

NIETZSCHE'S NATSZCHURALISM:

THE ROLE OF CRITICAL PSYCHOLOGY IN PHILOSOPHY AND SCIENCE

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Friedrich Nietzsche's philosophy consisted of both a negative and a positive campaign (or, as he might put it, a giant No followed by a king-sized Yes). The negative campaign was a thorough critique of long-standing metaphysics, theology and morals. He believed that all of these were results of sickened individuals and cultures, and all of them terminate in a deep and unanswerable *nihilism*, or a global rejection of all values whatsoever. Anyone who recognizes the inherent pathology of our philosophies, and who desires something other than global nihilism, will then join him in his positive task: the revaluation of all values, or a new system of values based upon life-affirming attitudes and prejudices. This new system, which advances beyond the old notions of good and evil, and beyond all ancient religions, will center itself upon the values of life and the expression of power in all forms of life.

Many commentators now see naturalism playing a pivotal role in both of these broad campaigns. It is through naturalistic psychology, and through a kind of naturalized philosophical anthropology, that Nietzsche criticizes our traditional ideologies. And a more naturalistic understanding of our psychology and even our biology plays some role in securing Nietzsche's vision of our future. It is incontestable that Nietzsche was strongly influenced by various books of his day which explored the relevance of

scientific results to philosophical problems.¹ Perhaps the strongest influence upon him was F. A. Lange's *History of Materialism* (1866), which carefully reviewed not only ancient and pre-Kantian schools of materialism, but also the materialist thinkers writing in Nietzsche's day (such as Moleschott, Büchner, and Czolbe). Lange argued against these materialists and in favor of a physiological neo-Kantianism advocated by Hermann von Helmholtz and others. Basically, Lange's view was that our sensory organs disguise what is really present in the world, and that we have no epistemic access to the world, except to know vaguely that something "out there" is the cause of our perceptions. This, Lange thought, preserves the core of Kant's doctrine, and at the same time manages to provide the free space we need for Kantian moral thought. While Nietzsche parted company with many of Lange's own views, he certainly found the book a valuable resource for understanding the relevance of scientific discovery – and specifically *physiology* -- to philosophy.

Nietzsche's enthusiasm for using science to undermine traditional metaphysics first becomes evident in several of his remarks early on in *Human, all too Human* (1878). He claims that a scientific study of our past – "a *history of the genesis of thought*" -- will eventually reveal why we have ended up with our metaphysical beliefs: "That which we now call the world is the outcome of a host of errors and fantasies which have gradually arisen and grown entwined with one another in the course of the overall evolution of the organic being" (HH 1:16). What caused traditional metaphysics to take on a shape so much at odds with the world as science knows it will eventually be a matter "relinquished to the physiology and history of the evolution of organisms and concepts" (HH 1:10). At the other end of his productive life, in *Twilight of the Idols* (1888), he continues to esteem

scientific empiricism over anything traditional philosophy can offer: "The extent to which we possess science today is precisely the extent to which we have decided to accept the testimony of the senses – and learned to sharpen them, arm them, and think them through to their end. The rest is an abortion and not-yet-science: that is, metaphysics, theology, psychology, epistemology" (TI 3:3).²

Moreover, Nietzsche hopes that the results of science will help us to forge a new, more accurate understanding of ourselves and the world, and better equip us to legislate new values for ourselves. In this connection, listen to the paean he sings to physics in *The Gay Science* (1882):

We, however, *want to become those we are* – human beings who are new, unique, incomparable, who give themselves laws, who create themselves. To that end we must become the best learners and discoverers of everything that is lawful and necessary in the world: we must become *physicists* in order to be able to be *creators* in this sense – while hitherto all valuations and ideals have been based on *ignorance* of physics or were constructed so as to *contradict* it. Therefore: long live physics! And even more so that which *compels* us to turn to physics – our honesty! (GS 335)

This passage powerfully evokes the ideological thrust of philosophical naturalism. It is up to human beings to chart their course, and human beings as they are, not as we wish they were. One needs "physics" – or some appropriate science – to establish what the real possibilities are for us. Once we have that, we need only courage enough to admit to

ourselves what those limits are, and the creativity to give ourselves laws and create ourselves anew. This is Nietzsche's thought at its most inspiring and terrifying – for it carries the promise of throwing tradition away and beginning again.

But at the same time, Nietzsche has also been recognized by many commentators as providing incisive critiques of science. We just heard the joyful support Nietzsche gave to physics; now listen to this vote of no-confidence:

It is perhaps just dawning on five or six minds that physics too is only an interpretation and arrangement of the world (according to our own requirements, if I may say so!) and not an explanation of the world: but in so far as it is founded on belief in the senses it passes for more than that and must continue to do so for a long time to come. (BGE 14)

He goes on to disparage natural scientists who have the temerity to think that causal concepts actually apply to the real world:

One ought not to make "cause" and "effect" *into material things*, as natural scientists do ..., in accordance with the prevailing mechanistic stupidity ...; one ought to employ "cause" and "effect" only as pure *concepts*, that is to say as conventional fictions for the purpose of designation, mutual understanding, *not* explanation. [...] It is *we* alone who have fabricated causes, succession, reciprocity, relativity, compulsion, number, law, freedom, motive, purpose; and when we falsely introduce this world of symbols into things and mingle it with

them as though this symbol-world were an "in itself", we once more behave as we have always behaved, namely *mythologically*. (BGE 21)

This certainly sounds as if Nietzsche is a "fictionalist" with regard to any science of causality – which hardly makes him a happy companion of philosophical naturalism. And in the very same work in which we found Nietzsche's praise of physics, we find this haughty dismissal of any quantitative, mechanistic science:

That the only justifiable interpretation of the world should be one in which *you* are justified because one can continue to work and do research scientifically in *your* sense (you really mean, mechanistically?) – an interpretation that permits counting, calculating, weighing, seeing, and touching, and nothing more – that is a crudity and naiveté, assuming that it is not a mental illness, an idiocy.

[...] A "scientific" interpretation of the world, as you understand it, might therefore still be one of *the most stupid* of all possible interpretations of the world, meaning that it would be one of the poorest in meaning. (GS 373)

He goes on to ridicule the idea that any "mechanistic" science could possibly apprehend the value of music. The overall intent of the passage seems to rule against any science like physics which strives to quantify our experience, reducing it "to a mere exercise for a calculator and an indoor diversion for mathematicians".³

Other passages could be given which are apparently hostile to sciences in good standing.⁴ But these passages are enough to raise the question of how we are to

understand Nietzsche's naturalism. He needed science for his positive and negative campaigns; but he also criticized science as merely an interpretation, which wrongly reifies its objects, and is incapable of understanding the most meaningful portions of human experience. In fact, I shall argue (part 1), Nietzsche is indeed a naturalist; but his naturalism assigns a pre-eminent role to his own peculiar brand of psychology, which allows him to launch substantive criticisms against other natural sciences of his day. In this, I shall argue (part 2), he was very similar to David Hume, who also used his own psychology as a platform for criticizing elements of Newtonian physics. In the end (part 3), Nietzsche's brand of naturalism is more closely related to social criticisms of science than it is to mainstream philosophical naturalism as we know it today.

1. Nietzsche, the speculative methodological naturalist?

First, though, we should examine more closely the case for understanding Nietzsche as a naturalist, and for understanding exactly what kind of naturalist he is supposed to be. The most thorough articulation of the character of Nietzsche's naturalism has been provided by Brian Leiter (Leiter 2002 and [forthcoming]).

Leiter articulates several ways in which a philosopher may be a naturalist. First, we may distinguish broadly between a **substantive naturalism** and a **methodological naturalism**. In Leiter's words, substantive naturalism is "either the (ontological) view that the only things that exist are *natural* (or perhaps *physical*) things; or the (semantic) view that a suitable philosophical analysis of any concept must show it to be amenable to empirical inquiry" (Leiter 2002: 5). In short, a substantive naturalist wants an ontology that is *well-behaved* and *manageable* in the eyes of existent natural science: no ghosts,

substantial forms, qualia, or any other entities whose existence it is impossible to verify or falsify through known empirical methods. The second way to be a naturalist is in terms of methodology, where one is concerned more with the methods of natural science than with any particular ontology. In Leiter's words, the methodological naturalist maintains that "philosophical inquiry ... should be continuous with empirical inquiry in the sciences" (Leiter 2002, 3).

Now there are two ways of being continuous with empirical enquiry, according to Leiter. One may be interested in "methods" continuity, which means framing inquiry in such a way that it connects smoothly with inquiry in the natural sciences. Such a naturalist seeks to "construct theories that are 'modeled' on the sciences ... in that they take over from science the idea that natural phenomena have deterministic causes" (Leiter 2002, 5). David Hume is typically regarded as such a naturalist, inasmuch as he wanted to take broadly the same approach to human psychology as Newton took toward the physics of moving bodies. Or a methodological naturalist may be interested in "results" continuity, which means that the actual results generated by natural scientists are incorporated into the philosophical theory.

Leiter's taxonomy is not perfectly crisp. In particular, it is unclear how to separate substantive naturalism from a methodological naturalism which aims at results continuity; and in any case it is difficult to imagine any naturalist interested only in methodology and not interested in importing any actual results from the sciences (or vice versa, for that matter). But the main point is sound: philosophical naturalists may admire different aspects of science for different reasons, and in varying degrees. No naturalist needs to embrace everything science offers, and every naturalist seeks some degree of

continuity with science, whether in results or in method. Perhaps then, without losing too much content, we can simplify matters a bit and see naturalism as a single spectrum ranging from "frame your theory so that it and science are working in the same general direction" at one end to "do not only that, but also build the actual empirical findings into your theory" at the other end, with most naturalists falling somewhere in the middle.

Where then are we to find Nietzsche along the spectrum? Somewhere in the middle, no doubt. Leiter's estimation is as follows:

So Nietzsche, the philosophical naturalist, aims to offer theories that explain various important human phenomena (especially the phenomena of morality), and that do so in ways that both draw on actual scientific results, particularly in physiology, but are also *modeled* on science in the sense that they seek to reveal the causal determinants of these phenomena, typically in various physiological and psychological facts about persons. (Leiter 2002: 8)

If this is right, then Nietzsche is mostly toward the "try to work in the same general direction as science" end of the spectrum. He wants to explain human phenomena by revealing causal determinants, just as a natural scientist would want to do. He does accept and employ some of the actual results from psychology and physiology; but only tentatively, and in his day there were not a lot of reliable results from experimental psychology to work with. And he also accepts the broad parameter for any naturalist's ontology: he rejects "supernatural" causes, or causes which escape any possible spatiotemporal measurement, like God, the soul, karma, or any noumenal will.

According to Leiter, the central naturalist component doing much of the explanatory work for Nietzsche is the notion of a certain "psycho-physical constitution, which defines [each person] as a particular *type* of person" (Leiter 2002: 8). To help picture the idea, we might envision a Nietzschean periodic table of personality types, which assigns to each type of person a certain set of qualities and dispositions which determines how such a person will behave under various conditions and pressures. (If we need examples of his types, just think "slave," "master," and "*übermensch*," though Nietzsche of course need not be limited to just these three; on various occasions, he seems also to want access to "German," "English," "Jew," "anti-Semite," and "female".) All personality types share an important feature: the will to power, or a fundamental drive to express power. But while this will to power is common to all types, the ways in which power is expressed will vary among types. Some will express power through self-denial (asceticism), while others will express power through conquering and enslaving other individuals, and still others will express power by enduring great hardship and creating great works of art and philosophy from their experience.

This periodic table of personalities gives Nietzsche the basis from which to explain the historical origins of morality. His account is something like this, in outline. Over two thousand years ago, many people of a certain type (the Jews), who lacked any means to power in their own communities, and hated that impotency, created a set of values which made a virtue of their weakness. This set of values caught on among various disenfranchised groups, and soon (with the rise of Christianity) it became widely believed that expressions of weakness were in fact signs of supernatural (or *moral*) strength. Even those with great power succumbed to the ideology. The end result is that

what once started as a cunning strategy to gain power by convincing the strong that strength was bad for them has become a set of artificial shackles that perversely restricts the expressions of power among all types. Thus traditional morality.

This sketch leaves out all of Nietzsche's interesting details, complications, and nuances, but it is enough to convey the central idea, which is that *natural, psycho-physical type facts, along with the contingent circumstances of human history, are sufficient for explaining the origins of modern moral prejudices*. No pure reason or supernatural agency is required. This central idea is familiarly naturalistic, and the broad account Nietzsche offers is the *sort* of account researchers might adopt as a paradigm before seeing how well it accommodates actual empirical findings.

But this sketch also reveals the peculiarity of his approach, which to our minds might seem most unnatural. When Nietzsche accounts for a moral prejudice, he typically does so by tracing the evolution of a set of feelings, as if he is chronicling the mental development of a single, transpersonal individual. Consider, by way of illustration, his account of how a deep feeling of indebtedness toward "the Creator" gradually evolves into feelings of pervasive guilt and sin beyond any natural redemption:

... those concepts "guilt" and "duty" *shall* now turn themselves backwards – and against whom? There can be no doubt: first against the "debtor," in whom bad conscience now fixes itself firmly, east into him, spreads out, and grows like a polyp in every breath and depth until finally, with the impossibility of discharging the debt, the impossibility of discharging penance is also conceived of, the idea that it cannot be paid off ("eternal punishment") ... (GM 2, 21)

This is vintage Nietzsche, and very much the kind of conceptual genealogy he regularly offers in various works. But consider the form of his explanation. He wants to account for a certain religious attitude or belief common through out a population (original sin, in this case). He does this by starting with some initial feelings (of pervasive debt and guilt) and then walking through a psycho-drama, where the feelings evolve naturally into other strong feelings (irredeemable debt) and eventually cement themselves into a religious dogma (the innate wickedness of humanity). In the culture or society in question, bad conscience takes root and spreads like cancer “in every breath and depth.” But exactly *whose* breath and depth are we talking about? All of the concerned individuals existing through the time period spanning early Judaism through early Christianity? Or just their thinkers and theologians? Or is it rather something less tangible, like the psyche of entire generations suffering through a particular social milieu? Or is it simply a truth about how a given, theoretical mind might evolve, were it exposed all at once to the ideas and pressures impinging upon the early Jews and Christians? It is hard to say. But generally, he seems to be offering a kind of psychoanalysis of an entire culture, with the aim of disclosing the somewhat beastly and greedy concerns which gave rise to modern morality. In the eyes of our own naturalism, this is a strange thing to do.

Perhaps Nietzsche, in his own time, simply saw this as the best way to chart the history of ideas. But the powerful passion fueling the eloquence of Nietzsche’s accounts suggests that he is after something more than merely an objective chronicle. In part, by offering these “historical” accounts, he is encouraging his readers to find in themselves remnants of the ancient beastliness and greed which allegedly gave rise to our modern

moral notions. At the same time, he is urging upon us the realization that the moral feelings we have are not necessarily the only ones we could or should have, but ones brought about through accidents of history and blind transformations in human psychology. But, in addition to these philosophical or therapeutic goals, he is also presenting a unique *methodological* one. He is modeling for us how psychologists of the future should approach their subject: with a combination of daring, depth, coldness, and in a sense, musicality. In *Ecce Homo*, when he praises his own *On the Genealogy of Morality*, he does so in the terms one might use to describe an exciting symphony: "... very unpleasant truths becoming audible as a dull rumbling in the distance – until at last a *tempo feroce* is attained in which everything surges forward with tremendous tension" (EH, "Genealogy"). Nietzsche seems always confident that he is seeing more deeply and more heroically into human nature than anyone ever has, and is writing about it with the greatest style anyone has ever summoned. Every account he offers carries with it a methodological or stylistic message: *this* is how you should do psychology of the spirit. His advice for his budding psychologists: "Now clench your teeth! Keep your eyes open! Keep a firm hand on the helm! – We sail straight over morality and *past* it, we flatten, we crush perhaps what is left of our own morality Never yet has a *deeper* world of insight revealed itself to daring travelers and adventurers..." (BGE 23).

Now the results of Nietzsche's peculiar psychoanalysis of cultures certainly can be made continuous with empirical inquiry. That is to say, cultural anthropology, history, and evolutionary psychology may uncover surprising origins of our moral sentiments, and these origins may well resemble the ones Nietzsche describes.⁵ But even as they do so, the approach taken by these fields will depart significantly from Nietzsche's own

approach. Their work will be tentative, carefully documented, and (in some cases) based upon clinical experiment. It will lack the daring goals, revolutionary temperament, and scorching rhetoric Nietzsche commanded. To what extent, then, will they really be continuous with the project he had in mind?

My point, again, is not that Nietzsche is not a naturalist, nor that his results are useless. It is that his naturalism is inextricably bound up with a philosophical approach that is not usually associated with naturalism. To the extent that we set aside that fact, we misread Nietzsche.

2. Psychology, queen of the sciences

But we still need to see how Nietzsche's psychological naturalism, fueled as it is by a dramatic philosophical agenda, squares with his various claims that certainly sound critical of the validity of physics, atomism, materialism, and even logic. What sort of naturalist trusts his psychology but not necessarily logic and physics?

Well -- David Hume, for one. Hume is rightly read as providing a kind of naturalism in response to the skeptical worries he raised in epistemology, especially worries over causal knowledge. Reason and experience are unable to provide any justification for causal knowledge; Hume was left with the conclusion that causal beliefs are produced nonrationally through a psychological mechanism -- namely, *custom*. "Custom" names a tendency of the human mind to expect patterns of past experience to extend into the future. Thus Hume's psychology serves to explain something philosophical reason cannot -- namely, why we make causal generalizations. But it is seldom recognized that Hume's naturalistic psychology is a two-edged sword, and he

also wields it to criticize Newtonian physics.⁶ One of the distinguishing claims of Newtonian physics is the force of gravitation, which bodies exert upon one another immediately, and over a distance. After Hume demonstrates that philosophical reasoning does not deliver any causal knowledge, he provides a set of “Rules by which to judge of causes and effects” (*Treatise* 1, 3, 15). These rules are apparently meant to govern the causal generalizations we make, and steer us away from superstitions. The first two rules seemed aimed directly at Newtonian action at a distance:

1. The cause and effect must be contiguous in space and time.
2. The cause must be prior to the effect.

Hume had great admiration for Newton, and there is no evidence that he had any doubts over the empirical adequacy of Newton’s inverse-square law. What he doubted was that the law did anything more than “track” appearances; that is, the law provides a useful summary of phenomena without revealing the true causes and effects of the phenomena. Further inquiry might reveal exactly what causes the mutual attraction of bodies, and why Newton’s law is adequate to the appearances, but Newton himself had not delivered the full causal story.

What gives Hume the license for this confidence? It is the “science of man” he intends to establish, as described in the introduction to the *Treatise*. This science, in effect, describes human capacities for understanding, and so places constraints upon our inquiries:

‘Tis evident, that all the sciences have a relation, greater or less, to human nature; and that however wide any of them may seem to run from it, they still return back by one passage or another. Even *Mathematics, Natural Philosophy, and Natural Religion*, are in some measure dependent on the science of MAN; since they lie under the cognizance of men, and are judged of by their powers and faculties.

[....]

There is no question of importance, whose decision is not compriz’ed in the science of man; and there is none, which can be decided with any certainty, before we become acquainted with that science. In pretending therefore to explain the principles of human nature, we in effect propose a compleat system of the sciences, built on a foundation almost entirely new, and the only one upon which they can stand with any security. (*Treatise*, introduction)

The “foundation almost entirely new” is Hume’s psychology, which explains how we turn impressions into ideas, and the ways in which we associate and connect ideas. All beliefs that are out of reach from this meager framework – and there are lots of them, to be sure, ranging from realism about bodies and necessary connections among events to the existence of the soul and of any divine providence – end up being tossed aside as mere sophistry and illusion. Hume’s “science of MAN” in this way provides a regulative control over empirical inquiry. Anyone proposing a theory or a claim to knowledge which is inaccessible to human beings, given their psychology, is producing only a wind egg – whether that person is a theologian, a dogmatic metaphysician, or Isaac Newton himself.

So the key, according to Hume, is to first understand the capabilities of the inquirer before trying to provide an account of the natural world which made the inquirer possible. The limits of the inquirer might mean that the account of the natural world will inevitably be incomplete – as the Humean science of man declares Newtonian physics to be. The same idea, I shall suggest, is what explains Nietzsche’s various critiques of physics, materialism, and logic (as well as morals, metaphysics, and religion). But in Nietzsche’s case, it is not simply a matter of “you can’t get there from here.” Rather, it is a matter of particular human interests and drives expressing themselves through the line of inquiry and directing it toward their own selfish ends.

Let us revisit the passages that sound critical of science. In BGE 14 (“physics too is only an interpretation”), Nietzsche goes on to criticize physics for being too “plebeian”, concerned “only that which can be seen and felt.” He contrasts modern-day physicists (and also “Darwinists and anti-teleologists”) with Platonic philosophers, “who perhaps rejoiced in even stronger and more exacting senses” and “experienced a greater triumph in mastering them.” The shallowness of modern-day science is really only good for “an uncouth industrious race of machinists and bridge-builders of the future.” So, according to Nietzsche’s diagnosis, these modern sciences grow from a “race” interested only in answering immediate practical needs and not interested in courageous, difficult lines of inquiry. They concern themselves with experience only to the extent that it will help to build machines and bridges. Physics may *seem* to us convincing and well grounded; but this is only because our judgment is ruled by our desires – namely, for technological benefits. But this is no reason for thinking that physics is anything more than an interpretation of experience and not a proper explanation of it.

In BGE 21 (“one ought not to make ‘cause’ and ‘effect’ *into material things*”), Nietzsche is primarily attacking the metaphysics surrounding debates over freedom of the will. Those who believe in free will, or the *causa sui*, have an inordinate desire “to bear the whole world and sole responsibility for one’s actions and absolve God, world, ancestors, chance, society from responsibility for them.” They take this to be confirming evidence of their own reality and existence, that they are ontologically independent of other things and can stand alone (each one desires “with more than Mückhausen temerity, to pull oneself into existence out of the swamp of nothingness by one’s own hair”). On the other hand, those who deny free will are inventing a mythology of necessary causes in order to excuse what they have done or (more significantly) what they have failed to achieve (“out of an inner self-contempt [he] wants to be able to *shift off* his responsibility for himself somewhere else”). In either case, it is some psychological pressure expressing itself as a metaphysical belief in one kind of causation or another, which amounts to only another interpretation of experience servicing our psychological needs.

Finally, in GS 373 (“a ‘scientific’ interpretation of the world, as you understand it, might therefore still be one of *the most stupid* of all possible interpretations”), Nietzsche is addressing the scholars who belong to “the spiritual middle class.” This middle class is mainly a class with the minds of accountants, clerks, and actuaries. They like to measure, quantify, and calculate. So when they become scholars, and take on the task of understanding human experience, they naturally come up with “an interpretation that permits counting, calculating, weighing, seeing, and touching, and nothing more.” That is why they end up with “one of the *most stupid* of all possible interpretations” – and I assume here that Nietzsche is using “stupid” in its technical sense, meaning “not

recognizing what is obvious.” These middle class scholars ignore what they cannot quantify, and so turn a deaf ear toward music, and a blind eye toward color, and all the meaningful dimensions of human experience.

In each of these three cases, Nietzsche is criticizing the sciences because of the psychologies from which they issue. Plebeian practical concerns (bridge-building), psychological weaknesses (desiring either to hog responsibility or divest oneself of it), and weak personality types (spiritual middle class) are driving the lines of inquiry, and force the sciences to take on particular shapes. His psychology is the science Nietzsche employs to assess and diagnose what is motivating each field of inquiry, and typically he finds them infected by one malady or another. It is thus a *critical* psychology. In the same passage quoted above, where Nietzsche gives advice to his budding psychologists, he opines that

... the psychologist who in this fashion ‘brings a sacrifice’ [sc., the sacrifice of traditional morality] ... will at least be entitled to demand in return that psychology shall again be recognized as the queen of the sciences, to serve and prepare for which the other sciences exist. For psychology is now once again the road to the fundamental problems. (BGE 23)

Thus Nietzsche’s psychology plays a similar role to Hume’s science of man: both are the arbiters of legitimate fields of inquiry. Indeed, it is interesting that according to both philosophers, physics comes out poorly, either because it is not causal enough or because it is an interpretation motivated by a psychological weakness. This should alert us to the

fact that both Nietzsche and Hume are very different from our contemporary philosophical naturalists, who typically either embrace the natural sciences equally or esteem the harder sciences like physics above the others.⁷ Nietzsche's own affinities are closer to those who provide a social criticism of scientific knowledge, a topic which will be taken up briefly in the next section.

3. The social criticism of scientific knowledge

Science, of course, is a social activity, and it has long been recognized that the prejudices of a society affects how science is practiced. Thomas Kuhn, for instance, famously demonstrated ways in which scientific revolutions have been fueled by social changes. Longino (1990, chapter 5) identifies five ways in which societal biases can shape science: in terms of (1) biased *practices* (or the economics of funded research), (2) the *questions* that are raised and pursued, (3) how *data* gets interpreted, (4) the *specific assumptions* made in a particular experiment, and (5) more *global background assumptions* in society at large.

As an example, consider the difficulty anthropologists have had in identifying when humans started using tools (Longino 1990, chapter 6). To oversimplify a bit: in the late 1960s, a prominent theory posited a correlation between the use of tools and other evolutionary changes, such as bipedalism, and the reduction in the size of canine teeth in males. Basically, the idea was that men could stand up and waive weapons instead of baring their teeth for the purposes of intimidating and attacking. As Longino writes, this theory connects the evolutionary changes to male behavior – and “not just any male behavior but behavior that, still in the twentieth-century mind, epitomizes the masculine”

(Longino 1990, 107). But another theory, raised about a decade later, is equally plausible. As hominids moved from forests to grasslands, there was greater pressure put upon females to gather adequate food efficiently, especially as their infants began to require more care. They might well have fashioned tools to help dig for, carry, and prepare food, and also to defend themselves against grassland predators. In this case, tool use would be linked to female behavior. And it also may have been females who caused the reduction in male canines, as “males with less prominent canines, less prone to aggressive displays and behavior, and more sociable, were more desirable partners for females than their more dentally endowed fellows” (Longino 1990, 108). The point of the example is to demonstrate how background societal assumptions (in this case androcentric vs. gynecentric) can lead us to a model which then determines how we look for and interpret evidence.

The examples can be multiplied.⁸ But the intent behind the social criticism of scientific knowledge is the same as the intent behind Nietzsche’s critical psychology. In both cases, the strategy is to find the ways in which scientific objectivity is skewed (at least potentially) by unscientific or nonrational pressures. Indeed, both seek to use a naturalized social science in order to understand the evolution of other natural sciences. In Nietzsche’s case, the pressures are psychological and are linked ultimately to his periodic table of personalities, and his peculiar, transpersonal psychoanalysis of history. In the case of Longino and others, the pressures are more widespread and less personal, and studied through a more familiar type of sociology or anthropology. Of course, no one else shares Nietzsche’s own positive philosophical agenda. But our contemporary attempts to use the social sciences to critique scientific practice is more in keeping at

least with Nietzsche's negative project – and with Hume's science of man, for that matter -- than the current trajectory of philosophical naturalism.

Moreover, in both cases the remedy is the same. According to Longino, “the only check against the arbitrary dominance of subjective (metaphysical, political, aesthetic) preference in such cases [where the theory is underdetermined by the evidence] is critical interaction among the members of the scientific community or among members of different communities” (Longino 2008). Critical dialogue and open discussion can help to expose our prejudices and biases. We might call this the positive task of the social criticism of science – to root out science's misconceptions by subjecting it to relentless social critique. Similarly, Nietzsche, with his doctrine of perspectivism, counsels us to gain greater objectivity by taking on different perspectives:

There is *only* perspectival seeing, *only* a perspectival “knowing”; and *the more* affects we allow to speak about a matter, *the more* eyes, different eyes, we know how to bring to bear on one and the same matter, that much more complete will our “concept” of this matter, our “objectivity” be. (GM 3, 12)

Nietzsche also believes that it is by experiencing multiple perspectives that we can discover the biases and limitations of any single perspective. Of course, while Longino sees this as a task for a community, Nietzsche tends to see the task as personal: it is up to the individual to be able to possess within himself many perspectives, like Goethe or Shakespeare.

In conclusion: it is right to see Nietzsche's philosophy as broadly naturalistic, though three important qualifications must be borne in mind. First, his naturalism was in the service of a passionate philosophical campaign both to disabuse his readers of traditional morality and to urge them toward a deeper understanding of themselves. Second, the reformatory and therapeutic nature of this campaign led him to adopt a peculiar form of analysis: he employed a kind of psychoanalysis of historical cultures, at once personal and cultural, which is utterly different from anything practiced today. Third, his approach gave a privileged place to psychology, which he used as a platform for criticism of the other "harder" sciences, along with criticisms of traditional morals, metaphysics, religion, and philosophy. So, in all, his naturalism is importantly different from contemporary naturalism. That is why it is better called "natschuralism" -- for there is nothing else quite like it.

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ENDNOTES

¹ Brobjer (2008) recounts more of Nietzsche's influences [check this].

² This is no doubt "psychology in a pejorative sense"; as we shall see, Nietzsche goes on to prize psychology, as he understands it, as the queen of the sciences. But note as well that in this section he goes on to disparage logic and mathematics as empty formalisms.

³ Clark and Dudrick (2006) argue that Nietzsche in this passage is taking up the cause of Afikan Spir (1837-1890), who argued that it is impossible for a purely empirical, quantitative science to account for the "space of reasons" which human beings enter when we make normative claims about the world. They conclude that Nietzsche's naturalism has its limits: natural science can plumb the pointless phenomena of the world, but it cannot fathom its occasional pockets of meaningfulness.

⁴ See, for example: BGE 12 (against atomism), GS 111 (against logic), GS 112 (against causality, again), and both GS 344 and GM 3:23 (against science as a disinterested pursuit of truth).

⁵ See, for example Prinz 2007. In chapters 6 and 7, Prinz argues that Nietzsche was right about the historicity of morals, but wrong in the details: his analyses were often "speculative, inflammatory, and probably deeply mistaken" (215). He also argues that Nietzsche was wrong to reject contemporary moral norms, and misguided in his radical new proposals. In turn, Nietzsche would probably call Prinz's work an instance of "the Darwinian beast politely joining hands with the most modern, unassuming moral milquetoast who 'no longer bites'" (GM preface, 7). But Prinz's science *is* better, no doubt.

⁶ I am indebted to Eric Schliesser for teaching me to read Hume in this way. Many of his textual arguments are given in Schliesser 2008.

⁷ The former I take as the default attitude of philosophical naturalism; as an example of the latter, see Papineau (1993), chapter 1.

⁸ For further discussion and references, see Longino (2008).