as the primary medium in which the drama of one's own life is played out. For Shaw, everything depends on the dialogue, reflecting a personified version of the outplaying of the relevant genetic factors. Not surprisingly, he regarded his brute 'Ibsenism' as the ultimate form of public pedagogy, understood as a 'shock to the system'.

Weber's *Protestant Ethic and the Spirit of Capitalism* should be read another version of this second-order representation of the new genealogy, which under the influence of Darwin (and later Mendel) one comes to see lived experience as existing simultaneously at a 'macro' and a 'micro' level, as sociological theorists have been calling it for over a half-century now. Social agents live double lives as replaceable players in various ongoing games (a metaphor that became more salient after the acceptance in the early twentieth century of Mendel's insight into the combinatorial nature of genetic factors) and individuals with unique lives. As Weismann said of 'germ' and 'soma', respectively, the former exists in perpetuity while the latter is well-bounded in time. Unfortunately, recent sociological theorizing has tended to reify 'macro' and 'micro' much more than the biologists who have followed in Weismann's footsteps while at the same time continuing to refine and redraw the boundaries and relationships between what is permanent and transient in life.

Perhaps this is the cost of sociology having distinguished itself so strongly from biology (Meloni 2016). In the process, it retained from biology a conception of the organism, which while arguably adequate for the study of a normal specimen was insufficient for the study of variable populations over large expanses of time and space. I refer here to what the great late taxonomist Ernst Mayr (1959) described as the shift from 'typological' to 'population' thinking in biology with the advent of Darwin's *On the Origin of Species* (Fuller 2020). While Plato and especially Aristotle are the clear sources of typological thinking, it persisted even into the embryology-based 'developmental' theorizing of Karl von Baer, which was the source of the idea of 'blueprints' that continue to provide the structure of macro-level evolutionary change. Moreover, following some clues in Georges Canguilhem, Paul Hirst (1975) showed that Emile Durkheim owed his understanding of the social organism to another modern who nevertheless remained a typological thinker, Claude Bernard, the founder of modern experimental medicine. Durkheim arguably could not have drawn his sharp distinction between the 'social' and both the 'vital' and the 'psychic', had he not followed in Bernard's typological footsteps, since Bernard himself was trying to argue – albeit in his own mechanistic way – for an ontological distinction between the 'vital' from the 'physical'.

This is more than a historical curiosity, since it may lie behind Bernard's revolutionary medical view that death should be treated not as a natural part of the life cycle but a soluble ('cybernetic') problem related to the organism's exchange of energy with its immediate environment. It is arguably the source of the benchmark normally used to judge overall progress in health: namely, the indefinite extension of the healthy individual lifespan. Nevertheless, Bernard's view was innocent of the entropy considerations that had recently entered physics, especially through his German medical rival Hermann von Helmholtz. Indeed, instead of circumscribing the 'vital' from the physical, Helmholtz performed the reverse move and re-inscribed death as constitutive of the physicalistic world-view, the source of what Freud would later call *Thanatos*, or the 'death drive' (Tran The et al. 2018). It is telling that Darwin's early supporters who ignored Mendel as much as Darwin himself – including Weismann and Ernst Haeckel – also retained a version of the typological view of life. In Weismann's case, it was the eternity of the 'germ' level of life, which somehow defies the physical disintegration of its individual organic bearers. Something similar could be said about the persistence of other realms of reality that manage to transcend the physical even as they depend on it for realization – be it the vital, the psychic or the social. 'Supervenience' is the post-metaphysical term used by analytic philosophers today to describe this relationship.

A lingering typological sensibility helps to explain the residual sympathy among all these scientists for a sense of 'immortality', which they believed should be de-theologized but not eliminated entirely. For them the problem was finding a scientifically respectable metaphysical location for it. Two quite popular 'monistic' philosophies of the turn of the century period, *hylozoism* and *panpsychism*, catered to this sensibility (Weir 2012). Weber locked horns with a variant that had been making specific claims on the social sciences, 'energeticism', more about which below. One can even read Richard Dawkins' (1976)

depiction of 'selfish genes' that persist in perpetuity by preying on unsuspecting organic vehicles as trading on this sensibility, though he would be the last to admit it. In any case, what is clearly denied by all these scientists is the ultimacy of death: An individual may die but some larger collective or corporate entity remains that preserves and extends the individual's immortal 'meaning', perhaps in perpetuity. In the case of a 'gene pool', it is a distributed corporate agent. Marxism, of course, trades on this sensibility as well, though its sense of distributed agency is normally discussed in a more centrally coordinated fashion, *à la* Hegel's 'cunning of reason'.

Interestingly, Weber's *prima facie* scepticism about functionalist explanations in sociology, which puts him in spirit much closer to, say, Jon Elster than Talcott Parsons, was articulated while reflecting on one of Weismann's immortalist biological speculations (Weber 1978: 16). Weismann proposed that greater functional differentiation in animals was related to their shorter lifespans because their social organization had become 'more' hard-wired than, say, humans whose societies vary significantly in terms of degree and kind of functional differentiation. For Weismann this marked the relative youth and vitality of *Homo sapiens* as a species. Thus, the reproductive patterns of insects correspond to the cell regeneration of humans: In the former case, 'Nature' simply moves to the next generation rather than rejuvenate the same organism. Weismann's point was part of a larger argument about the classification of life forms. The 'individual' ants that constitute an ant colony should perhaps not be considered individuals at all because each ant is basically an expendable part of a whole – the colony—that is of indefinite duration. Whatever else one makes of this reasoning, it amounts to seeing all of life from a 'functionalist' standpoint. It would have been recognizable to Weber (and Marx) as the aptly named 'variable capital' of human labour under both capitalism and bureaucratisation, the bottom line of both being the maximization of means to a desired ends, namely, the execution of a specified task.

Weismann's own speculations had gone some way to meet Thomas Henry Huxley's hypothesis that when seen from the *longue durée* of evolution itself, there may be something anachronistic about biologists typifying life forms in terms of an individual specimen organism. After all, 'individuality' itself may be only a recent innovation that *Homo sapiens* – especially in its more enlightened Europeanized forms! – exemplifies (Minot 1884). This curious relationship between death and individuality in Darwin's version of biological evolution moved in two opposing directions in the twentieth century. On the one hand, it gave impetus to such concepts as 'group selection' and 'superorganism', the downstream effects of which have been an emphasis on both 'symbiosis' and 'sociobiology', with Lynn Margulis and E.O. Wilson turning out to be unlikely bedfellows (Glorfeld 2018). On the other, it resulted in the sort of preoccupations already found in Shaw's *Back to Methuselah* and more recently travelling under Julian Huxley's 'transhumanism'. They involve an explicit identification of the maintenance of individuality and the conquest of death.

Of course, within sociology Durkheim had postulated *anomie* as a likely outcome in a secular world whose competing normative vectors effectively pulls apart personal identity. Durkheim

himself treated the attendant rise in suicide rates among people so dislodged from the role-expectations of their ancestors as a 'social problem'. Increased individuality was an invitation to self-destruction. In contrast, Weber hardly wrote about suicide and was more open-minded about the sociological significance of individuality. He was no doubt moved both by the spiritual core of capitalism, notwithstanding its increased sensualisation, and by the rise of customized social relations (aka *Gesellschaft*, or 'contract culture'). This perhaps reflected his desire to see how 'functionalism' as an empirical hypothesis played out in practice in human societies. Nevertheless, in the end Weber concluded that the sort of species vitality that Weismann attributed to humanity was illusory, as *Homo sapiens* appeared destined to go down the same path as the insects, at least if his 'iron cage' remarks are taken at face value. Here it is worth recalling that Weber introduced the phrase as an ironic gloss on the Puritan advice that external goods should be worn as a light cloak, which over time and under secularisation has solidified around the individual to contain their spiritual freedom (Weber 2001: 123). Capitalism effectively converts humanity into a superorganism, albeit a highly dynamic and variegated one. From that standpoint, socialism marks capitalism's evolutionary senescence, a point intuitively picked up and distinctive developed in Schumpeter (1942).

But generally speaking, and probably more categorically than the first English translator of *The Protestant Ethic and the Spirit of Capitalism*, Talcott Parsons, Weber rejected any scientific philosophy that aspired to perform the functions of religion. In this respect, Weber was quite close to Freud's 'scientific' understanding of the human condition, which was basically a direct application of Helmholtz's 'heat death of the universe' (i.e., total disorder) as an implication of the second law of thermodynamics, if we assume the universe's finitude. (Ludwig Boltzmann, who provided the statistical formulation of thermodynamics, had shown that the universe would need to be infinite to make it reasonable to believe that entropy could be reversed 'eventually', given that the deck is stacked against the persistence of order over time.) As a metaphysical project, psychoanalysis basically aims to get people to cope with the finality of their finitude against the twin existential temptations of, on the one hand, always living in the moment (*Eros*) and, on the other, accelerating toward the inevitable (*Thanatos*). For his part, Weber dealt with the matter primarily at the level of methodology. Most explicitly, he refused to let the second law of thermodynamics operate as a constraint on theorizing in economics – and by implication, sociology (Weber 2012: 247). In this respect, he matched the finitude postulated by the entropy principle with a meta-principle of its finite epistemic reach.

Nevertheless, at the more substantive level, Weber wanted to render the concept of 'meaning' fit for the sort of disenchanted social science that accepts human finitude. He was operating against a range of thinkers from the original 'scientific theologian', Friedrich Schleiermacher, to the most scientifically sophisticated humanist philosopher of his day, Wilhelm Dilthey. They all held that the apprehension of 'meaning' (aka 'empathy' or 'sympathy') involved access to a physically irreducible realm (aka *Geist*) that required a radically different scientific sensibility. Weber's strategy here was to restrict the metaphysical

scope of 'meaning' to an object of subjective awareness rather than some Plato-like participation in an ideal entity that could be shared across agents widely disparate in space and time. Here it is worth recalling that Schleiermacher's original appeal to 'empathy' in the hermeneutical sciences had been based on the idea that God endows each individual with a soul that enables, so to speak, a kind of 'transcendental communication' across souls. Dilthey simply secularised this premise for a Darwinian age by referring to the common lifeworld challenges faced by all humans by virtue of being members of the same biological species, something that could not be accessed in the emerging psychology laboratories. To be sure, what came to be known as 'philosophical anthropology' in the early twentieth century largely followed Dilthey's example, which included a founder of the sociology of knowledge, Max Scheler.

Evidence that Weber's 'disenchanted' scientific world-view was tied to his Freud-like acceptance of Helmholtz's pessimistic physicalism may be found in his visceral aversion to Wilhelm Ostwald's 'energeticism' as a foundation for sociology (Stewart 2014), notwithstanding their similar interest in efficiency as a defining modern value, especially in the workplace. However, Ostwald's ultimate aim was the defeat of entropy, which led him to reinterpret the second law of thermodynamics as an incentive to greater achievement while using less energy, presenting it as an indefinitely extendable principle of human progress. This is precisely what Weber doubted, especially as a regulative principle for the conduct of the social sciences. He did not share Ostwald's dream that a properly organized ('unified') science would enable humanity to transcend its earthly infirmities, *à la* Comte's original vision of 'sociology' (Fuller 2016). Thus, Weber probably would have not supported Ostwald's interwar pioneering efforts in library and information science, which including promoting the use of abstracts and even a universal language of science ('Ido') as part of defeating entropy in knowledge transmission. It was in this spirit that Ostwald found Wittgenstein's *Tractatus* congenial to his monograph series, given its definition of logic as the ultimate 'truth-preserving' form of inference. In contrast, Weber held a more Darwinian picture of knowledge transmission, in which one scientist or text succeeds another in the spirit of ecological niche replacement, until the selection environment changes to such an extent that the entire scientific lineage becomes extinct – say, after a Kuhn-style 'paradigm shift', after which an entire domain of reality may drop out of sight, along with the scientists who had claimed to know something about it. Arguably this Weberian fate befell Ostwald himself, since he stuck with energy as the ultimate physical principle even after Einstein had confirmed the existence of atoms.

Weber's counter-move to all this 'scientism', as we now tend to characterise the moves of Huxley, Haeckel, Weismann and Ostwald, was to operate with a highly restricted conception of 'meaning', relatively rigorous access to which can be acquired through a specifically disciplined form of *Verstehen* that Karl Popper later popularised as the 'logic of the situation'. The pivotal figure here was Helmholtz's leading disciple, Johannes von Kries, who glossed an agent's subjective horizon in terms of *Spielraum*, or 'room to manoeuvre'. Von Kries was

interested in applying the recent thermodynamically driven statistical turn in physics to the law. The term *Spielraum* itself comes from modern military strategy, where it refers to a commander's sphere of freedom in a tight battle situation. Von Kries' own elaboration of the concept was inspired by the difference between the uncertainty in the initial conditions under which a single physical event happens (e.g., an actual coin toss) and the certainty of the laws (including the laws of chance) by which the event happens, once it happens (Neumann 2006). Von Kries understood this difference in counterfactual terms: the former is underdetermined, the latter overdetermined (cf. Fuller 2015: chap. 6). The question for legal judgement – which Weber then adapted for sociological inference – was how to circumscribe the underdetermined part in order to decide the extent to which a defendant could have acted otherwise to prevent the outcome for which s/he is on trial (Heidelberger 2013).

When compared with the expansive, even free-floating conception of 'meaning' in, say, Schleiermacher or Dilthey, what is striking about Weber's formulation is its effective rendering of the agent as what I have elsewhere called a 'transcendental dope', that is, someone capable of seeing themselves only as a player in the first-order drama on the ground (e.g., a battle or a trial) but not in the second-order drama of world-history (Fuller 2015: 259). For Schleiermacher and Dilthey, this second-order drama constituted the realm of *Geist*, which Richard Rorty brought down to earth in the late twentieth century as the 'conversation of mankind'. Moreover, Karl Marx's own form of sociological 'disenchantment' via 'historical materialism' was arguably a 're-enchantment' that preserved the second-order drama, only now with messianic religion replaced by the revolutionary party, in terms of which self-identified members of the working class can mutually identify across time and space, thereby enacting a 'class consciousness' capable of propelling collective action. This is what came to be known as 'consciousness raising' in the 1960s, which was used as a political template for various civil rights groups.

Nevertheless, Weber's exclusively first-order notion of subjectivity has had enormous influence on the complexion of sociology as a discipline, albeit one that has been often masked by largely useless 'qualitative' vs 'quantitative' methods debates that rumble on to this day. For example, both ethnomethodology and rational choice theory share Weber's restricted subjective horizon, in which the 'meaningful' is defined in terms of the agent's immediate field of play. In both cases, religion -- the historic source of second-order self-understandings and central to the agents that interested not only Schleiermacher and Dilthey but also Marx -- is relegated to the margins as 'resources' and 'rationalizations', whose value is determined in relation to the 'on the ground' concerns that constitute the terms on which agents decide to act as they do. (One hears echoes here of 'grounded theory' as a sociological methodology – in many respects, the exact opposite of 'consciousness raising' of the same vintage.) Here we see perhaps most clearly Weber's relegation of the spirit as a theoretically less brutal, yet non-therapeutic, version of the Freudian posture.

Weber's epistemic austerity caught the eye of Alfred Schutz, who shared Weber's hybrid law-economics background via his teacher Ludwig von Mises, who castigated Weber for his

seeming abandonment of the liberal principle that 'anything that is not prohibited is allowed'. In Mises' mind, which underwrites the 'neo-liberal imaginary', law and economics are complementary disciplines: The former is about the determined and the latter about the free. From that standpoint, in the name of 'sociology', Weber seemed to want to blur the distinction, which Mises (1978) diagnosed in terms of both the intellectual inheritance of German historicism and Weber's own misguided fascination with emerging conceptions of probability. For Mises, what are conventionally called 'laws' in economics are akin neither to physical laws nor even acts of legislation; rather, they are abstractions from the aggregate experiences of spontaneous agents. To say that 'prices are set by the law of supply and demand' is simply shorthand for the sum of market transactions. The role of the state here is as the bearer of 'law': that is, to provide the outer bounds of freedom, within which further determinations are made by individual transactions (aka 'contracts'). Schutz shared much of Mises' critique but was more interested in the abstraction process by which Weber derived his 'ideal types' (Schutz 1976: chap. 5).

My own view is that both Mises and Schutz short changed Weber on what he was trying to do with probabilistic thinking. He basically wanted to render its varieties tractable to the sort of non-mathematical 'qualitative' reasoning that would be more familiar to humanists – and would indeed turn out to predominate within sociology as a discipline to this day. A good way to see this is in terms of Weber's famous tripartite account of *Verstehen*, each of which corresponds to a mode of probabilistic thinking:

> In all these cases understanding (*Verstehen*) involves the interpretive grasp of the meaning present in one of the following contexts: (a) as in the historical approach, the actually intended meaning for concrete individual action; or (b) as in cases of sociological mass phenomena, the average of, or an approximation to, the actually intended meaning; or (c) the meaning appropriate to a scientifically formulated pure type (an ideal type) of a common phenomenon (Weber 1978: 9).

The three aforementioned contexts correspond to the following contexts in probabilistic thinking: (a) Von Kries, who highlighted the options available to the agent under known constraints; (b) Adolphe Quetelet's *homme moyen*, the basis for Durkheim's distinction between 'normal' and 'deviant' behaviour, but which here is invoked as a frame of reference for understanding a particular action against a larger mass of actions; (c) Boltzmann, who can be used to understand how people behave in terms 'normally' expected of them, which involves loosening the standards that Mises used to judge Weber.

Notwithstanding Schutz's scepticism about Weber's grasp of probability, the hand of Weber's rigorous re-specification of 'meaning' is present in Schutz's (1946) image of society's 'distribution of knowledge' that would license multiple, overlapping expertises in a world where the individual's sphere of meaningfulness – or 'relevance', in Schutz's jargon -- was increasingly challenged and perhaps even confused by the advent of radio and television. In effect, the epistemological problem of mass democracy – that is, of being a 'well-informed citizen' – arises from the systematic misinterpretation of personal experience. Schutz's

Weber-inspired intuition was that the broadcast media were indeed the 'technological extensions of the senses', as Marshall McLuhan would later say. But whereas McLuhan largely valorised them, for Schutz they created a false sense of immediacy that encouraged people to manufacture second-order dramas of endless duration on top of the first-order dramas of their quite finite lives. A couple of benchmarks for this post-theological resurgence of the second-order that raised Schutz's Weberian concerns were Edward Bernays' (1928) re-appropriation of the Counter-Reformation coinage of 'propaganda' to characterise the business of public relations and Carl Schmitt's (1932) explicit identification of the modern 'totalitarian' sense of the political with the new media.

In this respect, Schutz might be read as recommending sociology primarily as a *method* for domesticating the technological passions of mass democracy, an extended application of Weber's disenchanted view of meaning for the very conduct of modern life. This vision of Weber as an alternative exemplar of a 'scientific ethic' to that of the scientific monists was popularised by Karl Jaspers shortly after Weber's death (Ringer 1969: 355-6). It is usefully understood as a counterpoint to the 'moral education' vision from which Durkheim's version of sociology emerged – namely, to provide a republican substitute for religion: in short, Comte's original vision suitably downsized yet enhanced by the latest scientific thinking. The clearest legacy of that approach is the twentieth century focus of sociology textbooks on the nation-state as the primary object of interest, something that Anthony Giddens tried to correct in the 1980s via 'globalization'.

The Anglophone understanding of Weber's significance has been clouded by the intervention of Talcott Parsons, whose own Durkheimian sensibilities were grafted on what became influential translations and interpretations of Weber. The closest that Parsons' own vision came to be realized was just after the Second World War at Harvard's cybernetically themed 'Social Relations' Department (Heims 1993). In this context, we should think of an emerging set of 'artificial sciences', in which, for only this period, psychoanalysts and engineers joined forces in identifying 'coping mechanisms' with 'feedback loops'. It is doubtful that Weber would have had anything to do with that. Weber was basically trying to design a social science fit for genuine liberals – a project that was subsequently championed by Karl Popper and Jon Elster. However, Weber was sufficiently bound by natural scientific modes of thinking – especially the forms of statistical reasoning associated with thermodynamics – to remain pessimistic about humanity's capacity for genuine freedom.

Steve Fuller is the Auguste Comte Chair in Social Epistemology,
Department of Sociology, at the University of Warwick

References

Bernays, E. 1928. *Propaganda*. New York: Horace Liveright.

Dawkins, R. 1976. *The Selfish Gene*. Oxford: Oxford University Press.

Fuller, S. 2015. *Knowledge: The Philosophical Quest in History.* London: Routledge.

Fuller, S. 2016. 'Organizing the organism: a re-casting of the bio-social interface for our times'. *Sociological Review Monographs* (Special issue on 'Biosocial Matters') 64.1: 134–150.

Fuller, S. 2020. 'Our love-hate relationship with humanity'. Review of D. Chernilo, *Debating Humanity*. *Distinktion* 21.1: 67-73.

Glorfeld, J. 2018. 'Lynn Margulis, Contrarian to the End.' *Cosmos* (22 November). https://cosmosmagazine.com/biology/science-history-lynn-margulis-contrarian-to-the-end/

Heidelberger, M. 2010. 'From Mill via Von Kries to Weber: Causality, Explanation and Understanding'. In U. Feest, ed., *Historical Perspectives on Erklären and Verstehen* (Pp. 241-65) Berlin: Springer.

Heims, S.J. 1993. *Constructing a Social Science for Postwar America*. Cambridge MA: MIT Press.

Hirst, P. 1975. *Durkheim, Bernard and Epistemology*. London: Routledge & Kegan Paul

Mayr, E. 1959. 'Typological versus population thinking'. In *Evolution and anthropology: A centennial appraisal*, ed. B. J. Meggers, 409–12. Washington, DC: Anthropological Society of Washington.

Meloni, M. 2016. 'The Transcendence of the Social: Durkheim, Weismann and the Purification of Sociology'. *Frontiers in Sociology* 1:11

Minot, C.S. 1884. 'Death and Individuality'. *Science* 4 (90): 398-400.

Mises, L.v. 1978. *Epistemological Problems of Economics*. (Orig. 1933). New York: New York University Press.

Nelson, R. 2001. 'Frank Knight and Original Sin'. *The Independent Review* 6.1: 5-25.

Neumann, M. 2006. A formal bridge between epistemic cultures: Objective possibility in the time of the second empire'. In B. Löwe et al. (eds.), *Foundations of the Formal Sciences: The History of the Concept of the Formal Sciences* (Pp. 169-82). London: Kings College Publications.

Ringer, F. 1969. *The Decline of the German Mandarins*. Cambridge MA: Harvard University Press.

Schmitt, C. 1932. *The Concept of the Political.* New Brunswick NJ: Rutgers University Press.

Schumpeter, J. 1942. *Capitalism, Socialism and Democracy*. New York: Harper & Row.

Schutz, A. 1946. 'The Well-Informed Citizen: An Essay on the Social Distribution of Knowledge'. *Social Research* 13: 463– 78.

Schutz, A. 1976. *The Phenomenology of the Social World*. Evanston IL: Northwestern University Press.

Stewart, J. 2014. 'Sociology, Culture and Energy: The Case of Wilhelm Ostwald's 'Sociological Energetics' – A Translation and Exposition of a Classic Text'. *Cultural Sociology* 8: 333-350.

Tran The, J.; Magistretti, P.; Ansermit, F. 2016. 'The Epistemological Foundations of Freud's Energetics Model'. *Frontiers in Psychology* 9: 1861.

Weber, M. 1978. *Economy and Society.* G. Roth and C. Wittich (eds.). Berkeley: University of California Press.

Weber, M. 2001. *The Protestant Ethic and the Spirit of Capitalism*. (Orig. 1930). T. Parsons (trans.). London: Routledge.

Weber, M. 2012. *Collected Methodological Writings*. H.H. Bruun and S. Whimster, eds, trans H. H. Bruun. London: Routledge

Weir, T., ed. 2012. *Monism: Science, Philosophy, Religion and the History of a World-View*. London: Palgrave.