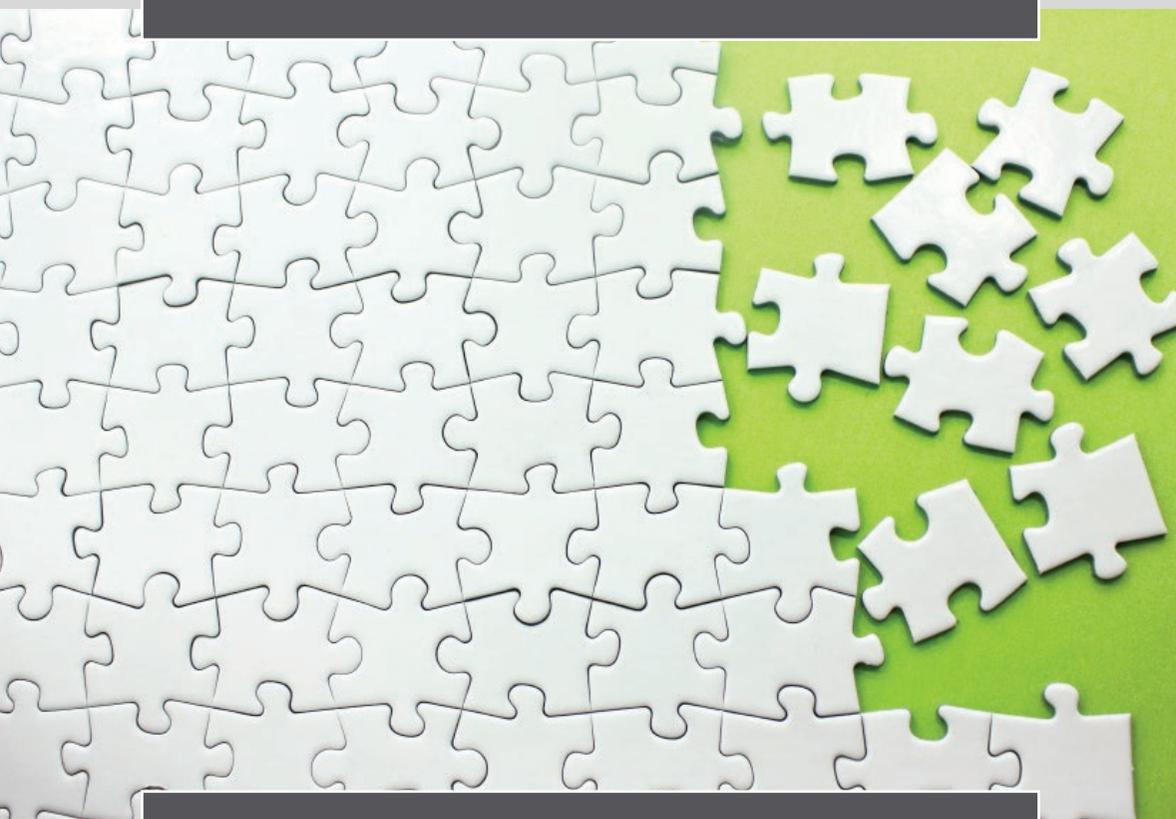


Reflections on Naturalism

José Ignacio Galparsoro and
Alberto Cordero (Eds.)



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REFLECTIONS ON NATURALISM

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INTRODUCTION

Naturalism and Philosophy

The precise character and scope of contemporary naturalism remain disputed issues, yet projects under that label do show discernible commonalities. In particular, naturalists grant exceptional cognitive status to the empirical sciences, although they do this in ways that vary from one author to another. Many, following John Dewey, strive to ground their view of human life in evolutionary biology and, more broadly, to replace traditional metaphysical and epistemological approaches with theories and methods continuous with those of the sciences. Some concentrate on the natural sciences, others take guidance from broader scientific disciplines. A strong version of naturalism, by Hans Reichenbach (1949), runs as follows:

[Modern scientists] refuse to recognize the authority of the philosopher who claims to know the truth from intuition, from insight into a world of ideas or the nature of reason or the principles of being, or from whatever super-empirical source. There is no separate entrance to truth for philosophers. The path of the philosopher is indicated by that of the scientist.¹

Not all contemporary naturalist positions aim to cover as much as Reichenbach's package, however. Positions differ regarding the theses they hold. Two especially prominent are (to first approximation):

1. Ontological naturalism, which asserts that all reality, including human life and society, is exhausted by what exists in the causal order of nature. This includes the view that all properties related to the mind depend ontologically on natural entities. Ontological naturalism thus rejects the existence of supernatural entities. Its various options include such positions as supervenient physicalism (e.g. Papineau, 1993) and broader pluralisms (e.g. Bunge, 1977, 1979).
2. Epistemological naturalism holds that there is no higher tribunal for knowledge than science. Different views on scientific knowledge make for different renditions of this thesis, but unifying traits include an emphasis on scientific justification, and a learned distrust of ideas thought to be immune to empirical findings (rejection of apriorism). From the perspective of naturalism (presented sometimes as "Methodological Naturalism"), one makes the most sense of things by avoiding non-scientific approaches to knowing—research should pursue the kind and level of warrant the natural

sciences achieve for their best hypotheses. Views under this banner range from liberal projects (e.g. Kitcher, 1992, 2001) to radical scientism (e.g. Rosenberg, 2011).

Naturalists who, like Reichenbach, support both theses use natural science and its methodologies as framework for the discussion of “philosophical” problems—the study of knowledge, worries regarding the history of inquiry, epistemology, ontology, the rise and nature of mind and ethics, and so forth. In modern science the earliest credible advances of strong naturalism came from evolutionary biology, especially as part of the discussion of Darwin’s work. Building on the naturalization of biology proposed in the *Origin*, a subsequent book by Darwin, *The Descent of Man*, introduced a proposal to understand psychology and the rise of mind that ran contrary to traditional explanations in terms of vital forces and spiritualism. Darwin went as far as to propose that freedom and moral values might be rooted in natural selection. His daring way of looking at organic life and the mind has been an inspiration to naturalists ever since.

Radical naturalists draw ontological lessons from Darwin, especially against dualism—a doctrine they think has become untenable (Danto, 1972, p. 448). As noted earlier, by affirming the continuity between all levels of reality naturalism opposes “supernaturalism” and “transcendentalism” (Ferrater Mora, 1990, p. 2315), with the consequence that, if naturalism is correct, neither human beings nor their cultural products can be considered supernatural—there is simply no room for spiritualist explanation (see Galparsoro’s chapter in this volume).

1. THE SIRENS OF PHILOSOPHY

An influential view has naturalism as an anti-philosophical stance. It is an extreme view held mostly by scientific naturalists:

[I]n its reliance on our capacity for experimentation, discovery, and cumulative knowledge, [science] solves all the great puzzles that people have tried to deal with through faith, philosophy, and alcohol and drugs. (Rosenberg, 2011, p. viii)

This self-assured image does not represent the full spectrum of contemporary naturalism (including Rosenberg’s own brand). Still, it is a view with considerable following. For example, in his Presidential PSA Address (2010), Larry Sklar objects to naturalists being confused by calls to

eschew the siren call of philosophy with its attempts at restraining, controlling, or supplementing internal science. I’d love to be a naturalist, if I only knew what naturalism was. (op. cit.)

Sklar convincingly makes the case that foundational theories exist in a jungle of contending interpretations, where choice typically follows “philosophical” guidelines (in his view from radical empiricism). Given the way scientists routinely include general philosophy into their research programs, projects like

Reichenbach's will stand out as disingenuous if they seek to contrast science and philosophy radically. However, few (if any) naturalists entirely eschew the siren call of philosophy.

None of the leading projects today takes an explicitly anti-philosophical stance. Proposals diverge regarding the type of philosophy they let in, also on the sciences they consider exemplary, but the proposals on view are *philosophical*. This should not surprise. In the last two centuries, major scientists have explicitly drawn insight from philosophy—Charles Darwin, James C. Maxwell, Ernst Mach, Henri Poincaré, Albert Einstein, John B. Watson, Niels Bohr, Werner Heisenberg, Paul Dirac, and John S. Bell, among many others. Typically, as Sklar urges, philosophical considerations enter the fray of scientific thought in the context of conceptual puzzles that drive theoreticians into ontological, epistemological, and/or semantic research. In order to appreciate the relationship between scientific projects and philosophy, it will help to sketch two examples, one primarily focused on metaphysics and the other on epistemology.

(A) Much scientific theorizing and experimentation intertwines with *metaphysics* (see, in particular, Steven French and Alberto Cordero in this volume). One telling historical example of metaphysical “entrapment” concerns a posit that was confidently believed to exist until the early 1900s: the mechanical ether of light (Cordero, 2011). A peculiar entity almost from the start,ⁱⁱ the ether supposedly pervaded the universe without impairing any celestial motions, even though the transversal properties of light waves required the ether to have a fairly rigid structure. Yet there were good reasons for assuming its existence. First, all other known waves had a mechanical medium; secondly, physical explanations were thought incomplete unless they gave mechanical understanding.ⁱⁱⁱ Last but not least, “being a wave” was identified with “being a *propagating perturbation*”, which means that waves *required* the existence of something capable of perturbation:

[I find] the evidence quite overwhelming that that light consists of undulations ... And, if waves, then a medium is required. (Stokes, 1884)

If light consists of waves ... it is clear that they must be waves of something. (Thompson, 1897)

A substantial piece of “received metaphysics” lies behind this confidence. At its center is an ontological hierarchy that has the lowest level of being (shadows, smiles, modes of being” in genera) depending on finite substances (Cordero, op. cit.). This ancient view, revitalized for modern physics by Descartes (see e.g. *Meditations III*), shaped the classical understanding of waves. Placed at the lowest ontological level, waves could not exist without some material substratum whose traveling perturbation they were. Physical theorizing remained firmly embedded in this metaphysical framework until late in the 19th century. Separating the ideas of wave and requiring a medium needed a level of conceptual atomization that became viable only with the rise of positivist interpretations of science and null-result experiments (e.g. by Michelson and Morley). The innovative conceptual

separation needed to drop the ether was at the heart of both Einstein's revolutionary move at the dawn of the 20th century and the rage it initially arose in the scientific establishment. As will be noted in section 3, less "professional" forms of metaphysics also influence physics, especially at personal, *private* levels of theorizing.

(B) Equally present in scientific theorizing are inputs from epistemology and methodology. Sklar (2010) singles out radical empiricism, but more moderate positions seemingly play a no less determinant role. Radical empiricist moves do occur, but their effectiveness tends to be short-lived. Typically, after a period of exuberance, radicals talk the talk far more than they walk the walk, at least in the more empirically successful disciplines. A supposedly archetypal case in point is quantum mechanics, a field dominated by a strongly empiricist rhetoric associated with the "Copenhagen" circle of Niels Bohr and Werner Heisenberg. Heisenberg, in particular, wanted a theory articulated exclusively in terms of quantities measurable by spectroscopy (like "energy levels" and optical intensities). Since the location of electrons cannot be so determined, micro-particles location was not just left out but regarded as something about which there is nothing say, ultimately an illegitimate issue. This radical empiricist attitude became dominant in mainstream physics in the 1930s, and remained in place until around 1980. To this day, many identify quantum mechanics with radical empiricism in action. In actual physics, however, only a minority of scientists have ever *practiced* Heisenberg's philosophy. Leading textbooks from the heyday of Copenhagenism make this plain. Consider, for example, Leonard I. Schiff's classic manual of 1955. The first chapters endorse a version of Copenhagenism full of radical empiricist caution, but then the chapters that deal with collisions, atoms, molecules and nuclei drop all empiricist caution and go for solutions of physical problems that feed magnitudes first introduced in empiricist-terms into classical magnitudes that Schiff presents in realist-objectivist terms. This move is common in quantum mechanics. For instance, theoreticians routinely enter electron state densities by feeding the classical electric potential into the equally classical Poisson equation of electrostatics (see Emch, 2007, especially section 2.5). Other empirically successful disciplines that cite unobservables bear out a similar story. On the face of it, most scientists have no doubts either about the existence of unobservables down to at least the nuclear scale, or about the truth of many theoretical descriptions concerning unobservables and structures involving them. The point is that, more often than not, scientific research and theorizing are guided, not by radical empiricism, but a broader and variegated form that has forged science as much as science has forged it (see e.g. Shapere, 1980, 1984). Einstein's work on atoms and molecules illustrates the character of what might be termed standard "scientific empiricism".

2. SCIENTIFIC "EMPIRICISM"

In 1905, moving against the establishment view, Albert Einstein declared the ether hypothesis dispensable. His motivation was not radical empiricism, for at the time

he was also busy defending the existence of theoretical entities posited by the Kinetic Theory of Matter. Einstein's work on molecular diffusion and his paper associated with Brownian motion explicitly grant epistemological worth to consilient explanations, particularly those that lead to novel predictions. Here and subsequently his writings show the same attitude towards theoretical proposals in general.

Einstein's argument for the existence of atoms and molecules seems emblematic of the empiricism that guides theorizing in much of science. The Kinetic Theory identified heat with the kinetic energy of the atoms and molecules assumed to constitute matter. Skepticism about this theory had distinguished champions at the turn of the century, led in chemistry by Wilhelm Ostwald, who maintained that the laws of thermodynamics, not mechanics, were fundamental. One epistemological advantage of thermodynamics, Ostwald urged, was that it did not require reference to fancy theoretical posits, only to energy and its observed transformations in the world accessible to the human senses. Existing conceptual problems with the Kinetic Theory helped Ostwald's case. For example, assuming that interactions between the molecules followed just Newtonian mechanics entails the full reversibility of their interactions, and thus the temporal reversal of every possible collision must be a possible motion as well. But then, why we do not see burned logs turning back to wood or melted ice cubes reconstituting themselves spontaneously? The abundance of irreversible processes made many thinkers wary of the Kinetic Theory, notably Mach. Like Ostwald, Mach argued that while mechanics required hypotheses about matter and invisible atoms in motion thermodynamics did not. Einstein's argument in 1905 challenged this radical empiricist rejection of the Kinetic Theory. It had been long noticed that pollen floating on water exhibited a never-ending, irregular motion (called "Brownian motion" after Robert Brown, the botanist who first reported it in 1827). Einstein reasoned that this spontaneous, irregular motion may provide evidence of the microscopic nature of matter. If water is actually made of molecules, then in a container these should collide continually with one another and with the walls. He therefore proposed that the irregular motion of small visible particles floating on water might be an effect of relentless kicking by the water molecules. Einstein (1905) articulates this idea mathematically in terms of the Kinetic Theory. His explanation of Brownian motion describes both how fast the water molecules move and how many of them hit a pollen grain per unit of time on average. This account—Einstein shows—can be turned a detailed story by feeding into the expressions data derived from tracking the pollen grains.

The result was a plausible explanation, but not yet one good enough for the most demanding branches of physics at the time. Einstein's readings of philosophy of science and the position held towards mere speculation at the institutions then closest to him (the Zurich Polytechnic and the Patents Office) had made him wary of mere hypotheses. Not the way radical empiricists are wary, however. The epistemological supplement Einstein called for was *prediction of previously unnoticed facts*. Since doubts stood against atoms and molecules, he thought it crucial to complete his explanation by deriving from it surprising predictions. He

focused on specific effects of molecules in the liquid state hitting at random much larger particles (e.g. grains of pollen). The result, Einstein found, would be irregular motion at the level of single pollen grains but also noticeable regularity for the average spread of a collection of grains over time. Specifiable statistical distributions, observable under ordinary microscopes, would be exhibited by Brownian motion. Tests of Einstein's theory took place a few years later, conducted with success by Jean Perrin, who even managed to estimate the dimensions of the proposed molecules. At first Ostwald challenged these experiments, but then he came to regard them as compelling enough to accept the reality of atoms. By 1908, molecules were no longer considered merely hypothetical posits by the vast majority of chemists and physicists.

Here Einstein had his theorizing guided by empiricist philosophy of a clearly non-radical sort. The situation seems typical of natural science.

3. PUBLIC SCIENCE AND PHILOSOPHY

Naturalists try to bring thought and theorizing of characteristically scientific varieties to philosophical problems: what is space-time; what there is in the world and how what there is came to be; what are "we" and where do we come from; and how do we know any of this. Naturalists are also increasingly keen to extend their project to anthropology, ethics and religion—what is right, what is wrong (e.g. see the papers by José Ignacio Galparsoro, Pablo Quintanilla, Jesse Prinz, Sergio Martínez and Nicanor Ursua in this volume). Now, if, as the previous considerations suggest, science and philosophy work together, then naturalism cannot be thought of as an anti-philosophy (Pacho's chapter presents a strong version of this claim). But, then, what (if any) is the contrast between naturalism and philosophy?

There is a sense in which virtually all forms of philosophy, including underdeveloped forms, influence science, especially at private levels of theorizing. Often scientists blurt them out when they speak their hearts in popularization essays. Here is a conception of theory-construction that links unity and truth via beauty, voiced by an eminent physicist, Anthony Zee (1986):

My colleagues and I in fundamental physics are the intellectual descendants of Albert Einstein; we like to think that we too search for beauty. Some physics equations are so ugly that we cannot bear to look at them, let alone write them down. Certainly, the Ultimate Designer would use only beautiful equations in designing the universe, we proclaim. [...] 'Let us worry about beauty first, and truth will take care of itself!' Such is the rallying cry of fundamental physicists. (p. 3)

The prevalent faith is that in Xeroxing the matter content of the universe, [Nature] must have been motivated by a deep aesthetic imperative which we are yet unable to appreciate. (p. 259)

Dreams also reportedly guide scientific projects. The mathematician Srinivasa Ramanujan articulated functions he said he had dreamed, and the story goes that Friedrich Kekulé's idea of the benzene ring benefitted from animations he saw while dozing off one day.

The point is that numerous forms of philosophical and cultural insight seemingly influence scientists. However, at *public* (as opposed to *private*) scientific levels, not every kind of "philosophizing" qualifies for consideration. Particularly in disciplines marked by high degrees of theoretical unification and predictive power, there is a well-developed *public-level of discourse* that has an inbuilt expectation of argument backed by empirical evidence, with everything open to detailed checking by any outsiders willing to look into the claims involved (Ziman, 1968). While at individual levels scientists may draw inspiration and confidence from various sources (including rationalist and mystical convictions), at public-levels the introduction and justification of ideas are epistemologically demanding affairs. How demanding? Mary B. Hesse puts it thus:

... models of science presuppose that the learning process returns to the empirical world, which provides checks and reinforcements, and is the subject of prediction and control. (1980, p. 125)

Empiricist caution (broadly construed) looms large and wide on scientific claims. "Broadly understood" is the operative phrase here. As critics have long pointed out, radical empiricism is both a logical impossibility and a historical falsehood. Even "perceptual observation" is problematic with respect to truth and nontrivially dependent on theory. Where applicable, therefore, the observational/non-observational distinction cannot be the foundationalist one of radical empiricists.^{iv} Nor are the virtues of theorizing pursued at public-levels limited to the constructivist qualities favored by hard empiricists. For example, while descriptive simplicity is a goal shared by virtually all reasonable projects, ontic simplicity is a knotty expectation, as is also formal unity.^v

And so, again, to the extent that fundamental science encompasses philosophical projects, naturalism cannot be construed in opposition to philosophy. Public science has, however, grown frosty towards such positions as rationalism, transcendentalism and mysticism. It is such positions that stand in contrast to naturalism. Some naturalists are particularly harsh towards aprioristic philosophy (e.g. Devitt, 1998, 2005).

Who present themselves as "naturalists?" A growing number of thinkers do, especially in English-speaking circles. Mainstream figures over the last half century include, for example, Mary B. Hesse (1961, 1974, 1980), Mario A. Bunge (1977, 1979), Adolf Grunbaum (1995), Dudley Shapere (1980, 1984), Philip Kitcher (1992, 1993), Daniel C. Dennett (1992, 1995), David Papineau (1993, 2002), Larry Laudan (1990), Abner Shimony (1993), Michael Devitt (1998, 2005), Ronald Giere (2000, 2006), James Ladyman (2007), Jesse Prinz (2008), and Alex Rosenberg (2011), along numerous others. These thinkers share just a general outline, and then not across the board. Still, their respective proposals share some key views. When they focus on public-level science, these and other naturalists

share a broadly empiricist approach to justification—only logic, background scientific knowledge, experiment and observation count in favor or against a theoretical proposal. This take on justification comes from the start as a claim that is fallible, a posteriori, and opened to improvement as science develops. Contemporary naturalists regard their perspective as being the most promising in philosophy, but they do so *tentatively*.

Naturalists who draw strongly from radical empiricist moves in scientific practice distrust speculation and reject scientific realism, whereas naturalists who draw from moderate empiricist moves generally accept abductive inference and favor realism (see Cordero’s essay in this volume). Antirealist varieties of naturalism identify optimal scientific reasoning with radical empiricist moves often advocated during episodes of serious conceptual tension by leading scientists—e.g. Ernst Mach, Pierre Duhem, John B. Watson, Werner Heisenberg, John von Neumann, and Stephen W. Hawkins, among others. Realist varieties, by contrast, identify optimal reasoning with the abductive empiricism common in scientific practice—e.g. as attested by Galileo Galilei, Isaac Newton, James C. Maxwell, Charles Darwin, Albert Einstein, Watson and Crick, John Bell, and Frank Wilczek, among others who follow *moderately* empiricist criteria for accepting and rejecting proposals.

Accordingly, mainstream naturalism seems best thought of as a *family* of philosophical projects of widely empiricist leanings, a variegated stance guided by the ideas and methods of public natural science (which, as noted, in turn receives guidance from a broad range of empiricist insight). This characterization allows for a plurality of positions about natural science. A still more multicolored collection results from extending the base from natural science and empiricism to include other empirical sciences and/or non-empiricist epistemologies (as variously discussed by Sergio Martínez and Julián Pacho in their respective contributions to this volume). Whether the views allowed in by the more inclusive characterizations of naturalism have anything significant in common beyond the fallibility thesis is a matter of dispute.

4. NATURALISM AND ITS CRITIQUE

Confronted with a philosophical issue, naturalists try to address it by means of current background science fortified by careful analysis. How successful are naturalist projects, however? “By their fruits ye shall know them”, so goes the saying. Naturalists seem to have advanced at least some traditional philosophical issues. Consider, for example, the project to naturalize epistemology started by W.V.O. Quine (1969/2004) and then critically developed by succeeding generations of naturalists (including Dudley Shapere, Daniel C. Dennett, Philip Kitcher, Larry Laudan, and Ronald Giere, among numerous others). The resulting proposals present cognitive subjects as organisms whose capacities evolved in a particular physical and social environment (most recently and intensely in the context of scientific practice). In naturalized epistemology the starting point is neither subjective experience nor the individual subject, but innate human

capacities supplemented by abilities developed through advances in science and the social organization of science.

A second example of naturalist fruitfulness seems on view in recent defenses of realist positions. Here, one key task is to justify forms of “inference to the best explanation”, enough to at least avoid a charge of vicious circularity against the moderate empiricism appealed to by realists. In a familiar version of the inference, given a set of hypotheses, the one that explains the available data better than its rivals is the hypothesis one should accept tentatively as true. But putting the claim this way invites embarrassing questions: How does one recognize a *good explanation*? Why should the actual world be the one singled out by the *current best possible explanation*? What makes anyone think that, given a pool of prospective explanations, it contains the truly “best” explanation? Some naturalists (notably Boyd, 1984) respond by sharpening the inference’s structure and then advancing characteristically scientific arguments in its support. Other naturalist realists labor to identify theoretical descriptions/explanations that can be relied upon with credibility similar to that granted to ordinary claims about ordinary observables (see Cordero’s essay in this volume). These are only some examples. Equally strong today are naturalist projects to address metaphysical and ethical issues. Efforts along those lines are represented in this collection by Steven French, Pablo Quintanilla, and Jesse Prinz.

An old line of criticism, however, dismisses efforts along the above lines as hopelessly naïve. Justification for the criteria and moves developed within naturalist perspectives runs along scientific lines. As such, naturalist justification rests on considerations of coherence, agreement with data, and risky predictions. However, even if a proposal were to succeed as a scientific claim, to non-naturalists the notion of success involved here might seem philosophically raw and misguided from the start.

What, non-naturalists ask, justifies the scientific methods to which naturalists appeal? I suggest Ernest Nagel’s response to this line of complaint remains strong. The objection matters, he noted at the dawn of contemporary naturalism, only to those who “refuse to dignify anything as genuine knowledge unless it is demonstrated from self luminous and self evident premises” (1956, p. 15).

But there is no such thing as complete justification for any claim, and so requiring complete warrant for naturalist proposals is an unreasonable request. The proper guideline for naturalist proposals seems thus clear: develop it using the methods of science; if this leads to a fruitful stance, then explicate and reassess. The ensuing offer will exhibit *virtuous circularity* if its explanatory feedback loop involves critical reassessment as the explanations it encompasses play out. So viewed, naturalism is a philosophical perspective that seeks to unite in a virtuous circle the sciences and non-foundationalist, broadly-based empiricism.

Other common lines of complaint are that naturalization efforts seem fruitful only in some areas, and that several endeavors outside the sciences serve as sources of knowledge into human life and the human condition, especially in areas where science does not reach far as yet. It seems difficult not to grant some truth to many allegories from literature, art and some religions. Naturalism has room for

knowledge gathered outside science, provided the imported claims can also be sustained by naturalist tests.

As noted at the beginning (and as the papers that follow make clear), naturalist approaches do not form a monolithic whole. This rough introductory chapter only aims to highlight the contemporary significance of naturalist moves. We, the editors, hope that, collectively, the essays that follow will give readers a fair view of the vitality and tribulations of naturalist projects today.

5. THIS VOLUME

This volume, long in the making, focuses on approaches discussed at seminars on naturalism at the University of the Basque Country (San Sebastian, Spain) by professors José Ignacio Galparsoro, Julián Pacho, and Nicanor Ursua. Many of these activities continued discussions started at various editions of the International Congress of Ontology—a biannual UNESCO-recognized venue that, under the umbrella term *physis*, promotes philosophical research that engages recent contributions of science. The papers in this collection are by authors whose work has been followed with interest at the noted seminars over the last decade. They are placed in an order that goes from papers that pursue naturalist projects to critical papers on naturalization efforts in recent philosophy.

In the first contribution, “Metaphilosophy, Folk-philosophy and Naturalized Philosophy: A Naturalistic Approach”, José Ignacio Galparsoro invites us to reflect on the advisability of analysing philosophy from a naturalistic perspective. That is, from a perspective that considers philosophy as if it was one more cultural object, which can be studied using the tools that we have available to us today and that are provided by disciplines such as evolutionary psychology or anthropology oriented by a distinctly cognitivist approach. A central concept in the analysis is that of “intuitive ontology”—closely linked to folk-philosophy or the spontaneous, naïve (natural) way of thinking that is associated with common sense—which is a result of the evolutionary process and a source of metaphysical prejudices such as dualism. A metaphilosophical reflection, such as that proposed by Galparsoro, identifies the “natural” character of a metaphysics that is still too close to folk-philosophy, and the interest of constituting a naturalized philosophy that is fully conscious of its “counterintuitive” character.

Pablo Quintanilla (“Naturalism and the Mind: the Final Questions”) starts his paper by making explicit the roots of central arguments against naturalism in Kant and Husserl, distinguishing along the way different kinds of naturalism: ontological, methodological, reductive and non-reductive. With this initial work of conceptual clarification in place he then discusses the senses in which there can be a naturalistic account of the mind. He endorses a non-reductive ontological and methodological naturalism, grounded on the notion of supervenience, arguing that there are good reasons to believe that this kind of naturalistic account of the mind is already been offered. However, in his view, there are two last realms in which we should extend naturalism: moral behavior and agency. The paper provides a sketch of how these views could take place.

Jesse Prinz (“Measuring Morality”) claims that in recent years there has been a naturalistic turn in philosophy, akin to the linguistic turn that characterized the last century of work in the analytic tradition. Naturalism has long been a popular metaphysical stance, but is now increasingly associated with a methodology that draws heavily on empirical research in defense of philosophical conclusions. Ethicists have resisted moral philosophy for a number of reasons, including the conceptual nature of ethical questions, the unreliability of folk intuitions, and, most importantly, the alleged divide between projects that are normative and those that are descriptive. In this chapter, Prinz argues that empirical research can contribute to all core areas of moral philosophy, including moral psychology, metaethics, and normative ethics. The author illustrates by describing empirical work that links morality to emotions. Along the way, the chapter distinguishes different kinds of empirical approaches and argues that these must be integrated with more traditional philosophical methods if we want to move from the articulation of theories to theory confirmation.

For Alberto Cordero (“Naturalism and Scientific Realism”), projects of naturalist realism rest their cases on fallible, *scientific* justification. This chapter explores such proposals in recent philosophy of science, their critical reception and the growing concentration of realist theses on theory-parts rather than whole theories, along with the main problems and prospects of naturalist realism today. The last two sections outline Cordero’s own suggestions, drawn from scientific practices that emphasize successful novel prediction, integrated into a criterion for selecting theory-parts of realist significance.

Steven French (“Handling Humility: Towards a Metaphysically Informed Naturalism”) claims that much of modern metaphysics is a priori, based on intuitions and pays only lip service to science, where, at best, this amounts to a dim understanding of high school chemistry. Some naturalists urge the construction of a fully naturalized metaphysics, based on what current science (physics, in particular) tells us about the world. In this essay French examines the prospects for such a metaphysics in the light of quantum theory in particular and suggests that even a non-naturalized metaphysics may prove useful to the philosopher of science. The chapter concludes by reflecting on the complex relationship between metaphysics, science and the philosophy of science.

According to Sergio F. Martínez (“The Scientific Undercurrents of Philosophical Naturalism”), naturalism refers to views that consider philosophical method to be continuous with the methods of science. Most often the discussion centers on the characterization of the sort of continuity that is relevant for characterizing naturalism, and thus it is assumed that naturalization takes places with respect to a given discipline. The author’s aim is to argue for a characterization of naturalism distinguished by the capacity of mutually supporting explanations to produce better and more encompassing explanations. Thus, such account of naturalism relies on attributing epistemic importance to the capacity of different explanations for mutually supporting each other, not as a consequence of a perfect fit, but through a process of accommodation that takes place in time and involves considerations that are crucial to evaluate its rationality. According to

Martínez, the issue is not supplementation or replacement of philosophical method as a whole. Naturalism, he argues, is not one master stroke of a brush, but a long process of subtle strokes promoting scientific understanding.

Nicanor Ursua (“Advantages and Risks of Naturalization: Converging Technologies Applied to Human Enhancement”) considers the stances offered by naturalized philosophy and looks at its prospects and the role that philosophy should play in the challenging context set by “converging technologies”. The concept of “converging technologies” used by Ursua draws from investigations in the USA and Europe that link this concept to the idea of “human enhancement”, i.e. improvement of human performance by corporal and/or intellectual modification. Ursua gives particular attention to the current debate about converging technologies and the concept of transhumanism or tecnofuturism which, he stresses, could lead to the transformation of the human species and requires a new philosophical anthropology.

Finally, in “Naturalism and the Naturalization of Philosophy: Disputed Questions”, Julian Pacho proposes that naturalism is a metaphysical position about the deep nature of things. In his view, naturalization is a program that seeks to apply the methodology of the natural sciences to the human sciences, especially philosophy. In some circles naturalization efforts are regarded as proposals to end philosophy, the critique being that, were naturalization efforts to succeed, many problems traditionally regarded as “philosophical” would be entirely transferred to the special sciences. Pacho poses the following questions: Is naturalization an unstoppable process? Are there issues or objects not naturalizable *per se*, thus revealing that philosophy is a safe and distinct form of knowledge? Is it necessary to assume a non-naturalistic metaphysics to challenge the naturalization of philosophy?

NOTES

- ⁱ Reichenbach (1949: 310); quoted by Maddy (2001). See also Reichenbach (1951).
- ⁱⁱ Whittaker (1953/2007) remains a sterling reference for the history of the ether of light.
- ⁱⁱⁱ For the classical arguments see e.g. William Thomson (1884).
- ^{iv} Research from cognitive science strongly indicates that percepts have the character of good hypotheses—best guesses that involve added information from prior generalizations, past learning, expectation, and even emotion. See, for example, Pylyshyn (1999), Brewertl and Lambert (2001).
- ^v Bunge (1963) offers a critique by a strong scientific realist of the myth that simplicity is always a fact or a goal of research. On formal unity see Steven French’s contribution to this volume.

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JOSÉ IGNACIO GALPARSORO

METAPHILOSOPHY, FOLK-PHILOSOPHY AND NATURALIZED PHILOSOPHY

*A Naturalistic Approach**

1. INTRODUCTION: NATURALIZING CULTURE. NATURALIZING PHILOSOPHY, TOO?

The claim that philosophy belongs to the realm of culture does not provoke substantial objections. However, if one is invited to consider the advisability of analysing philosophy as if it was just one more cultural object that can be studied with the tools that we have available today—and which are provided by disciplines such as evolutionary psychology or anthropology oriented by a distinctly cognitivist approach—then things are quite different. This invitation faces important obstacles, one of which is the excessive zeal with which philosophers tend to protect their discipline. Historically, the field that has been considered the realm of philosophy has been progressively reduced. The fear, then, is that the remaining reduced scope that is considered to be the exclusive domain of philosophy may be wrested from it. When in addition the suspicion is that philosophy's home ground is threatened by disciplines that, more or less patently, are recognized as belonging to "science", there is a tendency to appeal to the magical word in which all faith is deposited to scare off the enemy: reductionism. The progressive separation of specific disciplines from the core trunk of philosophy has the consequence of leaving philosophy with the sensation of being surrounded, and in need of adopting a defensive position in order to safeguard its remaining possessions at all costs. This attitude means that a large proportion of philosophers consider as enemies—and no longer, as would be desirable, as fellow travellers—those disciplines that could provide elements that would help to clarify problems that philosophers consider to be their own exclusive concerns.

Considering philosophy from the point of view of philosophy, that is to say, engaging in metaphilosophy, is a practice that has been common among philosophers from all eras, and there has been an increase in such activity in recent decades. A common denominator among the immense majority of contemporary philosophical tendencies and authors is a refusal to consider the contributions of scientific disciplines—and very specifically those contributions that come from the field of evolutionary biology—as relevant. There is something that resembles "biophobia"—which is not unique to philosophy, but rather is common among the humanities and social sciences—that triggers a knee-jerk rejection of any

suggestion that so much as considers the advisability of adopting an approach that takes these contributions into account.

A symptom of this biophobia is the dominance over many decades of the 20th century of the so-called Standard Social Science Model (SSSM). This model considers that the social sciences are a completely independent field with respect to the natural sciences. The SSSM has been severely criticized, particularly by Tooby and Cosmides (1992). For these authors, one of the central proposals of the SSSM is particularly worthy of criticism; this proposal maintains that, “biology is intrinsically disconnected from the human social order” (Tooby & Cosmides, 1992, p. 49). The SSSM would suggest the following division of labour: natural scientists should deal with the non-human world and the “physical” aspects of human life, while social scientists would be the custodians of human minds and of all the mental, moral, political, social and cultural world. To Tooby and Cosmides, this is no more than “the resurrection of a barely disguised and archaic physical/mental, matter/spirit, nature/human dualism” (Tooby & Cosmides, 1992, p. 49). Such a stance would have led the SSSM to ignore the evolutionary perspective because it is considered irrelevant to the correct field of study of the social sciences. Tooby and Cosmides consider that the time has come for a revolution in the field of social or human sciences: it is necessary to apply our knowledge of evolutionary psychology to the field of culture. A profound consequence of such a move would be to change the way we understand culture itself. It will become necessary to recognize that human beings have a mental architecture that is a product of evolution and is fitted out with a series of contents that condition culture. It will therefore be necessary to give up the idea of the SSSM according to which the mind is originally a completely malleable “blank slate” that culture, through the process of learning, fills with content (Tooby & Cosmides 1992, p. 28; Pinker, 2002).

The critical response to the radical separation that the SSSM establishes between nature and culture is the proposal for a “naturalist program in the social sciences” (Sperber, 1996) or in other words, a naturalization of culture. In recent years, to the horror of many, there have been attempts to naturalize different areas of culture such as religion (Boyer, 1994, 2001; Dennett, 2006), morality (Ridley, 1996; Dennett, 2003) or science (Atran, 1998; Carruthers et al., 2002). The question that arises is that of the advisability of extending this tendency to the field of philosophy, as an integral part of culture. The project would therefore involve examining the pertinence of applying an anthropological, cognitivist and evolutionary approach to philosophy and considering whether philosophy can be treated as one more cultural product, similar to religion, morality or science. The lack of specialist studies in the field of philosophy¹ does not mean that research must start from zero. Research should make use of the studies that have already been carried out in other areas of culture, all of which can be characterized by the fact that they attach great importance to the findings of cognitive science within a context that is markedly evolutionary. Be that as it may, such an approach will clearly mark its distance from the SSSM, with its idea of a radical separation between nature and culture. If culture is not a field that is completely independent

of nature, it means that cultural products will, at least to a certain extent, be constrained by naturally determined factors which are ultimately biological, since they are the result of a long evolutionary process. Thus, if philosophy is a cultural product, and if there are no longer good reasons for radically separating nature from culture, the question that inevitably arises is the following: are we at last seeing the possibility of a naturalization of philosophy?

Today, we know that the human mind has been evolutionarily configured to respond to the problems that it has faced from the environment in which human life has developed (Mithen, 1996). Furthermore, it is with this same cognitive apparatus that people today tackle philosophical and scientific questions. One of the theses of evolutionary psychology is the following: our biological structure has a fundamental influence on the way we think (Mithen, 1996). If this thesis is correct, does it mean that our biological structure influences the way we do philosophy? Or, posing the question in a way that some may find provocative: is philosophy also constrained by human mental structures that are the result of the evolutionary process of natural selection? It is very revealing that philosophy has not dedicated more time and effort to examining itself in the light of these questions. This means that analysing the pertinence of a naturalistic metaphilosophy that takes this thesis into account (via, among other disciplines, evolutionary psychology) is a necessary and urgent task that still has to be undertaken. Furthermore, it should not cause of any great consternation if, as a result of this reflection, it became clear that it would be useful to analyse the contents that philosophy has generated over its history precisely in the light of evolutionary psychology or cultural anthropology with a cognitivist bent. It is not the case that anyone is trying to whisk away a precious treasure from philosophy. Rather, there is a desire to take the task of regarding philosophy itself seriously, which leads to asking questions such as why do we think the way we do, and, why is philosophy the way it is. These are questions that have worried the greatest philosophers; those who lived before the advent of theories such as evolution did not have this valuable tool available to them to assist in the task. For those of us who are alive now, it would be unforgivable not to make use of such theories in order to try to shed some light on these central philosophical questions.

2. NATURALIZED REALMS OF CULTURE: MORALITY AND RELIGION

Nietzsche was one of the first philosophers to recognize that the theory of evolution deeply altered the image of man. The new perspective opened up by evolutionary theory makes it possible, among other things, to develop a genealogy of morality, in which it becomes absolutely imperative to scratch beneath the surface of the apparently eternal and immutable moral values to show that these too were the result of a historical process. Despite the fact that Nietzsche's ideas are, in general, completely unknown to researchers in the field of cognitive and evolutionary sciences, those researchers follow the same genealogical strategy, albeit using means that are far more powerful and better honed. Some cultural anthropologists are also interested in a genealogy of morality.ⁱⁱ If we were to

perform a comparative study between Nietzsche and the latest research results (for example, those of Hauser, 2006) we could probably see important similarities. Thus Hauser—like Nietzsche—also moves through a landscape of suspicion: after explicit declarations that are made to justify a moral choice, other more basic elements remain hidden. Here also, it is necessary to dig beneath the surface and to try to make explicit that which is kept hidden but which nonetheless conditions our moral choices.

Hauser's thesis is that there is a certain parallel between the universal grammar of Chomsky and what he calls a "moral grammar" or "moral organ". That is, that there would be some kind of profound moral "intuitions" upon which the different moral variants would be configured. This idea has yet to be demonstrated. However, it certainly is an interesting hypothesis according to which there would also be a biologically evolving base that is common to all humans in the field of morality. This means that the barriers that are set up between morality and biology start to be torn down and that, as this happens, the doors to a naturalistic treatment of morality start to swing open. It does not seem probable that biology is the key to explaining all the processes in the field of morality, but it does seem plausible that an answer is to be found to the origin of our moral capacity in the cognitive and evolutionary sciences (Ayala, 1987).

Another example of an analysis of morality from a naturalistic perspective is that provided by Bloom (2004), who attempts to show that our "intuitive dualism" (an element of our mental machinery that is fruit of the evolutionary process) lies behind the way we regard other people. To this end, he analyses the appearance of moral feelings in babies and children, and reaches the following conclusion: "the roots of morality are innate" (Bloom, 2004, p. 100).

Bloom is also concerned with another important field of culture that it would be useful to examine from a naturalistic perspective: religion (Bloom, 2007). Bloom laments the fact that contemporary evolutionary psychologists have abandoned the analysis of religion. Nevertheless, he emphasizes that in recent years some research has attempted to gain an understanding of certain "universal religious ideas" in children. Some recent studies suggest that "two foundational aspects of religious belief—belief in divine agents, and belief in mind-body dualism—come naturally to young children" (Bloom, 2007, p. 147). This research therefore considers two themes that are particularly interesting: the existence of universal religious ideas and the idea that mind-body dualism is firmly rooted in human beings from childhood. Later we will consider the question of this dualism in greater depth. For now, it is enough to point out that dualism is a natural idea (that is, it is spontaneously accepted by our common sense) and that, insofar as this is the case, casting it off requires us to overcome considerable resistance.

Bloom claims that if psychologists do not refer to religion, it is because it is a taboo subject: religion is a "sacrosanct domain" (Bloom, 2007, p. 148). If this subject was treated from a naturalistic point of view, there would be a risk of offending people. In effect, people spontaneously react hostilely to the claim made by many cognitive scientists that religious belief is an "evolutionary accident", that is, "an unexpected by-product of cognitive systems that have evolved for other

purposes” (Bloom, 2007, p. 148). Nevertheless, according to Bloom the situation is changing. To a great extent thanks to progress in fields such as evolutionary psychology and cultural anthropology, there is now a small community of cognitive scientists who study religious belief using the same type of theories and methods as have been applied to other fields, such as language, the perception of objects, theories of mind, etc. (Bloom, 2007, p. 148). From Bloom’s research we can draw an important conclusion: although religion deals with things that are transcendent (that is, supernatural), “religion is natural”. Insofar as this is the case, religion is an element of culture that can be naturalized.

Some of the most interesting results stemming from the analysis of religion from a cognitive and evolutionary perspective are those presented by Pascal Boyer. It is often said that religion provides explanations about the world itself or about events in the world. One thing that we can expect of an explanation is that it tells a story that is less surprising than the thing it aims to explain. Nevertheless, religious explanations tend to complicate things somewhat; providing more obscurity than clarity. Instead of shedding light on things (i.e., explaining) they encourage mystery and obscurity. This means that religious concepts seem to be located outside of the ordinary. Boyer’s aim is to refute this impression by showing that it is possible to present religious concepts as just one more result of the normal functioning of our mental mechanisms.

Boyer presents the human mind as a “inference systems”, that is, as “lots of specialised explanations-devices [...], each of which is adapted to specific kinds of events, automatically suggests explanations for these events” (Boyer, 2001, pp. 19-20). Our minds execute these chains of inferences automatically and it is only the results that are visible to us and can be consciously scrutinized. An analysis of mental mechanisms shows that religious concepts (despite their apparent extraordinary character) are as ordinary or “natural” as anything else (Boyer, 2003, p. 119). So, these concepts are counterintuitive, that is, they are contrary to the expectations of the intuitive ontologies developed by natural selection in the areas of physics, biology or psychology. Furthermore, Boyer points out, this counterintuitive character is precisely what we find striking and, therefore, what makes religious concepts easily memorable.

However, counterintuitive elements are just one part of the representations that are activated in the process: “religious concepts also activate a number of additional background assumptions that are not counter-intuitive and in fact are directly provided by intuitive ontological expectations” (Boyer, 1998, p. 881). Therefore, these inferential elements are not contradicted by religious propositions. It is precisely the combination of counterintuitive elements and the intuitive mechanisms of basic inference that explains, according to Boyer, “the cultural success of such representations in many different cultural environments” (1998, p. 881). All of this means that these representations can propagate themselves easily. However, the fact that the counterintuitive elements are constrained by the general system of inference of the mental machinery means that the variation in religious concepts is limited.

3. INTUITIVE ONTOLOGY

Boyer's attempt to provide a naturalistic explanation of religion leads to a series of implications that affect other areas of culture. Religion is still a special case in which we can appreciate the functioning of human mental structures (Boyer, 2008). Boyer clearly has the more general aim of providing a "naturalistic description" of all cultural representations, which is "empirically based" on the evidence of neurological functioning and on the evolutionary history of the species (Boyer, 1999, p. 226). The common denominator in Boyer's work is the central role allocated to the concept of the "intuitive ontology". Boyer often uses this notion, although on occasions he also makes use of equivalent expressions such as "evolved metaphysics" or "natural metaphysics" (Boyer, 2000) which in turn are not substantially different in meaning from other expressions such as "natural philosophy", "intuitive philosophy" or "folk-philosophy". In what follows, I will try to explain this concept in some detail, paying particular attention to its philosophical implications.

Boyer presents the following thesis, which is of great relevance to a field such as philosophy: "cognitive capacities make certain types of concepts more likely than others to be acquired and transmitted in human groups" (Boyer, 1999, p. 206). The question (a worrying question for some) that inevitably emerges is the following: is it easier or more probable that some philosophical concepts arise (and/or are transmitted) than others? An affirmative answer to this question means that one has to confront the very widely-held notion that it constitutes an attack on the dignity of philosophy to attempt to judge the creative freedom of the practice of philosophy itself in this manner, through the restrictions imposed by our cognitive capacities. Although this may be an uncomfortable problem, philosophy is obliged to consider it and to attempt to answer it. That is why philosophy should take note of the efforts made by authors such as Boyer in research into the field of cognitive development.

The human mind has no general principles for learning; rather it has many acquisition mechanisms, each of which is directed at specific aspects of the world. The structure of these mechanisms is based on domain-specific principles, and they are shared by all human being. This universal nature means that the different intuitive domains (those that correspond, for example, to physics, to psychology or to biology) are not substantially different in people belonging to very distant cultures: far apart in space or in time. All human beings share a common intuitive ontology which is developed during our infancy and which then changes very little throughout our adult lives. According to Boyer, "processes of cultural transmission cannot be understood without this intuitive background" (Boyer, 1999, p. 210). Thus, the intuitive ontology includes universal principles that do not necessarily have to provide "cultural universals", but which constrain the degree of variation in cultural productions. Therefore, the thesis of the variability of cultures, one of the central aspects of cultural anthropology that dominated the human sciences for decades, is greatly undermined: such variability is severely limited by the presence of an intuitive ontology that is common to all human beings and that is developed

ontogenetically during infancy and is, phylogenetically, the result of the gradual process of natural selection. In this context, other questions that are very closely related to those mentioned above and which deserve an answer reappear within philosophy: is the variability of philosophy conditioned by our cognitive apparatus?

The existence of the intuitive ontology does not mean that there are no cases in which the expectations that result from this ontology are thwarted. We have already considered the case of religion; many of the propositions of which fly in the face of intuitive expectations. However, there are domains other than religion that also surpass the bounds of the intuitive ontology, for example, physics, evolutionary biology, mathematics or philosophy itself. Boyer recognizes that there are differences between these fields and religion. We could say that they violate the principles of the intuitive ontology in a different way. In religion, this violation was easy of memorize (and, therefore, easy of transmit), while in the other fields the same thing does not hold. For that reason, in these fields there are special difficulties in transmitting concepts that overstretch the intuitive ontology (Boyer, 1999, p. 216).

Boyer offers us the following characterization of “ontology”: “an ontology specifies kinds of stuff in the world” (Boyer, 2000, p. 277). Ontology understood in this way is therefore a classification of the objects in the world. In effect, the Aristotelian theory of categories, which is central to Aristotle’s ontological conception, is none other than an attempt to detail a very general series of categories into which the things in the world are classified. From our current perspective, we could say that Aristotle’s was the first great attempt to make an “intuitive ontology” explicit. This was a giant first step; for the first time there was an attempt to make the classification of the things that belong to the realm of common sense explicit. With the tools available to him, Aristotle could not go much further. These days we have much more sophisticated tools and we should use them when it comes to analysing the question of ontology.

Today we have abundant psychological evidence that conceptual knowledge—we must not forget that knowledge of science and philosophy is a type of conceptual knowledge and that, therefore, what follows affects them fully—includes a series of “ontological commitments” (Boyer, 2000, p. 277). This means that all conceptualization is underwritten by a more “profound” base, which is its condition of possibility.

Studies of inductive and categorization processes in young children show that “children are certainly not driven by a pure sensitivity to correlations of external properties in objects” (Boyer, 2000, p. 278). That is to say that the mind of the child “contributes” something in the process of categorization. This confirms the thesis that the mind is not a blank slate. Young children (at an age when the processes described here cannot be affected by conscious reflection or by knowledge that could have been transmitted to them) do not exclusively classify things in the world based on their perception of the objects; rather this perception is “filtered” by a series of mental mechanisms that remain hidden to their consciousness.ⁱⁱⁱ Furthermore, for Boyer, “that ontological categories are real

psychological structures is not really in doubt” (Boyer, 2000, p. 280). So the categories are not ideal entities, but mental structures that have taken root in the human mind after a long evolutionary process. Without these mechanisms—which, following Boyer and other authors, we could call “ontological commitments”—children would not be able to classify the things in the world or look for regularities beyond the superficial characteristics of the objects; in short, they would not be able to think and, ultimately, they would not potentially be able to contribute to philosophy.

We see then that studies performed on children play an important role in the analysis of the intuitive ontology. However, the questions that inevitably arise are the following: does the intuitive ontology remain unaltered in the adult? Does it change? If it does change, to what extent? Or to put it more clearly: can scientific knowledge modify the intuitive ontology? Boyer’s answer leaves no room for doubt: no, because the two never meet; science and the intuitive ontology develop along different pathways. Specifically, scientific concepts are invariably acquired in the form of “metarepresentational beliefs” in a given social and cultural context (Boyer, 2000, p. 286). It is clear that in its content, science challenges those concepts that could be built up from a simple extension of intuitive expectations. For example, the intuitive notions of “force” or of “essence” have no place in contemporary physics or biology. Nevertheless, it must be clear that the acquisition of scientific theories that enter into conflict with the intuitive ontology do not result in the intuitive ontology simply being replaced. The intuitive ontology does not disappear. For example, Darwinian biologists continue to construct their theories using a mental apparatus fitted out with an intuitive ontology in which the notion of “essence” continues to play a decisive role. Darwinian theory contradicts this notion, which comes from intuitive biology, but that does not mean that the notion of “essence” vanishes from our deepest mental structures. Knowledge of a theory does not create a type of intuitive expectations that would be consistent with that theory, and which substitute the prior intuitive expectations. This means that science plays no role in the emergence and development of the intuitive ontology. The intuitive ontology is more like the obstacle against which science must constantly struggle.^{iv}

4. SCIENCE AND INTUITIVE ONTOLOGY

An author such as Nietzsche (*Unpublished Notebooks 1888*, 14[153])^v already warned that the fact that the cognitive structures of reason are useful for the survival of the human race does not warrant our making epistemological anthropocentric extrapolations: the utility of these structures does not demonstrate their absolute truth (*Unpublished Notebooks 1887*, 9[38]).

Many years after Nietzsche, and perhaps without knowing what Nietzsche had said, Boyer arrives at the same conclusion. After stating that intuitive ontologies are the normal result of cognitive development, Boyer says:

Evolved ontology [...] is neither optimal nor necessarily true. It is certainly not exhaustive—there are domains of experience for which it does not deliver any stable intuitions. Also, intuitive ontology may well be metaphysically [i.e., philosophically] unsound, postulating such things as ‘essences’ in living things or ‘beliefs’ in intentional agents without much evidence. Such flaws can only be expected in an ontology that was built by natural selection rather than by trained philosophers. (1998, p. 879)

Our intuitive ontology was not designed by natural selection in order for us to know the truth.^{vi} It is therefore an error to set it up as a criterion for truth. As Boyer says, “the human brain’s intuitive ontology is *philosophically incorrect*” (Boyer & Barrett, 2005, p. 98). One of the tasks of philosophy should be to analyse the problem of categories, firstly, by making the contents of the intuitive ontology explicit and, secondly, by denouncing its epistemic limitations in order to avoid the temptation of raising it to the status of absolute truth. Aristotelian and Kantian theories of categories can be interpreted precisely as attempts to make the contents of the intuitive ontology explicit. Furthermore, contributions, such as that of Nietzsche, can be considered as denouncing such attempts because they treat these categories as hypostasis. Following authors such as Nietzsche and Boyer, we should distinguish between the natural level (of the intuitive ontology) and another level (where science is located, and where post-Darwinian philosophy should be located^{vii}) where we should search for truth and which is a realm that on many occasions does not necessarily coincide with the expectations of the intuitive ontology. It can easily be shown that the intuitive ontology carves or classifies reality in a different way from how science does, or how philosophy should do.

The propositions of science are counterintuitive, just as those of religion are. However, as I have already said, that does not mean that we should lump science and religion together; the differences between these two fields of culture are notable. While “religion is a *likely* thing [...] scientific activity is both cognitively and socially very *unlikely*” (Boyer, 2001, pp. 369-370). That is why it has only been developed by a few people, in a few places and it is just a tiny part of our evolutionary history. Given our cognitive characteristics, scientific activity is totally “unnatural” (Wolpert, 1992). The intuitive (natural) ontology seems to be completely absent from the realm of science insofar as the propositions of science seem to contradict intuitive expectations. Does that mean that science (and acquired culture in general) is free from the constraints of intuitive expectations? We already know that Boyer’s answer is a resounding “no”:

Conceptual constraints from intuitive ontology are present here, too [...]. Acquired culture can add to intuitions some explicit comments on different (or better) concepts and offer explicit ‘non-intuitive’ alternatives, not change or replace the intuitions themselves. (1998, pp. 882-883)

De Cruz and De Smedt (2007) also tackle the problem of the relation between the intuitive ontology and scientific understanding from an evolutionary perspective, analysing the specific case of the theory of evolution applied to humans. Those

authors present something like a metatheory of evolution constructed out of evolutionary elements, thus placing themselves in a domain that could formally be useful for a naturalistic metaphilosophical reflection.

The distinction between humans and non-humans belongs to the realm of the intuitive ontology. It is possible that some studies into human evolution are influenced by this spontaneous ontological division between humans and non-humans, when for example they conclude that human evolution is exceptional (i.e., unique) with respect to that of other species. On the other hand, essentialism^{viii} (also a result of the intuitive ontology) could lead to opposite conclusions: given that there is a great genetic similarity between non-human higher primates and humans, implicitly both must share the same essence. This can lead to the idea that apes have psychological abilities that are similar to those of humans (De Cruz & De Smedt, 2007, p. 358). We can therefore see that both those who emphasize the uniqueness of humans and also those who insist on demonstrating the family resemblance with the apes are (when it comes down to it, and despite the fact that the defenders of both these opposing positions claim to be scientific) victims of the intuitive ontology.

We arrive then at the paradox that scientific ideas have to constantly struggle against something without which those scientific ideas would not exist (i.e., against the intuitive ontology). The fact that our intuitive expectations are so firmly rooted in the human mind explains, from an evolutionary perspective, why we resist accepting explanations, such as evolution, that tend to contradict those expectations (Giroto et al., 2008). Such resistance to scientific ideas is so widespread that some authors do not hesitate to claim that it is a “human universal” (Bloom & Skolnick Weisberg, 2007).

5. A FOLK-PHILOSOPHY? THE CASE OF DUALISM

The natural character of dualism has been emphasized by some anthropologists (Astuti, 2001; Gell, 1998) who are aware of opposing a very widespread conception among their colleagues according to which dualism is a characteristic exclusive to western civilization. The unorthodox view has also been defended by psychologists such as Paul Bloom, frequently using the expression “intuitive dualism” or referring to the fact that we are all “natural Cartesians” or that babies are “natural-born dualists” (Bloom, 2004, p. xiii). The approach that Bloom advances to explain dualism is decidedly Darwinian:

Darwin proposed that many mental abilities emerged through natural selection—they arose through the reproductive advantages that they gave to our ancestors. But he was also clear that many uniquely human traits are not themselves adaptations. They are by-products of adaptations—biological accidents. (2004, p. xi)

Among these mental capacities that accidentally emerged during the evolutionary process are the capacity to understand the world and people; that is, the capacity of perform science and philosophy. In the same way as for example our feet—which

were originally shaped by natural selection as instruments of movement—can be used to play football, so our brains are capable of doing things in the modern world that offer no clear reproductive advantages, such as engaging in science or philosophy. Bloom's thesis is that some of the most interesting aspects of mental life are a consequence of two capacities such as our understanding of material bodies and our understanding of people: "we see the world as containing bodies and souls, and this explains much of what makes us human" (Bloom, 2004, p. 34). That is to say, it explains many of those specifically human capacities that we set to work when we perform science or philosophy.

Descartes's is one of the most notable attempts in the history of thought to make what Bloom calls "our naïve metaphysics" explicit (Bloom, 2004, pp. 5-6) and which coincides with what we have been calling "intuitive ontology". The only thing that is intuitively clear for Descartes—who aimed to question everything he knew—is our existence as thinking beings. In effect, Descartes asked himself: what am I? And he answered: although I may doubt my body, there is no doubt that I am a thinking being, that is, there is no doubt that the self (the "soul") exists and that the body is not necessary for the existence of the soul. For Descartes it is clear that mind and body have different properties; that I am not a body, but rather a being that feels, that acts and that occupies a body. The Cartesian answer is a very good reflection of our basic intuitions regarding what we are, since this is how we spontaneously see ourselves and how we see others. Such as it is, Descartes's answer satisfies the expectations of our intuitive ontology: it is perfectly "natural". Furthermore, according to Bloom, this intuitive dualism that is common to all of us, and which Descartes was able to make explicit, is precisely the foundation of "our understanding of personal identity" (Bloom, 2004, p. 195). Cartesian intuitive dualism demonstrates the way in which we see the world. We can come to understand what it is that makes us human by recognizing that we are natural Cartesians. Spontaneously, human beings consider that mental states and entities are ontologically different from physical objects and actual events. A good explanation of this attitude is given by some recent research in psychology, such as that of Henry Wellman (1990), who maintains that "young children are dualists" (Bloom, 2004, p. 199).

Dualism decisively favours the appearance of the idea that the "soul" can survive the death of the body. As Bloom claims, "belief in afterlife is a natural consequence of our intuitive Cartesian perspective" (Bloom, 2004, p. 207). It also explains why this belief is so widespread and why it is so difficult to accept it as false, despite the fact that cognitive scientists present evidence that is ever more categorical in favour of the thesis that mental life (or if you prefer, the "spiritual soul") is no different from material forces and, therefore, has no existence independently of the body. We find ourselves facing another example of persistent resistance to science. Here once again the natural, common sense vision (in accordance with our intuitive ontology) and the scientific vision are in direct conflict. The application of materialism to what we generically call "the human soul" is a hypothesis that is difficult to swallow: it is profoundly counterintuitive. However, there seems to be no alternative other than to challenge the "natural

dualism” contained in our intuitive ontology, maintaining that the only way to explain humans and our cultural products is via acceptance of materialism (Sperber, 1999). This means accepting that every last vestige of dualism must disappear from psychology and from anthropology. Furthermore, we could say that it is also an invitation for it to disappear from philosophy.

6. CONCLUSION: METAPHILOSOPHY, FOLK-PHILOSOPHY AND (NATURALIZED) PHILOSOPHY

It does not seem reasonable for philosophy to continue to ignore the clamour from the approach led by the cognitivist and evolutionary disciplines, and that affects important areas of human culture. That approach presents arguments that are rationally convincing and that should therefore be of interest to philosophy. If in disciplines such as anthropology there are more and more voices being raised in favour of naturalizing the discipline, philosophy should at least seriously analyse the advisability of following the same path, which would involve, in the first place, reflecting on philosophy itself (i.e., engaging in metaphilosophy from a naturalistic perspective). Thereafter, and based on that reflection, philosophy should consider taking the opportunity to purge itself of the positions it has been so firmly entrenched in for many centuries. In this way, a naturalized philosophy should do away with those transcendent positions (or “metaphysical” in the Nietzschean sense) that are strongly linked to dualism. This must not be seen as philosophy betraying its own past; it is closer to being the exact opposite: from the perspective considered here, this history is valued, since it recognizes that the attempts to make the mechanisms of what we have been calling “intuitive ontology” explicit that were carried out by great philosophers such as Aristotle, Descartes and Kant, are the first step without which the current critical analysis of those mechanisms would not be possible. It also recognizes the efforts of authors such as Nietzsche who (anticipating some of the results that the cognitive and evolutionary approach considered here leads to) denounced the fact that, due to a paradoxical mechanism that can be explained in naturalistic terms, those positions that cling to dualism and that therefore deny the pertinence of naturalism, are very “natural”; that is, they can count on the support of our common sense and that is why they are so successful.

Dualism does not belong exclusively to any one field of the intuitive ontology (i.e., to intuitive biology, intuitive physics or intuitive psychology), rather it is present in all these areas. Because of this, dualism could be considered one of the characteristics of the intuitive ontology in general and therefore it would be a good candidate to occupy a central place in a hypothetical “folk-philosophy” (i.e. a “naïve”, “natural” or “intuitive” philosophy), whose actual existence should be demonstrated with the help of data to be provided by anthropology. If such a “folk-philosophy” exists (and all the evidence seems to suggest that it does), it would in principle be concerned—in a way which would have to be determined—with all the “folk” disciplines (“folk-biology”, “folk-psychology”, “folk-physics”, etc.). That is to say, it would deal with all the areas of the intuitive ontology in an attempt to provide a global vision. Using the metaphor proposed by Mithen (1996),

“folk-philosophy” could be seen as the corridors that connect the chapels in the cathedral of knowledge. Each chapel would represent an area of knowledge, and “folk-philosophy” would be concerned with all of them. Given that such chapels and corridors are the reflection of the cognitive machinery that has resulted from natural evolution, there is a very strong chance that “folk-philosophy” would be included among the human universals.

The same does not seem to be true of philosophy, which is located at a different level of reflection. Philosophy (for example, as practiced by Aristotle, Descartes or Kant) aims to make explicit (although there is probably no conscious awareness of performing this operation) the categories of the intuitive ontology that folk-philosophy contains. Philosophy (paradoxically unconsciously) has attempted throughout its history to make those mental constraints of the intuitive ontology that remain hidden accessible to the consciousness.

Metaphilosophy would be located at another level of reflection, and analyses the assumptions of philosophy that had previously made explicit the assumptions of the intuitive ontology. Metaphilosophy aims to explore (from a naturalistic perspective) the reasons why, for example, the ontology of Aristotle is what it is and is the way it is. Thus it aims to make the status of the Aristotelian ontology explicit; performing something along the lines of a genealogical study of it. This is much the same as performing something along the lines of a genealogy of reason, of the *logos*, but not through merely speculative means, rather using strictly naturalistic means.

Metaphilosophy should not only be concerned with the domain of what interests philosophy as a discipline (i.e., not only with the intuitive ontology that runs through all the areas of knowledge), but also with specific intuitive ontologies. Metaphilosophy would therefore be concerned with certain elements of the different fields of knowledge that in their day separated themselves from the common trunk of philosophy. A metaphilosophical reflection from the naturalistic point of view considered here would have the virtue of making philosophy (once naturalized) emerge from its walled enclosure, and making it interact with other fields of knowledge.

Once the need to naturalize philosophy has been accepted, metaphilosophical reflection would contribute to making philosophy conscious that, just as with all the other fields of culture, it is subjected to cognitive constraints that interfere with its task. So philosophy should accept that the intuitive ontology is not the domain where truth is located, but precisely the domain where obstacles to finding truth are. Philosophy should struggle against the prejudices that the dominant philosophical tradition uncritically considered to be a fundamental part of its own identity. If these philosophical prejudices are so difficult to abandon, it is precisely due to the fact that they are prejudices of the common sense and they are therefore deeply rooted in the human mind. Among such prejudices a central place is occupied by the spontaneity of thinking about things in dualistic terms. If philosophy is to continue doing justice to its name, it must accept that advances in the discipline are brought about via a powerful clash with these “natural” conceptions that have been accepted as correct. If philosophy follows the path

taken by other fields of knowledge, it will have to accept its counterintuitive (i.e., “unnatural”) nature and struggle against intuitive (i.e., “natural”) conceptions that have dominated its core throughout its history, such as essentialism or dualism. A naturalistic philosophy (that is neither natural nor naïve) seems to be the only possible way forward for a philosophy that aims to take its place in the field of human knowledge with dignity, without conforming to a relegated, secondary role as an interpreter of texts that are considered to be lifeless relics. The metaphilosophical reflection would identify the “natural” character of metaphysics and the advisability of constructing a philosophy that is “unnatural” or “counterintuitive” precisely because it is naturalistic.

The metaphilosophical reflection would also encourage us to consider philosophy in a different, unusual way; reading and interpreting it in the light of what has been said here: from a cognitive and evolutionary perspective. This does not mean throwing out the history of philosophy, but rather interpreting it as the efforts of human beings to understand the world and to understand themselves, but emphasizing the fact that these efforts have to use tools that are not well suited to this end. The intuitive ontology offers permanent resistance that we can only attempt to overthrow through patient work in which the cooperation of everybody is necessary. Culture is accumulative and this allows us to advance through the dense forest of our own understanding. However, philosophy cannot shut itself away; it cannot become a sterile, exclusively self-referential practice. It must be aware that it is one more cultural product, with a series of special characteristics (such as striving to provide globalized explanations) that make its task extremely difficult in a period when the accumulated knowledge is so large that it is impossible to cover it all in a single prodigious synthesis. Nevertheless, philosophy must continue to assert that there is no problem that is not within its field. It must insist that its specificity is precisely and paradoxically its generalizing aim; that is, its declared vocation for the absence of specificity. That its capacities are limited compared to this grandiose task must serve as a stimulus to enlist help from other fields of knowledge that historically belonged to the realm of philosophy but which were progressively separated from the common trunk. The advisability of embarking on a metaphilosophical reflection from this perspective seems obvious. Such a reflection opens the doors to a naturalization of philosophy within the broader context of the programme of a naturalization of culture. Notwithstanding, it must remain clear that naturalizing philosophy does not necessarily mean passively accepting that philosophy must be completely built using features of the methods of the natural sciences. However, it does require accepting that philosophy must free itself from the arrogant attitude that it has displayed in many moments throughout its history, and by virtue of which it has rejected the help that could have been provided by other disciplines in order to better understand itself.

NOTES

- * This work forms part of the Research Project “Naturalizing Philosophy: A Metaphilosophical Reflection in the Context of Contemporary Culture” (EHU2009/03), funded by the University of the Basque Country (UPV/EHU).
- i An important exception is the excellent book by George Lakoff and Mark Johnson: *Philosophy in the Flesh. The Embodied Mind and Its Challenge to Western Thought* (1999). The authors take to philosophy as a study object, applying the knowledge of cognitive science. They move, then, in a metaphilosophical field. The key to their explanation lies in the emphasis on metaphorical character of the assumptions of the different philosophies. Their perspective is, therefore, rather linguistics. It shows how the concepts and the theses of the most significant authors in the history of philosophy are constrained by a series of metaphors as a result of naive (i.e., folk) way of think of human beings. From the perspective of the present work, it would take another step, wondering why these metaphors are as much “successful”, that is why they are so deeply rooted in the human mind. The answer comes from the field of evolutionary psychology: these metaphors were formed along the evolutionary history of man and respond to the solutions that the man was to give to problems posed by the environment. The evolutionary approach of the present work and the approach of Lakoff and Johnson (based on the results of cognitive science and on special attention paid to the metaphors) are complementary. Both approaches show the same preoccupation by the problem of the philosophy and they approach it using a similar strategy.
- ii In the more specifically philosophical field of metaethics the work of Richard Joyce (Joyce 2006) is particularly noteworthy.
- iii Studies of neuroimages provide clues as to how the intuitive ontologies can be neurologically represented (De Cruz & De Smedt, 2007, P. 354). Such studies suggest that intuitive ontologies structure and guide perception. Thus, “the brain does not just passively construct abstract information from sensory cues, but actively constructs conceptual frameworks to interpret the sensory information” (*Ibid.*). We can consider that this is another more specific way to refer to what Kant called the “spontaneity” of understanding, that is, to refer to the fact that the subject contributes something to the process of knowing. What Kant could only lay out in a way that was inevitably confused and even clumsy—since he did not have more details at his disposal—is now made clear by these discoveries. That is why philosophers must know what Kant said, but they cannot remain deaf or blind to the latest discoveries of, in this case, neuroscience.
- iv This lack of agreement between science and intuitive ontology led to studies into “intuitive” or “naïve” (i.e., “folk”) theories in fields such as physics, logic, biology and psychology. An outstanding author in the attempt to tackle the problem of science (and very specifically that of biology) from an anthropological perspective is Scott Atran (1998).
- v When Nietzsche’s Unpublished Notebook is cited, the date and the numeration of the Notebook are given according to the numeration established in the Colli-Montinari edition (Nietzsche, 1967-sq).
- vi In this too, there is concurrence with Nietzsche. Cf. *The Gay Science*, § 354: “We have not any organ at all for *knowing*, or for ‘truth’: we ‘know’ (or believe, or fancy) just as much as may be *of use* in the interest of the human herd, the species”.
- vii Pre-Darwinian philosophy (such as that of Aristotle or Kant) would be at an intermediate level, between that of the intuitive ontology and that of post-Darwinian science or philosophy.
- viii Regarding essentialism in biology, see the work of Susan A. Gelman (Gelman, 2003; Gelman & Hirschfeld, 1999). Essentialism in biology has important consequences, as it is a mental obstacle that makes the appearance of the theory of evolution difficult. It would be necessary to analyse whether essentialist positions, which are present in other fields of knowledge, and very consolidated in philosophy (e.g., the essentialism of Plato: ideas or forms are the invariable, unchanging essences of material things in a constant state of change or becoming) also represent an obstacle when it comes to offering non-essentialist (or non-substantialist) explanations in these fields. This would bring out

the difficulty, denounced by authors such as Nietzsche, involved in detaching oneself from notions such as being, the self or causes. Essentialism is so firmly grounded in our intuitive ontology that explanations that threaten this idea encounter huge difficulties when it comes to being accepted.

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