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## **Introduction**

### **Contesting the Authority of Science**

*Dick Houtman, Stef Aupers and Rudi Laermans*

An institution under attack must reexamine its foundations, restate its objectives, seek out its rationale. Crisis invites self-appraisal (Merton, 1973a [1942]: 267)

#### **1. Marching for Science**

On April 22, 2017, tens of thousands of people, scientists and concerned citizens alike, marched for science. In the pouring rain, media personality and science popularizer Bill Nye (‘the Science Guy’) addressed the crowd in Washington, DC: “We are marching today to remind people everywhere, our lawmakers especially, of the significance of science for our health and prosperity.” In the shadow of the National Monument, close to the White House, he warned against political elites “deliberately ignoring and actively suppressing science.” A participant interviewed by CNN pointed out the sea change in just half a century: “John F. Kennedy promised this nation that by the end of the sixties we’d land on the moon. Now almost fifty years later we have an American president disparaging the facts, denigrating science. And we are here to tell him that science matters.”

The first March for Science in 2017 not only mobilized substantial protest in a wide range of American and Canadian cities, but also in Australia (e.g., Canberra, Melbourne, Sydney) and all over Europe (e.g., Berlin, Stockholm, London, Brussels, Amsterdam, Budapest, Warsaw, Belgrade, Bucharest). The protests did not remain confined to the West either, as testified by marches in Asia (e.g., Ho Chi Minh City, Taipei, Hong Kong, Hyderabad, Dhaka, Seoul, Quezon), Africa (e.g., Accra, Abuja,

Kampala), South America (e.g., Rio de Janeiro, Bogotá, Santiago, Buenos Aires), and even Antarctica. Doubtlessly encouraged by the circumstance that the primary initiative was American and that the event took place on April 22, Earth Day, many participants all over the world marched in opposition to Donald Trump, who no longer prioritizes funds for scientific research ('Make America smart again'; 'Trust scientific facts, not alternative facts'; 'You can't grab science by the pussy!'; 'Next NASA mission: launch Trump to Uranus'), relies on notions like 'alternative facts', and considers climate change a hoax by the Chinese government ('Mother nature trumps alternative facts'; 'Ice has no agenda, it just melts'; 'We've lost our patience: the oceans are rising and so are we'; 'Climate change is real'; 'There is no planet B').

Disgust of Trumpean anti-intellectualism and concerns about climate change nonetheless merely epitomize the more general issue at stake, as revealed by many other banners and placards that insist that politics should take science seriously because of its promise of overcoming problems threatening humanity: 'Got polio? Me neither. Thanks, science!'; 'Science saves lives'; 'Science is magic that works'; 'Science: It works, bitches'; 'Society should worry when geeks have to demonstrate'; 'Physics makes the world go round.' Even granting the occasional placard voicing support for the humanities ('Humanities: Enlightening the world since the 4<sup>th</sup> century'), it is striking to note the preoccupation with natural science, its technological accomplishments and its further promises.

Indeed, the protests took place against the background of concerns within the 'harder' fields of science about a postmodernist 'anything-goes mentality' in the humanities and social sciences. Those concerned regard postmodernism a threat to neutral, empirically grounded knowledge, leading science to fall prey to unworldly leftist cultural identity politics, especially in the humanities and social sciences (e.g., Gross and Levitt, 1997). Responses to today's contestations of the authority of science are as such strongly framed in the moral terms of good and evil: trusting science and its truth claims is consistently construed as good, while its counterpart is routinely condemned as morally wrong and socially detrimental. This moralizing tendency is underscored by tendencies to push the issue at stake into the political binaries of 'right' versus 'left', 'authoritarian' versus 'democratic', i.e., by linking contestations of the authority of science closely to American president Donald Trump.

This book seeks to bypass moral issues of good and evil by approaching the issue from a cultural-sociological perspective. Our aim is hence neither to morally condemn nor to praise the headwind faced by contemporary science, but rather to dig into the explanatory mechanisms that account for the current situation. We do so not only because self-justifying political responses easily backfire, but also because such

indignant responses conceal many an inconvenient fact. Indeed, cultural and intellectual history provide abundant evidence that contestations of the authority of science are not necessarily authoritarian and politically rightist. Earlier left-libertarian critics have also massively contested the authority of science, pointing out how the latter's mindless acceptance poses a threat to liberty and democracy.

In this introductory chapter we trace the latter argument in both intellectual discourse and cultural history to argue that contestations of the authority of science entail a rejection of scientism. This is an understanding of science as a sort of secular religion that conceives of science as 'superior' to alternative ways of relating to the world, because the 'facts' it produces do 'neutrally' and 'objectively' represent 'the world as it really is'. Highlighting the oft-neglected similarities between religion and scientism, we then introduce three theories from sociology of religion and explain why they offer fruitful points of departure for understanding contestations of the authority of science. This is why these theories inform the empirical contributions in the remainder of this book.

## **2. Scientism: Science as Secular Religion**

### *2.1. Modern Science and Its Critics*

Modern science emerged in the period from the fifteenth through the seventeenth centuries, coinciding with major scientific breakthroughs associated with the work of natural scientists like Copernicus, Kepler, Galileo, and Newton (Dijksterhuis, 1961). It understood scientific truth as resulting from the combination of logical reasoning and systematic empirical observation. This point of view was popularized in the eighteenth century by Enlightenment thinkers like Voltaire, Condorcet, Hume, and Montesquieu. They paved the way for nineteenth-century pioneers of social science like Comte, Marx, Spencer, and Freud, who connected the quest for scientific knowledge about the foundations of human society with reformist political agendas. In that era the modern scientific worldview was in effect transformed into a major cultural and political force as part of "a struggle by new social and cultural elites to undermine aspects of the religious culture that underpinned the institutions of the church, monarchy, and the ruling aristocratic elite" (Seidman, 1994: 10).

Central to eighteenth- and nineteenth-century Enlightenment thought was indeed a systematic critique of religion, tradition, and belief as sources of ignorance and tutelage, with science and its direct practical application, technology, conceived as their superior successors that would effectively bring material and cultural progress (Seidman, 1994: 20-26). In this Enlightenment understanding, scientific knowledge differs drastically

from other types of knowledge and meaning in that it does not stem from the human imagination, but from the careful and systematic study of the world itself. This notion became one of the mainstays of the modern self-image, which embraced science, rationality and technology as superior modes of relating to the world that would in time increasingly marginalize tradition, religion and belief.

This modern self-understanding came to be viewed with skepticism from the end of the eighteenth century onwards – not only inspired by a Christian worldview, as Enlightenment critiques of religion would lead one to expect, but equally so by Romanticism. Against the imperatives of science and reason, Rousseau, Coleridge and many others defended the significance of feelings, experiences and emotions, while applauding the human capacity of imagining non-existing worlds against the mere systematic empirical study of existing ones. These Romantic critiques differ sharply from Christian ones in that they reject what Enlightenment science and the Abrahamic revelation religions (Judaism, Christianity, and Islam) do despite everything have in common, i.e., “belief in the existence of a unique truth, instead of an endless plurality of meaning-systems” (Gellner, 1992: 84). Romanticism as such dismisses an understanding of truth as rooted in either divine revelation, which would make it a matter of religious belief, or in logical reasoning and empirical observation, which would make it a matter of scientific reason. Rejecting the authorities of science and religion alike, it rather underscores the liberty and capacity of human beings to indulge in utopian fantasies about imaginary worlds and to experience reality in a strictly personal fashion.

## *2.2. Max Weber about Science and Its ‘Objectivity’*

In this climate of clashes between Romanticism and the scientific worldview, Max Weber crafted his *Wissenschaftslehre*. Later sociologists have tended to tame and domesticate the latter by foregrounding the normative doctrine of ‘value freedom’ or ‘value neutrality’ (‘science can only tell how the world is, so researchers ought to refrain from making claims about how it ought to be’). This one-sided reception obscures how this doctrine is intimately bound up with a more fundamental account of science and its ‘objectivity’ that challenges scientist understandings of science. For just like the world religions and their theological doctrines, Weber brings forth, science and its truth claims are irretrievably culturally embedded, so that the notion of science as religion’s superior successor is flawed.

Weber firstly acknowledges that “the belief in the value of scientific truth is the product of certain cultures and is not a product of man’s original nature” (2014 [1904]: 137), so that by implication scientific truth is not that which is universally valid and as such binding to everyone, but

rather “that which *claims* validity for all who *seek* truth” (ibid.: 121, emphases in original). The quest for scientific truth is hence just one particular way of relating to the world and there is no logical way in which it can be made superior to for instance religion, morality, or aesthetics. Critiquing scientist understandings of science as religion’s superior successor, Weber distinguishes sharply between scientific reason on the one hand and values and morality on the other, confining the former to matters of fact and logic, i.e., to debates about how the world actually is. This leaves religious and political worldviews as the only available resource to endow the world with meaning – to answer human questions of meaning and purpose, to tell what is good from what is bad, what needs to be done and what needs to be abstained from.

Rather than asserting the superiority of science, Weber thus aims to “adjudicate the tensions between two vital Western traditions: between reason and faith, between knowledge and feeling, between classicism and romanticism, between the head and the heart” (Gouldner, 1962: 212-3), “attempting to guard the autonomy of both spheres” (ibid.: 211). He acknowledges their incompatibility without ordering them in terms of superiority and inferiority (see also Koshul, 2005) and in doing so he robs science of its status of be-all and end-all, as in Comtean-style scientism. The result is an account that is more critical of exaggerated claims about the authority and superiority of science than it is about the value and significance of religion. Indeed, as Gouldner observes (1962: 211, see also 1973), “(Weber’s) main campaign here is waged against science and reason and is aimed at confining their influence. To Weber, even reason must submit when conscience declares, Here I stand; I can do no other.”

In tandem with this relativist account of the status of science Weber addresses the role of culture and values in the conduct of scientific research. The principal point here is not that values need to be ousted from science, but rather the opposite: that scientific research inevitably addresses ‘issues that matter’ and that ‘what matters’ is inevitably informed by values and as such a normative moral issue. In this Weberian understanding scientific research cannot and should not collect ‘the’ facts. It cannot do so, because ‘the’ facts do not exist: due to the endless complexity of reality ‘the’ facts always and inevitably entail an intellectually arbitrary selection from a much broader set of potential facts. It should not do so, because “Any knowledge of infinite reality acquired by the finite human mind is (...) based on the tacit assumption that, in any given instance, only a finite *part* of [that reality] should be the object of scientific comprehension – should be ‘important’ (in the sense of ‘worth knowing about’)” (Weber, 2012: 114). This is what Weber calls the ‘value relatedness’ (*Wertbeziehung*) of scientific research.

In Weber's hands the conduct of scientific research thus comes to resemble value-informed social action by non-scientists, even though after having normatively defined what is 'worth knowing' methodological craftsmanship and conformity to standards of intellectual integrity take over. This role of values in directing empirical research implies that research findings are always partial and one-sided. Even though the researcher herself surely finds the registered facts 'meaningful' and 'relevant', they are logically speaking only so for those who share her value priorities. For all others they are less culturally significant than a series of potential alternative facts that the researcher has decided to bypass. This means that accusations of research being 'one-sided' are intellectually meaningless, because research is always and inevitably one-sided: "The belief that scientific work, as it progresses, should assume the task of overcoming (...) 'one-sidedness' (...) is flawed" (2014 [1904]: 111). Reproaches pertaining to 'one-sidedness' merely assert a critic's own value priorities ('What about race / class / gender?'; 'Surely, you need to address the relationship with power, too'). These are normative issues of moral or political taste that cannot be justified on intellectual grounds.

A simple example suffices to demonstrate that normative standpoints cannot be defended by invoking 'the' facts. It is for instance not too difficult to demonstrate in a methodologically sound fashion that condom use protects against HIV/AIDS, but it is quite another to invoke this 'fact' to defend the claim that condom use and unprotected sex need to be encouraged, respectively discouraged. For the study's value-informed definition of sex as a health risk is clearly one-sided. An equally one-sided study that instead construes sex as a source of pleasure will arguably produce a different 'fact', i.e., that both men and women find sex without condoms more enjoyable than protected sex. While the former study manoeuvres reasons to abstain from condom use out of sight, the latter does the same with reasons to protect oneself. Clearly, then, none of these studies can be used to defend 'policy implications' on strictly logical and empirical grounds. This is all the more so, because there are of course many additional reasons for using contraceptives or not. Men may for instance define condom use as 'un-manly' and deny women's right to go against men's wishes and desires, perhaps especially in non-western settings.

In Weber's understanding, in short, it is inevitable that data are collected and facts arrived at on the basis of intellectually arbitrary values, so that facts do not have logically compelling implications for policies. So while science can surely produce facts, the latter can only inform policies after they have been interpreted as either 'good' or 'bad'; a 'pleasure' or a 'nuisance'; a 'healthy' condition or an 'unhealthy' one; a 'social problem' to be wiped out or a 'blessing' to be cherished. This is the underlying

rationale of Weber's normative doctrine of value neutrality: empirically established facts have no 'intrinsic' meaning, so there is no such thing as a 'neutral', 'scientific' or 'logical' path from facts to moral evaluations and policy measures.

Critics of scientism have time and again invoked similar arguments since Weber's days, albeit more often than not without observing the marked continuity with the Weberian account of science. Science, these critics have observed like Weber before them, is not logically superior to alternative ways of relating to the world and research does not simply represent the world as it 'really' is, i.e., in a strictly 'neutral', 'objective' and culturally unmediated fashion.

### *2.3. The Counter Culture of the 1960s and the Postmodern Turn*

Indeed, these notions were among the mainstays of the so-called 'counter culture' of the 1960s and 1970s, which critiqued not only religion and tradition, but also reason and science for standing in the way of personal liberty and dreams of a better world. Budding young academics and students with middle-class backgrounds and leftist-liberal political profiles back then accused science of being basically conservative politics in disguise. They critiqued science as the handmaiden of 'technocracy' or 'the system', both understood as forcing people into slave-like existences as futile cogs in the rationalized modern machine (see Marwick, 1998; Roszak, 1969; Musgrove, 1974; Zijderfeld, 1970).

The young critics found much of their intellectual ammunition in the works of the philosophers and sociologists of the Frankfurt School. Adding sizable doses of Weber and Freud to Marxism, and no longer seeing the cultural sphere or superstructure as a pure reflection of class power or the economic infrastructure, authors like Fromm (1941), Horkheimer and Adorno (2002 [1944]) and Marcuse (1964) exchanged faith in an inevitable socialist revolution for the necessity of liberation from ideological indoctrination. This entailed a profound transformation of the old-school Marxism that claimed an objective scientific status for itself. Whereas the latter type of 'scientific Marxism' charged its bourgeois critics with betraying ideals of objectivity and impartiality and with legitimizing the existing order and reigning interests, the Frankfurters rejected "the cult of objective fact as such, and not merely its alleged misapplications" (Gellner, 1992: 33).

Thus, in *Dialectic of Enlightenment* (2002 [1944]), indeed a telling title, Horkheimer and Adorno argue that reason had changed from an emancipatory force into an oppressive one because it had gradually been reduced to pure instrumentality and calculability. This had gone hand in hand with the scientific reduction of 'the world' to a mere ensemble of facts, studied by a positivism that equates reality with 'that what is' and

that thus excludes the dimension of possibility or ‘that what could be’. Marcuse (1964) unfolds a similar argument in *One-Dimensional Man*, which also critiqued the limitation of science, reason and truth to ‘that what is’, in effect negating the importance of a thinking that dares to speculate and open up new, emancipatory vistas. With this emphasis on the necessity of conceiving attainable utopias that counter the weight of seemingly neutral descriptions of existing reality, the Frankfurters targeted empirical science’s ‘fact fetishism’ and gave a social twist to Romanticism’s belief in the blessings of the faculty of imagination.

In line with the foregoing the Frankfurters underscored that people in the West do not at all live free and happy lives in tolerant and democratic societies, but are merely made to believe they do. Hence Marcuse’s (1964) argument that consciousness-raising and freeing one’s mind are both the conditions and the goals of genuine political action. Horkheimer and Adorno (2002 [1944]) similarly critiqued the ‘culture industries’ for keeping people in a shiftless, complacent and uncritical state of half sleep so as to veil the harsh realities of the real world and to seduce them into mistaking their alienation for a state of satisfaction and happiness. These are indeed Romantic notions that differ profoundly from old-school Marxism (Campbell, 2007: 294-5; Josephson-Storm, 2017: 209-39), even though other Frankfurters had doubts about whether such a ‘mind-switch’ was effectively possible within the confines of existing society. Yet, these ideas sounded like music in the young protesters’ ears, witness countercultural slogans like “Power to the imagination!” and “If the theory doesn’t fit the facts, then that’s too bad for the facts!” Slogans like this still sound familiar today, even though they now tend to come from the Trumpean right (Duncombe, 2007).

The period from the 1980s onwards has witnessed a cross-fertilization of the heritage of the Frankfurt School with newly emerged French post-structuralism (Derrida, Foucault, Lacan, Deleuze, Baudrillard, etcetera). This produced the so-called postmodern turn in the humanities and social sciences, meanwhile firmly institutionalized in the new transdisciplinary field of cultural studies (Inglis, 2007). This postmodernism rejects the epistemic privilege of science. It underscores that there is no way to decide on the validity of competing knowledge claims, because the latter are inextricably bound up with incommensurable cultural frames. Much like Weber did much earlier, then, postmodernism denies the possibility of a ‘neutral’ or ‘objective’ representation of reality and understands cultural pluralism as an inescapable condition that cannot be solved by science. The postmodern worldview entails “the dissipation of objectivity,” as Bauman (1992: 35) puts it: “The element most conspicuously absent is a reference to the supracommunal, ‘extraterritorial’ grounds of truth and meaning” (see also



Aronowitz, 1992: 258). Culture is here hence regarded as consisting of heterogeneous 'language games' (Lyotard, 1984) or incommensurable 'vocabularies' (Rorty, 1979, 1989) that compete and clash with each other, without the possibility of a fair and neutral settlement. "Once the veil of epistemic privilege is torn away (...), science appears as a social force enmeshed in particular cultural and power struggles. The claim to truth, as Foucault has proposed, is inextricably an act of power – a will to form humanity," as Seidman (1991: 134-5) summarizes the postmodern position.

Postmodernism moreover conceives itself as a 'philosophy of difference' that positively appreciates the postmodern condition of radical and irresolvable cultural pluralism. It defends the latter against totalizing claims informed by 'meta-narratives' that articulate science's presumed epistemological exceptionality in terms of societal progress (through technology) or individual emancipation (through Enlightenment) (Lyotard, 1984). This defense of cultural pluralism and difference informs the political engagements of 'the academic left', to borrow a phrase from its critics Gross and Levitt (1994), i.e., an engagement with the left-libertarian identity politics of social movements like the women's and gay and lesbian movements. Academic postmodernism has thus facilitated the emergence of an 'everyday postmodernism'.

Such everyday postmodernism nowadays even informs populist rightist-authoritarian identity politics. For despite, or rather precisely because of, its marked nationalism and dreams of cultural sameness, it also embraces radical notions of insurmountable cultural difference and rejects the authority of science and its truth claims. In doing so it much like its left-libertarian counterpart privileges non-existing imagined worlds and everyday experience over the rational scientific analysis of the sorry, alienating and miserable state of actually existing society (Canovan, 1999). Informed by everyday experience, it celebrates the practical knowledge and understandings of 'the common people' (Taggart, 2000: 95-98), as epitomized by figures like 'Joe the plumber' (USA) or 'Henk and Ingrid' (the Netherlands). 'What every person with just a modicum of common sense knows' is here deemed superior and more practically sound than the scientifically-informed understandings of the world held by intellectual and political elites.

What is nowadays critiqued and rejected as populist rightist-authoritarian 'post-truth politics' by those identifying with the political left, in short, has much in common with its left-libertarian counterpart, with the left-libertarian counter culture of the 1960s and 1970s, and with the Romantic movement from the late-eighteenth century onwards. Despite the political-cultural shift to the right, the basic complaint has remained much the same: that it is intellectually misguided and morally

wrong to conceive of science as a privileged source of knowledge, i.e., as superior to non-rational and non-scientific ways of understanding the world. The more this postmodern temper disseminates, both within the academy and beyond it in politics and everyday life, the more distinctions between knowledge and belief; between trained scientific experts and ordinary citizens; between empirically grounded accounts and wishful thinking; and ultimately between fact and fiction, become blurred and obscured. The booming market for psychological and spiritual self-help books, often of debatable scientific repute, exemplifies today's openness to and tolerance of 'alternative' ideas (e.g., Furedi, 2003). In the process, such alternative and deviant ideas become less and less likely to be taken down and discredited as 'unscientific', 'delusional', or 'irrational'.

#### *2.4. Sociology of Science and Sociology of Religion: Convergence*

Critiques of science as the be-all and end-all have since the 1970s transformed the sociology of science. It traditionally limited itself to the social conditions that facilitate or impede the conduct of modern science (e.g., Merton, 1973b), shying away from a sociological explanation of scientific practices themselves. Under the labels 'Sociology of Scientific Knowledge' (SSK) and 'Science and Technology Studies (STS)' it has since the 1970s opened up to precisely such practices, not least acceptance or rejection by scientists of truth claims as 'true' or 'untrue'. This entails a marked shift away from sociologically unsatisfactory distinctions between scientists and non-scientists, as if only the latter were influenced by social and cultural forces and hence in need of sociological analysis. The sociology of science has thus come to dismiss the notion that the production of scientific truth claims merely entails the following of impersonal and neutral methodological rules, without extra-scientific social and cultural influences playing any role in the process (Barnes, 1974; Bloor, 1976; Callon et al., 1986; Latour, 1987).

This new sociology of science has meanwhile done much to unmask scientist understandings of 'objective' and 'neutral' science as a modern myth. As especially Latour (1987) has influentially demonstrated, science has a Janus face. 'Science in action', as he calls it, features a good deal more than the mere deployment of methods and technical instruments to register 'the facts'. It entails precisely the sort of extra-scientific social dynamics that scientism denies and negates and that is indeed difficult to reconcile with its rhetoric of the strict objectivity and autonomy of science. While making or doing science, when 'hunting the facts', scientists are inspired by all sorts of hoped-for and aimed-for findings and applications, negotiate with funding patrons to secure further funding, toss around figures and concepts in brain storms, transgress methodological rules in order to quickly try out a wild idea, and so on. When presenting their

research findings, however, the very same scientists pretend to have merely registered the facts that their theories or models had predicted from the outset. Like other types of social action, then, 'science in action' entails a human and social activity that is firmly embedded in the broader societal environment.

Contemporary students in the sociology of science in effect no longer take the aggrandizing scientist portrait of science as producing allegedly 'absolute' or 'neutral' knowledge for granted. They have rather come to understand it as intimately connected to, and influenced by, all sorts of political and economic interests – a shift epitomized by the Foucauldian adage that 'knowledge is power'. The scientist notion that scientific knowledge can guide humanity in solving whatever kind of problem has in the process been exposed as a genuine ideology. For when it addresses opportunities for knowledge application, science bluntly oversteps the distinction between 'what is' and 'what ought to be', between scientific facts and moral values, notwithstanding its self-understanding as a neutral and objective, culturally unbound fact-finding practice. In the process scientific experts mediate between scientific knowledge on the one hand and values, interests, and other socio-cultural factors on the other. They do as such not only represent scientific knowledge, but calibrate the latter in function of various non-scientific parameters that define phenomena as problems in need of solution, informed by various stakeholders, varying from government agencies to social movements (e.g., Beck, 1992).

The scientist pretension of being able to objectively grasp the 'real' truth about reality – 'reality as it really is', so to say – exposes an oft-neglected similarity between scientism and religion, especially religion in the more orthodox strains of western-style Abrahamic revelation religions like Judaism, Christianity, and Islam. This is because scientism and this type of religion alike assume the existence of a culturally unmediated truth, unpolluted by human understandings and prejudices: 'real' truth about reality as it 'really' is, that is as such taken to be universally binding. Both therefore understand what people believe to be true as potentially misguided and standing in the way of such 'real' truth. In both cases this invokes an urge to authoritatively assess the validity of lay beliefs: their scientific legitimacy in the case of scientism (i.e., their '(ir)rationality', their truth or falsity according to scientific standards) and their sinfulness or moral rightness in the case of orthodox religion (i.e., whether or not they are in keeping with God-revealed truth). This does of course not mean that science and religion are identical, for they are obviously not – neither in terms of ontology (a supernatural reality is not the same as an empirically observable reality), nor in terms of epistemology (belief is not the same as reason). Nonetheless, despite these

differences, they both assume the existence of a 'real', culturally unmediated and hence universally binding truth: "(T)he (...) cognitive ethic of the Enlightenment (...) shares with monotheistic exclusive scriptural religion the belief in the existence of a unique truth, instead of an endless plurality of meaning-systems; but it repudiates the idea that this unique vision is related to a privileged Source, and could even be definitive. (...) Only a procedure, but no substantive ideas, is absolutized" (Gellner, 1992: 84).

In the new sociology of science and in sociology of religion alike this oft-neglected similarity between scientism and religion informs strategies of preventing researchers from 'going native' by accepting and reproducing emic understandings of truth and falsity. Sociology of science boasts the so-called principle of 'symmetry', according to which a sociology worth its salt needs to explain the embracement of successful ('true') knowledge claims by scientists and unsuccessful ('untrue') ones by non-scientists by means of the same interpretative vocabulary and explanatory principles (Barnes, 1974; Bloor, 1976), thus bracketing issues of ('real') truth. Because sociology of religion, like sociology of science and unlike theology, is not interested either in whether religious beliefs (e.g., about the existence or ontological qualities of God) are 'really' true or not, it adopts a similar strategy. All that sociologists of religion study is the 'human' side of religion, i.e., how people conceive of the sacred and how they give shape to their relationship with it. In doing so, sociology of religion embraces a 'methodological agnosticism', according to which metaphysical claims about the truth of religious doctrines need to be abstained from (e.g., Furseth and Repstad, 2006: 197-8; Wilson, 1982: 1-26).

Sociology of science's principle of symmetry and sociology of religion's methodological agnosticism do hence both bring forward that truth claims need to be studied without privileging some of them and discrediting others. Even if one doubts the intellectual merits of this strategy, it is important to realize that the only alternative comes down to accepting and reproducing 'native' or 'emic' understandings of truth, which can then only inform 'explanations' in terms of people's alleged misguidedness or thoughtfulness – or, more prosaically put: their 'stupidity' or 'smartness'. That sort of explanation is however more morally than empirically informed and does as such not help much in understanding why people so often hold deviant and unconventional beliefs in the first place. Yet, it is precisely such an understanding that sociologists of science and sociologists of religion – or, more generally, cultural sociologists – are after. Informed by sociology of religion and the new sociology of science, this book therefore also adopts this cautious and agnostic stance vis-à-vis the validity of truth claims: we do not study what is true, but what people *take to be* true.

The often overlooked similarities between religion and scientism, and between sociology of religion and sociology of science, point out that there are no good grounds either to theoretically disconnect the study of the authority of science from that of the authority of religion. Indeed, three sociological theories about religion can be fruitfully applied to the endorsement or rejection of the authority of science and its truth claims. First, there is the theory of *secularization*, according to which the emergence of a pluralist situation with competing worldviews erodes the authority of religion. Second, there is the theory of *religious purification*, according to which the same pluralist situation directs religious energies away from religion's institutional bulwarks and foregrounds spiritual experience. Thirdly, there is the theory about social groups' *selective religious affinities*, as immortalized by Max Weber's study *The Protestant Ethic and the Spirit of Capitalism* (2005 [1904/05]). We elaborate these theories in what follows and explain how each of them informs one of the three parts of the book.

### **3. Secularization and the Authority of Religion and Science**

#### *3.1. Secularization and Pluralism*

The secularization theory that became dominant in postwar sociology is not one single and unitary thing, but not a hopelessly unstructured mess either (Casanova, 1994; Dobbelaere, 1981, 2007; Tschannen, 1991; Wallis and Bruce, 1992). Its virtually uncontested backbone is a thesis of structural differentiation, according to which the modern constitution is defined by various institutional realms that follow their own particular cultural logics. Religion in effect no longer morally 'overarches' all of society as a sort of 'sacred canopy', as Peter Berger (1967) has famously put it. While medieval art was still basically religious art, and while religion and science were still inextricably intertwined during the Renaissance, for instance, institutional realms like art, science, politics, and the economy have meanwhile transformed into coexisting subsystems that each follow their own cultural logic (e.g., Wilson, 1982). According to this theory of secularization, religion has transformed into a realm in and off itself, representing one cultural logic besides others and like its competitors lacking any domain-transcending authority or privileged status. This situation entails a 'crisis of credibility' (Berger, 1967: 151) that erodes religion's former authority.

This influential account of the fate of religion under conditions of modernity raises the often overlooked question whether science, unlike religion, is capable of escaping the plausibility-corroding consequences of cultural pluralism. For much like religion, science of course also faces a

range of competing moral, political and aesthetic logics which are logically speaking inferior to neither religion, nor science, but merely radically different from both of them. The question is indeed whether science is not more vulnerable than religion to such a condition of pluralism. For precisely science's marked aversion to dogma and unassailable truth claims (Gellner, 1992: 84), i.e., its commitment to intellectual openness and tolerance of critique, debate and disagreement, impedes its opportunities to impose its superiority over competing cultural logics (Campbell, 2002 [1972]).

In explaining why cultural pluralization undermines the special status of religion as a privileged and overarching 'meta-logic', the secularization theory hence provides no compelling arguments why science, unlike religion, could escape a similar corrosion of its authority. This is precisely what is wrong with the argument that in the course of secularization authority of religion gives way to authority of science, an argument enshrined in theories of modernization and the modern self-image alike. Indeed, the blunt fact that nowadays science, much like religion before it, finds its authority under siege provides evidence to the contrary. In short, the theory of secularization as cultural pluralization suggests that the authority of science, much like that of religion before it, is incapable of escaping the authority-corroding consequences of cultural pluralism.

### *3.2. Part I of the Book: Pluralism and the Authority of Science*

The first part of this book, 'Pluralism and the Authority of Science', further addresses how pluralism erodes the authority of science. Dick Houtman (Chapter 2) studies how cultural pluralism has led to the dissolution of the notion of 'real' or 'objective' truth in sociology in the post-war period, focusing on the crisis of sociology that broke out in the 1960s. Whereas the Protestant Reformation robbed the world of 'objective' meaning in the sixteenth century, he maintains, sociologists have likewise come to reject the positivist notion that social life can have such a thing as a 'discoverable', 'objective' meaning. Disenchantment in the classical sense of Max Weber, then, has meanwhile transformed the intellectual realm as much as the religious one.

Stef Aupers (Chapter 3) then addresses how among non-academic audiences the media are involved in undermining the authority of science. Demonstrating that different types of media work out differently, the open, decentralized, and non-hierarchical structure of Web 2.0 is singled out for special attention. It incites people to formulate their own 'truths' and enables them to collect their own 'data' or to 'scientifically' defend them. Critical observers like Andrew Keen (2007: 44) remain in disgust and confusion: "Can a social worker in Des Moines really be considered

credible in arguing with a trained physicist over string theory? Can we trust a religious fundamentalist to know more about the origins of mankind than a PhD in evolutionary biology? Unfortunately, the Web 2.0 revolution helps to foster such absurdities.”

Rudi Laermans (Chapter 4) then addresses how science is losing its virtual monopoly in its traditional institutional stronghold, the university. For many a university today opens up to the arts, e.g., by introducing PhD programs in the arts and embracing practice-based research in the arts. He demonstrates how the various articulations of ‘artistic research’ hover between a more traditional science-informed view and a stance defending the particularity of artistic practices. While especially the latter are obviously contested, not least by those who stick to traditional conceptions of ‘science’ and ‘truth’, these notions are losing their former monopoly in academia.

Finally, Marleen Brans and Sonja Blum (Chapter 5) discuss the profound changes that have occurred in the realm of policy research, where the hierarchical relation between scientific experts and non-scientific stakeholders of the past has largely dissolved. The latter’s understandings are no longer downplayed as basically irrelevant, irrational, and in need of correction by expert knowledge, but have come to be taken very seriously.

#### **4. Religious Purification and the Authority of Religion and Science**

##### *4.1. Religious Purification*

Since the end of the twentieth century sociology of religion has witnessed the emergence of a theory about a profound transformation of religion since the 1960s. While it is indeed hardly contested that religion’s customary institutional, doctrinal and ritual aspects have lost much of their former traction (e.g., Davie, 1994), this theory holds that this process has coincided with a quest for religious purification that has resulted in a ‘spiritual turn’ (Heelas and Woodhead, 2005; Houtman and Mascini, 2002; Houtman and Aupers, 2007). The theory accounts for the increasing numbers of westerners who self-identify as ‘spiritual but not religious’, producing utterances like, “No, I am not religious; I want to follow my personal spiritual path” and “I do not believe in God, but I do believe that there is ‘something’.” Heelas and Woodhead (2005) have even suggested that a ‘spiritual revolution’ may be underway, consisting of a major transition from ‘religion’ to ‘spirituality’, and Campbell (2007: 41) even goes so far as to observe “a fundamental revolution in Western civilisation, one that can be compared in significance to the Renaissance, the Reformation, or the Enlightenment.”

This spiritual turn entails the dissemination of a specific type of religious discourse that does not want to be mistaken for the Christian religion of the past and that sets itself decidedly apart from religion's traditional organizational-institutional entrapments. Among those who define themselves as 'spiritual, but not religious' this spiritual discourse is commonly accepted, basically uncontested and understood as morally binding. It rejects and distrusts established religious traditions and institutions and in effect calls on those who subscribe to it to 'follow their personal path' by taking their own experiences, feelings and intuitions seriously. This shared discourse as such brings forth practices of personal bricolage, syncretism and spiritual seeking that Luckmann (1967) and many others in his wake have misconstrued as merely privatized (see for critiques: Aupers and Houtman, 2006; Besecke, 2005; Woodhead, 2010). In fact, this is a good example of religion in the classical Durkheimian cultural-sociological sense, because the spiritual discourse at stake clearly sets the sacred (the free and authentic person that one 'at deepest' is) apart from the profane (institutions and traditions that reduce one to a puppet on a string) (Alexander, 1988; Durkheim, 1995 [1912]).

Such a cultural-sociological approach highlights how the spiritual discourse construes the doctrinal and institutional idiosyncrasies of existing religious traditions as human-made and invented and as distracting from what religion is (or rather: should) 'really' be about: engaging in a personal contact with the sacred (Roeland et al., 2010). Articulating ideals of 'pure' religion and 'real' sacrality, the spiritual worldview thus posits that the sacred can neither be captured in human-made institutions nor reduced to religious doctrines, which leads it to dismiss religious institutions and doctrines as false, shoddy, mundane and ultimately profane. It does as such not unequivocally reject religious traditions, but rather understands them as placing too much emphasis on ritual conformity and institutional and doctrinal side issues. Religious traditions are in effect understood as 'basically', 'deep down' referring to the same spiritual source and hence as more flawed and misleading to the extent that they define themselves as different from, conflicting with, and superior to others. This notion that what religious traditions have in common is more important than what sets them apart is known as 'polymorphism' (Campbell, 1978: 149) or more typically 'perennialism' ('There are many paths, but there is just one truth').

The spiritual turn in religion, to sum up, is the outcome of a process of religious 'purification' that dismisses religious institutions and religious doctrines as side-issues. In this spiritual understanding, 'real' religion is about connecting to the divine, personally experiencing its presence, and as such going beyond its 'less-than-real', humanly constructed institutional and doctrinal side.



#### 4.2. Part II of the Book: Purification and the Authority of Science

Such purification processes do not remain confined to religion, as can for instance be seen in populist rejections of contemporary politics as lost in the institutional side issues of party-centered politics, while neglecting what ought to be central to democratic politics, i.e., the interests of ‘the people’ (e.g., Canovan, 1999; Houtman, Laermans and Simons, paper under revision). Within the realm of science, similar tendencies testify of a profound anti-institutionalism that plays off ideals of ‘pure science’ against debatable practices identified with science’s traditional institutional bulwarks, i.e., universities and research institutes. The latter are critiqued for obstructing scientific ideals of democratic and critical openness and for tending towards submissive ‘Big Science’, selling out to ‘Big Corporations’ and ‘Big Government’. Similar complaints about the ‘impurity’ of today’s science can also be heard from within the academy itself. Complaints tend to center around the ways in which competition between universities and neoliberal funding regimes straightjacket, trivialize, and commodify the results of scientific research.

The three contributions that make up Part II of this book explore these dynamics of scientific purification. Peter Achterberg and his colleagues (Chapter 6) analyze survey data to demonstrate that, unlike what is often believed, the lower educated embrace unbiased scientific research as the only feasible road to truth as much as the higher educated do. They are however much more skeptical about whether everyday scientific practices do actually live up to this ideal. Their distrust of science does hence not stem from a rejection of the scientific endeavor *per se*, but from their low levels of generalized social trust (‘anomie’).

Jaron Harambam and Stef Aupers (Chapter 7) present similar findings from an ethnographic study of conspiracy theorists, a group vociferously present among today’s critics of science. Branded as dangerous, irrational and deluded loonies by scientists, they do again not reject the scientific endeavor *per se*, but accuse modern science of being insufficiently scientific itself. In their eyes, science has increasingly lost its critical edge and has become dogmatic. The scientific endeavor, they argue, is consistently sacrificed to corporate and political interests, while scientists have allegedly become part of a global power elite whose practices cannot stand the light of day. These critics of science do indeed pride themselves on being more critical and skeptical than the typical academic scientist.

Massimiliano Simons (Chapter 8), finally, discusses the Do-It-Yourself biology movement, also known as ‘biohacking’, ‘biopunk’, or ‘garage biology’, which aims to make experimental molecular biology available to all. Much like the conspiracy theorists discussed by

Harambam and Aupers, DIY biology accuses the universities of having killed ‘the free spirit of science’ and having degenerated into dull research factories: lost in bureaucratic and economic side issues, enlisted by powerful states and corporations, and in effect no longer hospitable to ‘real’ science, driven by idle curiosity.

## **5. Elective Affinities between Worldviews and Knowledge Claims**

### *5.1. Max Weber on Religion and Its Wahlverwandtschaften*

A third theory from the sociology of religion does not so much explain the endorsement or rejection of the authority of science generally, but rather differences between groups as to the types of truth claims they tend to accept as unbiased and valid or reject as false and invalid. This is Max Weber’s theory about the affinities between religious worldviews and modes of social action in everyday life, which informs his historical and comparative analysis of the world religions. Weber’s most famous study, *The Protestant Ethic and the Spirit of Capitalism* (2005 [1904/05]), constitutes just one case study within his larger framework (Collins, 2007). For from world-rejecting Buddhism or Sufi mysticism to the stratified caste system of Hinduism to the harmonious worldview of Confucianism in China to the rationalist, world-affirming tradition of Calvinism in the sixteenth century, Weber demonstrates, all of these religious worldviews motivate particular modes of conduct, not least within the economic sphere (Weber, 1946 [1921]; 1963 [1922]; see Collins, 2007: 30-37 for a summary).

Weber interprets the links between religion and the conduct that it fosters in terms of *Wahlverwandtschaften* (‘elective affinities’), i.e., selective cultural ‘resonances’ that lead culturally meaningful phenomena to attract each other (or, in case of a negative elective affinity, to repel each other due to negative resonance) (Howe, 1978; Löwy, 2004). Weber’s Protestantism study, aimed at understanding the historical link between Protestantism and capitalism, is a good example. It asserts that the Calvinist valuation of hard work and reinvesting rather than squandering its rewards stimulated a sober and thrifty, disciplined lifestyle. The latter was further stimulated by the Calvinist doctrine of predestination, which created uncertainty about salvation and led material success to be seen as a ‘sign’ that one was among the elected for salvation. Weber’s argument is thus that Protestantism’s emphasis on hard work and attainment of economic success resonates positively with the spirit of modern capitalist entrepreneurship, i.e., a continuous and calculated, goal-rational dealing with money and other production factors.

Taylorizing Weber's notion of elective affinity to the acceptance of scientific truth claims produces the psychological mechanisms of 'confirmation bias' (Nickerson, 1998) and its logical counterpart, 'avoidance of cognitive dissonance' (Festinger, 1962). 'Confirmation bias' is the tendency to positively appreciate and accept as true information that appears to confirm one's pre-existing beliefs, a specific instance of positive elective affinity in the Weberian sense. 'Avoidance of cognitive dissonance', on the other hand, constitutes its logical counterpart as an instance of negative elective affinity. It is the tendency to try and avoid feelings of discomfort invoked by information that appears to challenge one's pre-existing beliefs (see, e.g., Manjoo, 2008).

### *5.2. Part III: Cultural Worldviews and Acceptance of Scientific Truth Claims*

The third and final part of the book applies Weber's elective-affinity approach to account for the acceptance or rejection of scientific truth claims by culturally defined groups. It thus explores the hypothesis that such groups feel attracted to types of scientific truth claims that resonate in a positive fashion with their cultural beliefs. Liza Cortois and Anneke Pons (Chapter 9) discuss how orthodox Protestants and spiritual adherents of mindfulness share an interest in research that demonstrates the plasticity of the brain. Yet, the two groups differ in terms of the specific types of knowledge claims they are interested in. The spiritual group gravitates toward research about how knowledge about the brain can be used to 'improve' it, while the orthodox Protestant group is primarily interested in how media use 'damages' the brain. These diverging research interests, the authors argue, stem from different elective affinities sparked by two different worldviews.

Paul Tromp and Peter Achterberg (Chapter 10), finally, present experimental evidence of the role of cultural worldviews in understandings of truth and falsity. Using fictitious press releases about the findings of an equally fictitious study on climate change they demonstrate that laypersons' evaluations of the reported findings can be attributed to their worldviews. This goes even further than the findings reported in the previous chapter, because it shows that people with different worldviews do not only have their own particular pet research findings, but even interpret the very same 'facts' in terms of their own worldview.

## **6. Conclusion: Science under Siege**

Today's contestations of the authority of science are too intellectually important to be just mourned or protested against. For it is clear that they sit quite uneasily with the long-standing notions of a fundamental

dissimilarity and conflict between religion and science (Evans and Evans, 2008) and of social change as resulting from a 'warfare of science with theology' (White, 1960) or a 'religion/science conflict' (Sappington, 1991). According to this understanding, the unfolding of modernity results in a displacement of religion by science, i.e., a transition from authority of religion to authority of science. In sociology, this notion informs theories of modernization and secularization, with sociologists of religion maintaining that science has meanwhile taken over from religion, so that nowadays "For many young people, problems of any kind have technical and rational solutions" (Wilson, 1982: 136).

One needs to be skeptical about such claims. Although the authority of religion has since the 1960s surely declined significantly in most Western-European countries (e.g., Brown, 2011; Bruce, 2002; Norris and Inglehart, 2004), and also – though less typically acknowledged – in the United States (Voas and Chaves, 2016), not much systematic research (if any) has addressed changes in the authority of science during this period (see for an exception Gauchat, 2012). This indicates that the idea of an increase in the authority of science at the cost of the authority of religion has (at least until very recently) enjoyed the status of an article of faith rather than that of a scientific hypothesis in need of critical empirical testing.

Indeed, the recent increase in contestations of the authority of science suggests that accounts of the declining authority of religion may tell only half the story. What seems to have eroded instead is something more general and more fundamental, i.e., acceptance of universally binding truth claims, be they religiously or scientifically informed. Such a dual decline of the authorities of both religion and science does not signal a process of 'modernization', but rather one of 'postmodernization' in which religion and science alike lose their former authority (e.g., Bauman, 1987, 1992; Inglehart, 1997). Precisely because such a process entails a major rupture with how the modern West has traditionally understood itself and its further development, there is ample reason to open up these and related issues for systematic empirical study.

Yet, as we have seen, lamentation, disapproval and political protest are more typical responses, with scientists, politicians and journalists bemoaning the 'anti-intellectual' currents in the contemporary West. Those concerned organize protests and write articles in defense of modern science and against fools who refuse to accept its authority. These are text examples of 'boundary work' (Gieryn, 1972; 1999) that as such create an asymmetrical divide between 'us' and 'them' by re-asserting precisely the pretensions of modern science that are at the root of today's discontents. Such boundary work moreover obscures that critiques of contemporary science are also expressed from within academia itself, not least from the

humanities and social sciences and not least about the instrumentalization of science and its subordination to political and economic interests. Indeed, unlike academic prophets of doom have it, eradicating misplaced pretensions of strictly objective and unmediated truth does not lead to the end of science, but rather opens the doors to better science – a science that is more critical of long-standing academic practices, epistemic doctrines, funding mechanisms and socio-economic power relations that impede the quest for truth.

The quest for better science in response to complaints about the elitist, exclusive nature of scientific research appears to demand more than the introduction of ‘citizen science’ (e.g., Riesch and Potter, 2014). Giving voice to democratic and participatory ideals, such citizen science entails initiatives by universities and governmental bodies to involve citizens in the research process. Examples are amateur archeologists, astronomers, biologists, hackers, and other lay volunteers collecting data in co-operation with professional scientists, often on a transnational, sometimes worldwide scale. It remains to be seen whether such citizen science is more than a mere accommodation strategy and can actually help restore public trust in science by wiping out excesses of scientism, not least the intertwinement of academic research, governmental policies and profit-driven corporations. On a skeptical note, citizen science may in practice entail not much more than the instrumentalization of citizen scientists in large-scale unpaid data collection for state- or EU-sponsored research projects that align seamlessly with hegemonic political and/or commercial agendas.

We have doubts about both un-reflexive moralistic dismissals of public discontents about science and lukewarm accommodations like citizen science. To the extent that today’s discontents about science pertain to misplaced scientist pretensions and to science’s intimate connections with vested political and economic interests, a more fundamental reflection is called for. Indeed, as one of the sociological pioneers of the study of science already pointed out amidst World War II, long before the unrest that would break out at the academic front in the 1960s: “An institution under attack must reexamine its foundations, restate its objectives, seek out its rationale. Crisis invites self-appraisal” (Merton, 1973a [1942]: 267). With this volume, we hope to make a modest contribution to such a more fundamental reflection.

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