Science and Ideology: From the Spontaneous Philosophy of Scientists to the Spontaneous Science of Economists[1]

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Today we are witnessing a quite common Manichean break-up of science on natural sciences and the humanities. Natural sciences play the role of useful, clinically clean, objective and exact activity, while humanism is reduced to a useless conglomerate of subjective, ideologically motivated constructs. Following Althusser, I aim to show that this delineation is false – not because humanism is not entangled with ideologies, but because the same holds for science: scientists are as scientists not immune to their personal beliefs and worldviews that can always be reduced to very concrete positions within philosophy (say, Spinozism in Einstein's case, rationalism in Gödel's, or materialism in Heisenberg's). I claim that the break-up of science leads to an illegitimate naturalisation of society that serves as the framework of the neoliberal worldview within science and other fields

Keywords: materialist philosophy / natural sciences / the humanities / ideology / neoliberalism

UDK 001.3

Today we are witnessing a well established break-up of science on natural sciences and the humanities. Natural sciences play a role of useful, clinically clean, objective and exact activity, while humanism is reduced to a useless conglomerate of subjective, ideologically motivated constructs, inseparable from individual pathologies of the people involved in its production. It is not difficult to show that such delineations are false because even the most eminent natural scientists are *as scientists* not immune to their personal (ideological) worldviews.

Perhaps one of the most striking examples is Albert Einstein's opposition to the Bohr-Heisenberg interpretation of quantum mechanics. As is well known, one of the major finding of the Bohr-Heisenberg interpreta-

tion is that every physical process involves a finite (non-zero) amount of uncertainty, of pure chance. This is something that Einstein, the scientific giant of giants, never came to terms with. To this randomness in the functioning of nature he opposed his now famous saying that God does not play dice, stated in the 1926 letter to Max Born: 'Quantum mechanics is very impressive. But an inner voice tells me it is not yet the real thing. The theory produces a good deal but hardly brings us closer to the secret of the Old One. I am at all events convinced that *He* does not play dice with the Universe.' (Qtd. in Pais 443) (Niels Bohr responded by telling Einstein not to tell God what God does or does not do.) The reasons for Einstein's refusal of the Bohr-Heisenberg interpretation are obviously not physical by nature. They are spontaneously philosophical in Althusser's sense. Einstein invoked philosophical categories instead of physical ones in order to formulate his objections. He was an outspoken defender of Spinoza's philosophy. In his magnum opus, *Ethics*, Spinoza created a logically strict pantheistic theology which ultimately interprets God as a set of rational laws intrinsic to Nature and governing Nature from within. To discover these laws is to discover the divine Nature. As Spinoza writes in *Ethics* IV, 'the eternal and infinite being, whom we call God, or Nature, acts by the same necessity whereby it exists' (Spinoza 321). This rational necessity of God in the form of deterministic harmony of physical laws was something that Einstein refused to forsake and replace with a probabilistic chance-driven interpretation of quantum mechanics. In this strict sense – and *precisely* in this sense, in which he held the harmony of natural laws to be divine, to *be* God – Einstein's science is science as theology (see also Pais 443). He believed that natural laws were deterministic by nature and that while they might be difficult to comprehend they are ultimately within our epistemological grasp. The rest is history. From the 1920s on Einstein had tried to create what he called the unified theory of total field. This was to be a classical (causal) field theory which would lead to quantum rules as one of its *consequences* (Pais 463–467).

As we know today, Einstein has correctly identified the very central of all modern physical problems – the quest for unification that he initiated is still going on – but due to his persistent refusal to accept quantum mechanics (as a theory of principle) all his attempts at a unified field theory were doomed to fail. In the 1920s it was admittedly not clear that the road to unification should lead through the quantum domain, as several different paths seemingly yielded legitimate methods that were to lead towards the same goal. Yet insofar as pursuing *one* path and not the other was a matter of personal *decision*, I believe that this is an illustrative example of how ideology affects scientific work. In retrospect it is clear that

Einstein made the wrong decision based on reasons other than physical ones ('an inner voice'). Ideology does not perturb the *methods* physicists use to achieve their goals, but it does to a certain extent *guide* them in terms of what they identify as true problems and what they dismiss as irrelevant.

Another example of a remarkable impact of personal belief on a scientific result is that of Kurt Gödel. Gödel is mostly known for his incompleteness theorems in mathematical logics, but in the late 1940s this close friend of Einstein's found a new solution to Einstein's relativistic field equations in rotating universes. His solutions allowed him to propose a surprising interpretation according to which time-travel might be possible. In other words, Gödel proved that by following a precisely specified curve in spacetime in such a universe, one eventually reaches the original point of departure, the original point in space *and time*. Gödel first tried to find a mistake in his calculations – but there was none. So he concluded that there is *no* type of universe in which the objective lapse of time can be defined.

It is true, he writes, that in our universe we *can* define an absolute lapse of time, but anyone who accepts this objective lapse of time

> accepts as a consequence that whether or not an objective lapse of time exists (i.e., whether or not a time in the ordinary sense of the word exists) depends on the particular way in which matter and its motion are arranged in the world. This is not a straightforward contradiction; nevertheless, a philosophical view leading to such consequences can hardly be considered as satisfactory. (Gödel, 'A Remark' 206–207)

In another study his argument gets profoundly Leibnizian:

> If, however, such a world time were to be introduced in these worlds as a new entity, independent of all observable magnitudes, it would violate the principle of sufficient reason, insofar as one would have to make an arbitrary choice between infinitely many physically completely indistinguishable possibilities, and introduce a perfectly unfounded asymmetry. (Gödel, 'Some Observations' 237)

It should be clear by now that Gödel rejected the notion of time exclusively on *metaphysical* grounds (see Ličer). As an outspoken Leibnizian rationalist, Gödel could not come to terms with a violation of the principle of sufficient reason, the central axiom of Leibniz's philosophy. For the notion of absolute world time implies 'completely indistinguishable possibilities' ('completely' here meaning that even God could not distinguish between them), which means that these possibilities are not *particular* possibilities and hence, following Leibniz, do not exists. As Leibniz put it: 'What is not *a* being, is not a *being*.' Hence, for Gödel, the objective world time does not exist.

These examples show that major scientists are *as scientists* guided by their world views (the totality of their ideas about the world), more precisely, their spontaneous philosophies of science (the totality of their ideas about their own scientific practice). Spontaneous philosophies of science do not impact the way they *do* science, but rather influence what they *perceive* as relevant problems (see Macherey 20). Faced with a grave epistemological problem, scientists often spontaneously shift the mode of discourse into philosophy or at least philosophy-flavoured ideology (see Althusser 64). Philosophy, on the other hand, tends to develop a relationship of exploitation with regard to science (Althusser 85): according to Althusser, Bergson was exploiting contemporary scientific crises in order to restitute spiritualism, while Descartes, Kant and Husserl were doing the same in order to formulate various nuances of idealism, which were, in the last instance, supposed to provide science with an external 'legal foundation' (Descartes: who guarantees that scientific truths are beyond all doubt? Kant: who guarantees that the conditions of possible experience vouch for the truth of the experience itself? Husserl: what is this consciousness that is both 'my' 'concrete' consciousness and the consciousness of scientific ideality?) This regime includes those scientists who, during their personal scientific crises (which are for Althusser nothing but their personal *philosophical* crises), produce their own philosophies of science (to which Einstein and Gödel are no exceptions). But since they are scientists, they are *as scientists* part of a long tradition of those who tend to exploit science for apologetic ends, 'and naturally without the counterweight of materialism and without the critical checks that can be ensured, within materialism, by knowledge of the mechanism of ideology and the class conflicts within it' (Althusser 132).

Obviously, these interactions do not imply that there exists a dialogue between science and philosophy. There is no such dialogue – at least not in the sense that *science* needs *philosophy* to solve its *immediate* problems, that is, problems that science is able to articulate within the scope of its own discourse. Science does not philosophy in this sense. Their difference was quite clearly grasped by Althusser: science functions as a system of reduction of errors in our understanding of nature, while there are no errors in philosophy – there is no correct philosophy, there is merely a struggle for domination between different philosophical cross-currents. But even though philosophy and science are undertakings of different order, scientific problems always need to be reflected and interpreted to be, to use Kuhn's terminology, incorporated into the prevailing scientific paradigms or to start off new paradigms. And here, as I have tried to show, scientists themselves spontaneously invoke specific ideological positions that func-

tion as a sort of 'ersatz philosophy […] loose from any reference whatsoever to practice, and which claim general validity' (Macherey 21–22). And these positions – which are, in philosophical sense, rarely illuminating – are, in the last instance, always positions pertaining to a *specific* philosophical school (such as the positivist, rationalist, empiricist or, say, idealist-Platonist school). Einstein's position was Spinozist, Gödel's was Leibnizian, and positions of mathematicians are often Platonist. But I should stress that such influences do not downplay anyone's *scientific* achievements the slightest bit. If anything, they are merely *external* to the way scientists test their theories. Anyone who believes that such influences on hard-core natural science somehow also contaminate it, holds (in a properly Kantian manner) a highly romantic picture of contemporary scientific enterprise. The very statement that true science is devoid of ideology *is* ideology at its purest. Althusser's lecture is quite telling:

> There are false ideas about science, not simply in the heads of philosophers but in the heads of scientists themselves: false 'obviousnesses' that, far from being means of making progress, are in reality 'epistemological obstacles' (Bachelard). […] A philosophy capable of discerning and criticizing them can have the effect of drawing the attention of scientists to the existence and efficacy of the epistemological obstacle that their spontaneous scientific ideology represents. […] Here again philosophy does not substitute itself for science: it intervenes, in order to clear a path, to open the space in which a correct [*juste*] line may then be drawn. (Althusser 88)

Althusser locates two contradictory elements of the spontaneous philosophies of scientists: the *materialist* and the *idealist* element. In their *materialist* approach to science, scientists test their *theories* using *experiments*, as they believe in the material and real existence of their scientific object; this is their scientific *method*, which they believe to be correct and effective. On the other hand, the *idealist* approach to science replaces the material existence of the scientific object with the *personal experience of scientific practice*, which it subordinates to 'values' derived from practical ideologies (such as religious obscurantisms), which are completely external to science. The materialist element is about particularity and temporality manifested in a particular experiment whose outcome is proposed (or not) by the theory that relates to this experiment. If the materialist knowledge about the scientific *object* is always mediated by experiment, and is thus finite, limited and never total, then the idealist knowledge about the scientific *experience* stems from the Totality of its particular ideological framework. The materialist element focuses on the partiality of the object of scientific knowledge, while the idealist element focuses on the ideological evaluation of the experience

of scientific practice and is supported by the authority of the One as strictly external to the field of science.[2] Idealism has thus been structuring science again and again in accordance with the transhistorical unity of the One of religious ideologies (in the last instance: the unity of God).

Following Aleš Bunta, one might say that this transhistorical and total unity, which Althusser criticises on the level of spontaneous philosophies of science, has been co-determining the form and the content of philosophy since Ancient Greece and that it still resonates in Badiou's ontology, to name just one example. Althusser sees in materialist philosophy support for the scientists who try to control and evict idealist elements from the field of spontaneous philosophies of science, while Badiou struggles to ban the One from (matematics as) ontology by using Zermelo-Fraenkel axiomatisation of the Cantor set theory. Bunta tries to demonstrate that Badiou's project must ultimately fail since his 'struggle with the metastases of the One' is in the last instance 'a struggle of a certain modified monism that, supported by the figure of the Two, struggles against a dualism grounded in the Figure of the One' (Bunta 15). The presence of the *transhistorical kernel*, the *eternal kernel*, the *One*, within the very core of science has in the past opened up science again and again to discourses – of, say, the Church and/or capital – that were driven by interests of power, that is, interests external to science. This, following Althusser, shatters one of the main (idealist) illusions of the European enlightenment: *there is no power of pure knowledge that is not bound up with power proper – with political and social power*. These spontaneous philosophies of scientists resonate also in political and social fields and are affected by them. The idea that the very emergence of Truth suffices to light up the darkness and chase prejudice away has been obsessing scientists to this day – in this sense, as Althusser is right to point out, scientists are just as idealist as the religious influences they try to fight.

Following Althusser, I tried to show that contemporary science is not devoid of ideology, but is instead a locus of the struggle for domination between idealism and materialism within the spontaneous philosophy of science, the struggle as old as Aristotle's *Metaphysics* and its empiricist critique of Plato's idealism. But I still owe an answer to the question of whose position precisely I am negating here. Who is it exactly that is nowadays presenting natural science, the Science, as devoid of all ideology? And who is, on the other hand, reducing humanism and philosophy to useless ideological ramble? In a nutshell, the answer could be: the global instances of power. It is obvious from, say, the Bologna reform of higher education that the EU is engaged in a downscaling of theoretical humanism and philosophy on behalf of practical sociological and economical statistical

studies. So much is clear. But we must not forget that we are also witnessing a downscaling of theoretical *natural* sciences in the name of computer sciences, technology and a kind of 'business informatics'. This is a clear manifestation of Althusser's thesis that there is no power of pure knowledge that is not bound up with power proper. The scientific knowledge itself, the scientists themselves, hold no actual power – the structural policies that dictate the shape of the development of science are set by political powers through agents whose interests are strictly external to science.

The implicit assumption at the core of the EU education policies is that humanism and philosophy no longer serve any useful purpose since mathematised social and economical sciences are so reliable (that is, objective) that they can henceforth mathematicaly quantify and predict social phenomena. Let me quote a beautiful example from a recent official OECD publication, *Measuring Student Knowledge and Skills: A New Framework for Assessment* (OECD 49), which was presented as a collaborative effort of the European scientific community. In the chapter on 'Change and growth' – growth, of course, and not decline – the authors classify natural phenomena as follows: 'Every natural phenomenon is a manifestation of change. Examples are: organisms changing as they grow, the cycle of seasons, the ebb and flow of tides, cycles of unemployment, weather changes and the Dow-Jones index.' (OECD 49)

So, the cycle of unemployment is explicitly said to be a natural phenomenon. The same goes for the Dow-Jones industrial index: it is, for OECD, a natural phenomenon. Cycles of unemployment and the stock market, too, are said to be governed by the same laws of physics that regulate tides and atmospheric processes.

This bizarre classification, this mathematisation of society, this naturalisation of society, is one of the leading ideological *sophistries* today. This ideology is, within economics and business studies, ideology *as* science, ideology presenting itself as science. It is, as Martin Klanjšek said, *the spontaneous science of economists*. Economics and business are presenting themselves *as* mathematical in order to create an impression that the laws of the free-market neoliberalism are eternal and objective. As Philip Mirowski thoroughly demonstrates, to this day economics has been trying to portray itself as *deterministic social physics*. This has been going on at least since the formulation of neoclassical economics (Pareto, Walras, Jevons, Fisher), which has been relying heavily on the nineteenth-century Hamiltonian formalisms in physics. Mirowski puts forward a devastating critique of such uncritical usage of physical metaphors in the scope of neoclassical economics and its legacy. One of his major points is that neoclassical economists have been uncritically constructing some sort of an inconsis-

tent econophysical chimera by merely rigidly translating Hamilton's equations from physics to economics. The beauty of Hamilton's equations is that they deterministically predict the dynamics of the system *for which they hold* (that is, *not* for the stock market) for all times ad infinitum. But as Mirowski points out, this deterministic Hamiltonian metaphor makes no sense without some sort of analogy to the conservation laws (such as the law of conservation of energy), which – in physics – follow directly from Hamilton's equations (if certain conditions of symmetry are met). The neoclassical economists never formulated any conservation laws in the field of economics, thus crippling their 'theory' beyond repair. When acclaimed physicists and mathematicians such as Laurent, Planck, Helmholtz, Volterra and Gibbs challenged them to justify the economic usage of the physical metaphor, they responded with nonsense and incomprehension (Mirowski 279). Incapable of confronting these issues regarding their over-simplified deterministic mathematised 'theory' of society, they were left high and dry as quantum mechanics shattered the deterministic roots of classical physics (Mirowski 275).

It should be clear that what we are dealing with here is *not* a scientific usurpation of humanism or philosophy; it is rather the opposite: science itself is being illegitimately converted into some sort of econometric statistical black magic which might be called *economystics*, with the sole purpose of supporting the illusion of transparency of free-market capitalism. Moreover, the situation did not improve over time: economics gradually lost all memory of the illegitimate neoclassical instrumentalisation of physics, which gave the mathematical newspeak a life of its own as a recognised part of the discourse of economics. This is what enables the neoliberal economists and businessmen of today to disqualify all their opponents as reactionary subjects who – like the Catholic Church in Galilean times – cannot seem to come to terms with the Copernican revolution of modern mathematised economics. (This naturalistic worldview of society might also be the reason why the right-wing leaders of today oppose the welfare state – whether they know it or not, they perceive the welfare state as an artificial, almost genetic intervention into the social Darwinist fabric of society, allowing the unnatural survival of those unfit to survive. Their *political state* ought to be a *state of nature*, that is, a state with every man for himself, a state with no free lunches and no free rides, a Spinozist state in which might makes right. It is interesting to note that these same proponents of *social* Darwinism are often the most radical creationist opponents of *biological* Darwinism.)

To my view, most of what I have claimed suggests that we need *more* philosophy *and more* science, not less. As Louis Althusser has put it in his

Philosophy and spontaneous philosophy of scientists, the practice of philosophy consists of demarcations of the *ideological* from the *scientific* in the indistinct reality of *both*. And today we are perhaps more than ever dealing with an indistinct reality of both.

NOTES

[1] This article is a result of the project 'J7–4175 (A): The Structure of the Void (basic research project)' financed by the Slovenian Research Agency.

[2] We can identify a dominating materialist element in the spontaneous philosophy of science of the great physicist Richard Feynman, the founder of modern quantum electrodynamics. Feynman was the first to acknowledge the partiality of his work in the field of physics by stressing that he does not 'feel frightened by not knowing things. By being lost in the mysterious universe without having any purpose, which is the way it really is, as far as I can tell, possibly. It doesn't frighten me'. Albert Einstein's spontaneous philosophy, on the other hand, adheres much more closely to idealistic tendencies. He was satisfied by the partiality of answers that contemporary physics offered. One of his questions in relation to quantum mechanics was whether or not quantum mechanics is a 'complete description of reality', that is, whether or not it tells us everything that *can* be told about nature.

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