

PAUL FEYERABEND

PHILOSOPHY OF NATURE



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Paul Feyerabend

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PAUL FEYERABEND, AN HISTORICAL PHILOSOPHER OF NATURE

An Introduction by
Helmut Heit and Eric Oberheim

“An enthusiastic and very engaged student whose talents are far above average. At times he may give in to the urge to make impertinent comments.” These remarks were entered on Feyerabend’s report for the 1939/40 school year by teachers of Vienna’s Public High School for Boys (*Staatliche Oberschule für Jungen*).¹ More than a few others would later record similar experiences in their interactions with him. Feyerabend was undoubtedly one of the most remarkable and controversial philosophers of science in the twentieth century, one who even drew attention outside the world of higher education. He had multiple interests and was interesting to many. While there is hardly any doubt about his above-average talents, assessments of his level of engagement are occasionally less enthusiastic. Feyerabend had a reputation for not being an excessively eager, committed, and thorough researcher, which was due at least in part to his nonchalant manner and snide remarks about the learned knowledgeableness of his colleagues. More than a few interpreted some of his remarks as unwelcome “impertinent comments,” much as did his former teachers. And in the course of a general reckoning with certain relativistic and skeptical developments in philosophy of science, the journal *Nature* labeled Feyerabend the “Salvador Dali of academic philosophy and currently the worst enemy of science” (Theocharis and Psimopoulos

¹ This and other school transcripts with similar content are part of the Feyerabend collection at the Philosophical Archive of the University of Constance, archive no. PF 9-3-26.

1987: 596). However, according to the authors of that piece, in this respect Feyerabend was just a little ahead of Karl Popper, Thomas Kuhn, and Imre Lakatos, since philosophical reflection on science on the whole was undergoing an undesirable development. From that point of view Feyerabend had a place in the company of the classic figures of post-positivist philosophy of science. Of the “Big Four” in twentieth-century philosophy of science, however, it is Feyerabend to whom the label “enemy of science” has mainly stuck, first in a manner suitable for the media (Horgan 1993) and later, posthumously, as an ambivalent honorary title (Preston, Munévar, and Lamb 2000).

This volume of *Philosophy of Nature* is well suited to shed new light on Feyerabend’s work and philosophical development as well as on his alleged hostility to science. In what follows we would like to introduce the reader to this text in three steps. (1) In the first step, after beginning with a brief initial summary of Feyerabend’s philosophical development, we will reconstruct the history of this volume and give the reasons why its publication was delayed for more than thirty years. (2) In the second step, we will explore the special significance of the manuscript both for Feyerabend research and for our understanding of the development of our conceptions of nature. In *Philosophy of Nature*, Feyerabend presents himself as an interpreter of early Greek thought and a genealogist of Western rationalism. Thus, this text reveals a fascinating perspective not only on the history of philosophy of nature, but also on some hitherto little-explored aspects of Feyerabend’s thought. At the same time, this work from the early 1970s constitutes a core resource for our understanding of the similarities and differences between the early and the late Feyerabend. It is the missing link for our understanding of Feyerabend’s later radicalization and of its justification and its scope within the continuum of his thought. (3) The final part of the introduction provides an overview of the structure and contents of Feyerabend’s *Philosophy of Nature*.

1. The History of an Unfinished Project

Feyerabend’s philosophy has always been intimately connected with the scientific and philosophical discussions of his time, and he frequently participated directly in these discussions through his personal contacts. In the late 1940s, while studying in Vienna under Felix Ehrenhaft and Victor Kraft, he obtained some direct insights into the logical positivism of the Vienna Circle and its problems,

which were of fundamental importance for the continuing development of philosophy of science on an international level. During this time, he also met Ludwig Wittgenstein, before deciding to accept an offer to work for Karl Popper in London. In the early 1950s, Feyerabend met with Niels Bohr a few times and became one of the most prominent philosophical critics of what would later be known as the Copenhagen interpretation of quantum mechanics. In 1962, along with Thomas Kuhn, his colleague at the time at the University of California, Feyerabend initiated the historical turn in philosophy of science, which subsequently adopted a stronger focus on the history and sociology of the sciences instead of regarding science exclusively as a logical system. During the 1970s, he became a strong critic first of Karl Popper's thought and his school of philosophy, and later of rationalism in a more fundamental sense. The catchphrase "Anything goes" from *Against Method* (Feyerabend 1975a, 1975b) drew attention both within and beyond academic philosophy. His subsequent works, especially *Science in a Free Society* (1978a, 1978b), "Science as Art" (1984a, 1984b), and *Farewell to Reason* (1987b, 1987c), were important contributions to a general discussion about the potentials and limits of the sciences in the Western world, as it was conducted in connection with postcolonial, postmodern, and ecological trends in the last third of the twentieth century. The potentials and limits of a scientific worldview are also themes in his final, posthumously published book, *Conquest of Abundance* (1999a, 1999b). Feyerabend's autobiography, *Killing Time* (1994a, 1994b), is a must-read, giving us insight into his dynamic life at the center of contemporary debates. And now *Philosophy of Nature* has revealed a hitherto little-known aspect of Feyerabend: the historical philosopher of nature and theoretician of the development of ancient philosophy.

While writing his major work, *Against Method*, whose first version was published in English in 1975, Feyerabend also worked on a comprehensive *Philosophy of Nature* in German. It was originally supposed to comprise three volumes reconstructing the history of human conceptions of nature from the earliest traces of Stone Age cave art to contemporary discussions of nuclear physics. Its working title was *Introduction to Philosophy of Nature* ("Einführung in die Naturphilosophie"). Since, however, it does not represent a genuine introductory work on the topic, but rather Feyerabend's own independent research, and thus is more of an historical reconstruction of the current situation than an introduction, we have decided to omit this misleading characterization from the published title of the work.

The project was not completed at the time; it was unknown in the late 1970s and apparently even forgotten by Feyerabend himself. The title continued to appear for a while in earlier bibliographies, but eventually disappeared.² In his autobiography, *Naturphilosophie* is not mentioned once. There are only a few isolated places in his later writings where it is mentioned at all. For example, Feyerabend mentions working on an introduction to philosophy of nature in a letter to Hans Albert (Baum 1997: 133). Yet the editor of the correspondence uses this reference primarily as evidence for Feyerabend's notoriously unreliable biographic and bibliographical statements: "Many projects were never realized; and even when a project was designated as 'in print' that does not mean it was actually published. For example, a book on philosophy of nature that had been scheduled to be published with *Wissenschaftliche Buchgesellschaft* was never released" (Baum 1997: 8). Baum was obviously unaware of the existence of the present work, which, however, at the time was scheduled to be released not by *Wissenschaftliche Buchgesellschaft* but by Vieweg in Braunschweig.

For this reason we were quite stunned when the uncompleted product of Feyerabend's efforts showed up during a research project at the Philosophical Archive of the University of Constance.³ It soon became obvious that the 245-page photocopy of a typescript was an important new source for Feyerabend research. The text covers in five chapters the development of our human understanding of nature from the earliest cave paintings and records of early history through the Homeric *aggregate universe* to the *substance universe* of the Pre-Socratics, especially Parmenides. For the first time we had encountered a thorough discussion of the "rise of rationalism" in Greek antiquity, to which Feyerabend had repeatedly alluded. Later,

² A bibliography put together by Feyerabend himself and dated "April 1976" (PF 3-1-9) lists "Einführung in die Naturphilosophie,? Braunschweig 1974" as his sixth book (before *Against Method*). However, it is marked with red text marker and a handwritten note by Feyerabend, "never published." A somewhat later bibliography (PF 3-1-5) still mentions the "Naturphilosophie" as title no. 92: "Einführung in die Naturphilosophie und Mythenlehre," where the word "Darmstadt" has been struck through and replaced with a handwritten "Braunschweig 1976." But the "Naturphilosophie" was entirely absent shortly afterwards in a bibliography spanning the time until 1977 (PF 3-1-1).

³ The material with archive no. PF 5-7-1 was discovered by Eric Oberheim and Torbjorn Gunderson in August 2004, when they were researching Feyerabend's literary estate following a seminar on *Against Method* at the Humboldt University of Berlin. They discovered the hitherto-unidentified book manuscript in a folder hidden under Feyerabend's dissertation "Zur Theorie der Basissätze" ("On the Theory of Basic Statements"; PF 5-6-2, Feyerabend 1951).

we happened quite by accident upon a reference to Feyerabend's unpublished *Naturphilosophie* in a work by Helmut Spinner.⁴ It turned out that at the time Spinner was supposed to act as the editor of the three volumes and had already invested considerable time and effort in this project. We are grateful that he gave us access to these preliminary studies as well as to a second, more detailed version of the typescript comprising a total of 305 typewritten pages and including an additional sixth chapter. This sixth chapter contains an outline of the development of philosophy of nature from Aristotle to Bohr. The various chapters are executed with varying degrees of thoroughness, but overall they constitute a continuous and internally cross-linked argument. Unlike the fragmentary legacy of *Conquest of Abundance* (1999a, 1999b) they actually constitute a consistent, if not editorially completed, monograph.

Due to its not having been quite completed, however, the now-published *Philosophy of Nature* provides fascinating insights into this philosopher's workshop. It is especially suited to correct the image of a slightly airy thinker, which had been cultivated by Feyerabend himself. Though he employs an effortless writing style while still getting carried away with tart (and not always firmly justified) remarks, he does so in the context of a comprehensive discussion of the relevant contemporary material and an "enormous reading quota" (Hoyningen-Huene 1997: 8), which is clearly discernible in the work. In this book Feyerabend presents himself not only as an agent provocateur but also as an academic who has worked hard and studied a great deal of material. He aired his grievance about this in the following letter to Imre Lakatos of May 5, 1972:

Dear Imre, Damn the *Naturphilosophie*. I do not have your patience for hard work, nor do I have two secretaries, a whole mafia of assistants who bring me books, check passages, Xerox papers and so on. If anarchism loses, then this is the most important reason. The examples which I find, are in books which *I* have found in the stacks myself, which *I* have carried myself, which *I* have opened myself, and which *I* have returned myself. [. . .] The very bloody version has been written by myself, never have I asked a secretary to do my dirty work.

(Lakatos and Feyerabend 1999: 274f.)

We may speculate whether not only anarchism but also the "damned *Naturphilosophie*" might have failed due to an excessively

⁴ Spinner also intended to use Feyerabend's thoughts toward a new interpretation of the development of western rationalism in antiquity and accordingly refers to Feyerabend's then unpublished work in two footnotes (Spinner 1977: 33 n. 99, 37 n. 121).

high workload. In any case, we know that Feyerabend dropped this project in the course of the late 1970s. His collaboration with Helmut Spinner ended in spring 1976 when Feyerabend apparently decided to undertake a substantial revision of the previous manuscript as well as his subsequent approach. This decision may have been in part due to Spinner's comprehensive comments and references, which Feyerabend appears to have valued and which encouraged him to revise the entire volume. At the same time, it appears that their collaboration was not entirely unproblematic, even though the agreements between Feyerabend, Spinner and publisher Vieweg were canceled by unanimous consent. This notion is supported by some public differences that occurred soon thereafter. For example, Spinner deplored Feyerabend's "philosophical idling" (Spinner 1977: 589), while the latter mocked Spinner's "illiteracy" (Feyerabend 1978b: 102). Nonetheless, in 1977 Feyerabend announced that he was planning to produce various publications "over the next two decades" in order to "remove some moral and intellectual garbage, so that new forms of life could appear. [...] This also includes my *Einführung in die Naturphilosophie*, which was supposed to be released in 1976 but which I have withdrawn in order to conduct some larger revisions" (Feyerabend 1977: 181). That he never implemented these plans is probably also due to the reactions to his other book from this period.

While before the mid-1970s Feyerabend was mainly a successful, argumentative, and respected philosopher of science, with his magnum opus *Against Method* he found himself catapulted into the center of contemporary intellectual and cultural debate. The predominantly negative reactions to *Against Method* may have had a two-sided effect on him with respect to his work on *Philosophy of Nature*. It is possible that it raised his standards of textual quality and clarity in order to prevent further misinterpretations. For though Feyerabend would rant and rave about "Sunday readers", "illiterates", and "propagandists" (1978a: 100ff.), he probably still felt responsible for those misinterpretations to at least some extent. This is also confirmed by the comprehensive edits that he repeatedly applied to the text. *Against Method* was originally published in 1970 as a long essay in *Minnesota Studies in the Philosophy of Science*. The first English-language book version was released in 1975. In the subsequent years Feyerabend used the two new editions (1988, 1993) as well as the two German translations (1976, 1983) to undertake comprehensive revisions and edits; hence we are today confronted with at least six versions of *Against Method*, which at times deviate significantly from one another with regard to content, scope, and argumentation.

Looking back, Feyerabend wrote in his autobiography, “AM is not a book, it is a collage” (1994a: 139). Though this collage established his international fame, it did not necessarily have a positive effect on his temper and self-esteem: “Somewhere in the middle of the commotion I grew rather depressed. The depression stayed with me for over a year [. . .] I often wished I had never written that fucking book” (1994a: 147). Feyerabend spent many years explaining *Against Method*. Perhaps his *Philosophy of Nature* would have been a better response to his critics than *Science in a Free Society*.⁵ In any case, the debate surrounding *Against Method* and the related professional and personal strains were probably an important factor in Feyerabend’s decision not to publish the present work despite the fact that it was near completion.

We have added a few more documents to the now-available book, which may give the reader further insights into the subsequent fate of *Philosophy of Nature*, as well as into Feyerabend’s own assessment of his academic developments, achievements, and goals. A lengthy and informative letter written by Feyerabend back in December 1963 to Jack Smart constitutes a particularly interesting source regarding the history of the *Philosophy of Nature* project prior to the actual typescript. In it Feyerabend conveys to his Australian colleague that he had always wanted to write about the nature of myths in order to show that they are fully developed alternative worldviews. In doing so he combines various notions both from philosophy of language and from Kant, according to which conceptual schemes are always a factor in the constitution of our worldviews, with the notion that these schemata are neither innate nor historically invariant. Rather, historical research and the comparison of cultures both suggest the co-existence of alternative worldviews, which are equally fully developed, independent, and functional. Feyerabend then quotes from Nietzsche’s “On Truth and Lies in a Nonmoral Sense” to illustrate that notion, using the liveliness and completeness of Greek myths as an example. He later reused the same quote and the same thought not only in his *Philosophy of Nature* (see chapter 3.3) but again 20 years later in his essay “Science as Art” (1984a, 1984b). In addition, the letter to Smart discloses a specific perspective on Feyerabend that can easily be overlooked in the later-published “Reply to Criticism: Comments on Smart, Sellars and Putnam”

⁵ As Grazia Borrini-Feyerabend wrote in her Preface to *Conquest of Abundance*, in the last decade of his life Feyerabend was “not at all pleased with *Science in a Free Society*, which he did not want to see reprinted” (Feyerabend 1999a: xi).

(1965a) due to the large number of points discussed in that piece. Feyerabend's basic tendency to compare the scientific view of nature with mythical and ethnological alternatives dates back to the early 1960s, though initially his conclusions were less radical. This fact is confirmed also by two hitherto-unpublished texts that are very revealing both autobiographically and with regard to his philosophical development.

In his 1977 "Preparation" of a sabbatical year, Feyerabend talked about his increasingly skeptical approach to scientific rationality. Starting with historical investigations of actual scientific practices, he at first recognized the restricted validity of methodological rules. From there he eventually reached the point of fundamentally challenging the validity of any criteria for demarcating science from non-science. But it was only by exploring myths and early Greek art that he developed his thesis that there can be fully developed alternatives to a scientific worldview that at the same time cannot be evaluated on the basis of scientific criteria but only on their very own criteria. Eventually he realized that even the putative rules of reason are unable to make any essential distinction between science and non-science. For these reasons he was planning to work on a long-term project to develop a novel theory of knowledge that would account for this situation. A first step in this direction, his "short range plan," was revising and completing his *Philosophy of Nature*. Now, a later report on a sabbatical year, which was written in 1985, no longer mentions *Philosophy of Nature*, though it does still refer to the long-term and the short-term project. Aspects of the topics addressed reappear, especially those related to ancient mythology and worldviews, and the list of interlocutors included in the work report is also very informative. And yet it becomes obvious that Feyerabend completed neither the long-term nor the short-term project. However, in the editors' view this result should not be interpreted as an indication that Feyerabend – as may not be entirely uncommon in connection with requests for sabbaticals – did not seriously plan to fulfill the projects in the first place. Rather, the now-accessible *Philosophy of Nature* is proof of his sincerity with regard to this work and plan, for all of his notorious anarchistic self-staging. To the extent to which this text gives us evidence about Feyerabend's motives and questions in the 1970s, it also closes the gap between the putative earlier scientifically interested, serious philosopher of science and the later *enfant terrible* who is generally interested in cultural philosophy and critique of society.

2. *Philosophy of Nature* in the Context of Feyerabend's Philosophical Development

The special significance of *Philosophy of Nature* for the balance between continuity and change in Feyerabend's thinking can be understood only against the background of his earlier works. At first sight his works from the 1950s and 1960s appear to be fairly heterogeneous, as if there was no common organizing core. One could easily be tempted into reading them as a series of disconnected critical essays, developing partly contradictory ideas in various directions without being systematically linked in any way. This is hardly surprising; Feyerabend did, after all, consider himself an epistemological anarchist. Furthermore, he often had recourse to immanent criticism, seemingly adopting other authors' positions in order to bring out their internal problems. Consequently, his own standpoint, to the extent that he had one, often remained hidden. However, a more detailed look at Feyerabend's earlier works reveals the astonishingly exact repetition of a certain figure of thought consisting of two elements: the otherwise distinct objects of his criticism all appear as different forms of *conceptual conservatism*, and his criticism is always based on the presumption that there are hitherto unnoticed *incommensurable alternatives* to the prevailing notion. As early as in his dissertation "On the Theory of Basic Statements" Feyerabend used the idea – though not yet the full-fledged concept – of incommensurability to critically discuss conceptual conservatism in Heisenberg's concept of a closed theory. Feyerabend considered the conservative and exclusive use of established and successful concepts and theories to be problematic, since it illegitimately gives preference to existing theories over potential improvements, thereby obstructing scientific progress. This impulse can be found in almost all of his texts of the time. Feyerabend's early philosophy can be construed as a series of different attacks on any form of *conceptual conservatism*.⁶ He pleaded for pluralism and theory proliferation to replace *conceptual conservatism*, which is very obvious in his previously mentioned "Reply to Criticism," e.g., criticism by thinkers such as Smart and Putnam:

The main consequence is the *principle of proliferation: Invent, and elaborate theories which are inconsistent with the accepted point of view, even if the latter should happen to be highly confirmed and generally accepted.* [. . .] The theories which the principle advises us to

⁶ Oberheim (2005; 2006: esp. part II) offers more detailed reasoning in favor of this interpretation.

use in addition to the accepted point of view will be called the *alternatives* of this point of view.

(Feyerabend 1965a: 105f.)

Several aspects of this quote are notable and can give us more insight into Feyerabend's philosophical development as well as into the part played by his *Philosophy of Nature* in that process. First, it should be noted that, as he immediately makes clear by writing in a footnote, "when speaking of theories I shall include myths, political ideas, religious systems" (Feyerabend 1965a: 105). His concept of a theory, and hence of an alternative worthy of discussion, is not restricted to scientific systems of statements. Rather, it includes any construct of ideas that has an underlying range of applications, any comprehensive point of view that "is applicable to at least some aspects of everything there is." Thus, creation myths and speculative metaphysical systems are explicitly included. Second, Feyerabend in his 1977 "Preparation" of a sabbatical, printed for the first time in the present book, notably refers to his "Reply to Criticism" (Feyerabend 1965a) as summing up thoughts contained in "Explanation, Reduction, and Empiricism" (1962), "Problems of Empiricism" (1965b), and "Von der beschränkten Gültigkeit methodologischer Regeln" (1972a). These latter texts were his most important philosophical works at the time, introducing the concept of incommensurability to the contemporary debate in philosophy of science (in 1962, contemporaneously with Kuhn) and producing basic arguments for his critique of method. A central focusing point of *Philosophy of Nature* is the question of the extent to which a myth can qualify as a genuine, possibly incommensurable, alternative to a scientific theory. It is in the course of and through his work on this question that Feyerabend's assessment of the sciences becomes more radicalized. While in 1965 the goal was scientific progress, and theory proliferation the means, the later Feyerabend was less convinced that scientific progress is even desirable in every case. In a retrospective 1980 addendum in German to his earlier "Reply to Criticism" he wrote: "I am quite amazed when reading that radically scientific treatise today. Though it opposes certain views about science such as extreme empiricism and monism, it still takes a pluralistically refined science as the basis for our approach to the world."

Feyerabend's change of mind, which he himself clearly recognized in retrospect, has been interpreted on occasion as a fundamental turn in his thought, and as a turn toward irrationalism.⁷ He himself

⁷ On his fundamental change of mind, see Preston (1997: 6ff., 139). Oberheim (2006: 281ff.) by contrast focuses on the continuity in Feyerabend's thought.

contributed not insignificantly to the appearance that this step toward a more radical relativization of the Western scientific worldview was primarily a consequence of his Berkeley experience. In his autobiography he refers to the student revolt and the opening of the universities to students with diverse cultural backgrounds, especially African Americans: "Should I continue feeding them the intellectual delicacies that were part of the white culture?" (Feyerabend 1994a: 123).⁸ Thus Feyerabend's persistent doubts about the scientific worldview could be easily perceived as a socio-culturally motivated idiosyncrasy. However, if we add his *Philosophy of Nature* to the total picture of his development, we realize that not only does he present reasons for his skeptical stance, but these reasons should be regarded as a consistent expansion, a radicalization of his earlier philosophy. By implementing what he had announced in his letter to Smart, namely writing an essay on the phenomenon of myths as fully developed worldviews, as comprehensive theories in the sense described above, Feyerabend gets the chance to look at the scientific worldview as a whole and to confront it with an alternative: Homer's world. In accordance with his *principle of proliferation* only a comparison with such alternative views can create the possibility of serious testing and fair evaluation of the scientific worldview itself. We can describe the transition to Feyerabend's fundamental critique of science (which has occasionally been misunderstood as irrationalist) as a combination of his proliferation principle and his incommensurability thesis together with his research on antiquity. We can retrace this general radicalization beyond *Philosophy of Nature* in his interpretation of antiquity.

Throughout his life Feyerabend had a strong interest in topics concerning Greek antiquity. This can be traced back as far as to his early essay "Physik und Ontologie" (1954), which is also interesting from a philosophy-of-nature angle. Already in this essay he makes the distinction between "the mythological phase, the metaphysical phase, and the scientific phase" of explanatory worldviews (1954: 464). And it is still present in his *Conquest of Abundance*, on which he continued to work on his deathbed. He dedicated extended passages in his main work (1975a: 177ff.) to the transformation of thought in early Greek antiquity, which unfortunately went largely unnoticed, and discussed ancient sources in numerous of his other works. In his essay "Science as Art," he once described the underlying motive for

⁸ Feyerabend's most explicit formulation of this motive for his increasing skepticism toward Western rationality can be found in the third revised English-language version of *Against Method* (Feyerabend 1975a: 163f. – see Hoyningen-Huene 1997: 8; Preston 1997: 4f.).

this as follows: “The introduction of abstract concepts in ancient Greece is one of the strangest chapters in the history of Western culture” (1984a: 50). For Feyerabend the transformation of thought in Greek antiquity may at first have been nothing but a particularly interesting case study, yet beyond this it also appears to be the basis for some central aspects of the Western concept of nature. Hence over and over again Feyerabend returned to his study of the early Greek intellectual world. However, his view of ancient thought underwent a fundamental change in the course of the 1960s, one that parallels his general development and is best understood as a radicalization. In his early texts Feyerabend’s view of Pre-Socratic philosophy appears to have been strongly influenced by Popper. In *Knowledge without Foundations* (1961) he still assumed that scientific knowledge develops through a process of *conjectures and refutations*: “by a process of rational criticism which relentlessly investigates every aspect of the theory and changes it in case it is found to be unsatisfactory. The attitude towards a generally accepted point of view such as a cosmological theory or a social system will therefore be an attitude of criticism” (1961: 48). This approach basically replicates Popper’s in “Back to the Pre-Socratics” (1958). But in the course of his partial disengagement from Popper, his assessment of the transformation of thought in Greek antiquity changed. Suddenly he saw the step from myth to logos no longer as an episode in a general history of progress driven by reasoned criticism of earlier positions. In his autobiography he cited his reading of Bruno Snell as a major factor for this change of mind.

The long chapter on incommensurability [in *Against Method*] was the result of extended studies based mainly on three books: Bruno Snell’s *Discovery of the Mind*, Heinrich Schäfer’s *Principles of Egyptian Art*, and Vasco Ronchi’s *Optics: The Science of Vision*. I still remember the excitement I felt when reading Snell on the Homeric notion of human beings.

(Feyerabend 1994a: 140)

Until now this self-description by Feyerabend seemed less than plausible since, after all, he supported his arguments against conceptual conservatism and the forced application of a questionable scientific method mainly with examples from the early modern history of science. As a result, Feyerabend scholars have had little use for this passage.⁹ In light of the present book, however, we may

⁹ Helmut Heit (2007) has attempted a reinterpretation of the development of Greek philosophy partly on the basis of Feyerabend’s considerations.

consider this retrospective assessment as a result of Feyerabend's work on his *Philosophy of Nature*, rudimentary and little-noticed traces of which can also be found in *Against Method* (and in later works). In *Philosophy of Nature* Feyerabend confronted the question of the origins of the Western scientific view of nature.¹⁰ And here he first revealed his conviction that the Homeric-mythical worldview was defeated not by arguments but by history. Other references to the special significance of the ancient transformation of thought for Feyerabend's approach to science can be made accessible in a similar manner. In the revised German version of *Science in a Free Society* he explains that in *Against Method* he discussed three historical examples to illustrate the difficulties associated with methodologies in philosophy of science such as those proposed by Popper or Lakatos. Along with Einstein's replacement of classical mechanics and Galileo's defense of the Copernican system, "the third example [was] the transition from Homer's aggregate universe to the Pre-Socratics' substance universe" (1978b: 30). Though the last example belongs not to the history of science but rather to its prehistorical beginning, the "illustration of incommensurability that it provides is a close fit" (1978b: 30). The basic concepts of Homer's world and of the Pre-Socratics' world are incommensurable, for they "cannot be used simultaneously and neither logical nor perceptual connections can be established between them" (1975a: 169).¹¹

It is important to keep in mind that for Feyerabend incommensurability was not the same as incomparability; rather, it merely indicates the lack of a common standard. Incommensurable theories cannot be internally related to one another; they can be compared only from a certain point of view, and this point of view should not be automatically viewed as superior, since its standards of comparison and evaluation are themselves always part of a worldview. Thus, to be incommensurable in this manner the Homeric and the Pre-Socratic worldviews need to be regarded as complete and fully functional conceptual and observational worlds. And this explains why Feyerabend in *Philosophy of Nature* presented an interpretation of Homeric epics and of archaic art and religion as constituting a universal theory with

¹⁰ This is why at the time Helmut Spinner reasonably suggested that the text could also be titled *Introduction to Philosophy of Nature*, which would reflect the text as work on the origins of a specific philosophical reflection on nature in ancient Greece.

¹¹ It is, however, notable that in *Philosophy of Nature* the term "incommensurability" does not have this meaning at all; instead it is used only in its mathematical meaning. This may indicate that Feyerabend was more concerned with the development of genuine alternatives than with the concept of incommensurability.

empirical content. He confronted the naturalistic metaphysics and logocentric argumentation of the Pre-Socratics with the holistic and context-sensitive worldview of Homeric religion. This historical case also derives special significance from the fact that it does not actually belong to the history of science but rather marks an important aspect of its beginnings. In this way it makes it possible to confront science itself with an alternative. At the same time, evaluating non-scientific theories according to scientific standards is not legitimate. The special value of scientific standards would have to be demonstrated in a different way. It is only based on such considerations that the later Feyerabend could draw parallels between the belief in atoms and the belief in gods (1987b: 117f.) and demand a fair evaluation of the scientific worldview, something that had formerly been absent (1978b: 146; 1999a: 71f.).

All of this points to the fact that *Philosophy of Nature* was central in Feyerabend's philosophical development. In the 1950s and 1960s he challenged the various forms of conceptual conservatism by developing incommensurable alternatives to existing theories. The basis and objective of his criticism was the conviction, supported by arguments in philosophy of science, that only a pluralism of theories would not obstruct scientific progress. Investigating the ancient transformation from myth to logos, which is at the center of *Philosophy of Nature*, he focused on a specific case of incommensurable worldviews. This historical case is particularly notable since it marks the introduction of some general standards, positions, and values belonging to the Western scientific worldview. In particular, it is a preference for conceptual proof methods and abstract, context-independent thinking, as well as for a naturalistic metaphysics, that generally distinguishes scientific theories from their non-scientific alternatives. In the course of his work on *Philosophy of Nature* Feyerabend confronted the question of the uses and disadvantages of these standards for a happy life. The link between pluralism and progress continued to be of primary importance, but for the later Feyerabend scientific progress does not necessarily coincide with cultural and social progress. With his goal of contributing to a fair evaluation of the scientific worldview in mind, he presented myth and art as strong alternatives to this worldview. His later critical stance toward Western science thus turns out to be an extension of his criticism of conceptual conservatism through the development of incommensurable alternatives to existing theories; it follows the ideal of human progress.

3. Survey of the Course of Argument in *Philosophy of Nature*

In *Philosophy of Nature* Feyerabend has revealed himself to be a critical historian of Western theories of nature pleading for a pragmatic use of human reason. He considered his work an “introduction” inasmuch as it historically guides us to our present situation; it is a genealogy of modern views of nature in light of past and possibly even future alternatives. There were functionally successful alternatives to the modern scientific form of life, and like it they had both advantages and disadvantages. Elaborating on the weaknesses of the abstract scientific view of nature and the strengths of the alternative views, he considerably expanded the standard scope of such an essay both historically and from an interdisciplinary point of view by including three additional aspects. First, he examined prehistorical and early historical periods as they are covered in research on Ice Age art, Stone Age science, ancient Egyptian art and science, as well as in Homer’s world. Second, he discussed ethnographic and social anthropological studies on indigenous tribes, challenging especially the Eurocentric notion of primary or primitive thought, in order to develop an adequate picture of mythical thought. Third, he included classic art history in *Philosophy of Nature*. With that Feyerabend exposed himself to the risk of occasional dilettantisms despite his comprehensive reading list. Experts mostly reject some of his claims today, such as the one about the fragmentary psychological state of Homeric human beings.¹² But at the same time he extended the traditional scope of historical studies in a most inspiring manner. In this respect, his work is certainly superior to other introductions to philosophy of nature, most of which fail to include Pre-Socratic philosophy or even non-European cultures.¹³

In accordance with this comprehensive scheme Feyerabend dedicated the first two chapters to the earliest traces of natural science. Based on archeological research and research in cultural history, as well as on social-anthropological comparisons, he attempted a reconstruction of the Stone Age conception of nature. In his theses

¹² The claim about the missing personal identity in Homeric human beings is mainly due to Bruno Snell (1930; 1946a: 57–86, esp. 77f.; 1946b: 42–71). However, as Bernhard Williams (1993: 88ff.) has shown, Snell’s Kant-oriented concepts are insufficient to understand ancient concepts of subjectivity. Though the heroes in the Homeric epics appear to have different body and world experiences from modern humans, they still have individual names, consider reasons and motives, and act intentionally. See Rappe (1995: 39f., 95f.) and Gill (1996: 29–40).

¹³ See Gloy (1995), Mutschler (2002), and Esfeld (2004) as examples.

on Stonehenge as an early center of astronomy and on the Stone Age dynamic view of nature he relied heavily on a non-primitivist interpretation of the early cultures.¹⁴ After all, Stone Age humans have the same biological and cognitive capacities as we do; they are fully developed members of the species *Homo sapiens*. Hence it is unlikely that their tools for understanding and controlling nature were structurally dysfunctional, resting on totally fantastic views. Feyerabend rejects the evaluation of historical material from the allegedly coherent and superior point of view of the present, finding it anachronistic and self-righteous. Instead, the traces of prehistoric and ancient cultures are just as theory-driven and partially successful conceptions of reality as our own; in the end, their quality can be evaluated only according to internal criteria. Accordingly, in the second chapter he interprets the Greek myths on the basis of a theory of nature myth: how does myth assist people in their understanding and control of nature? Also notable in this context is the detailed comparison of his own interpretation of myth with the works of Lévi-Strauss.

In the third chapter Feyerabend offers a realistic interpretation of both the archaic style in art and the Homeric epics. The manners of representation in archaic art are not due to a structural inability to create better paintings; rather, they adequately express a perceptual world that corresponds to them. Likewise, the structural characteristics of the Homeric epics are to be regarded as the consequence of a corresponding worldview. They exhibit a dynamic outlook paratactically composed of individual aggregates and responding flexibly in variable contexts. It is an open world that Feyerabend presents in a highly positive light. Not unlike those of Nietzsche and Whorff, his basic assumption is that our conceptual schemata play an essential part in the constitution of our perceptual world while at the same time being subject to historical changes. Scientific language and conceptions of reality are intertwined, and both are subject to possible changes.

Following these insights concerning the prehistorical period, *Philosophy of Nature* takes an interesting perspective on the transformation of our worldview in Greek antiquity, which at the same time aims at providing a better understanding of the Western conception of nature. The linguistic and empirical reality of the Homeric world dissolves and is replaced by the philosophers' world, as Feyerabend shows in chapter 4. This transition is shown to be a process not guided

¹⁴ Some of the elements of his related theories were already familiar from his essay "Science as Art" (1984a: 25–9), which also contains various images that Feyerabend had collected for *Philosophy of Nature*.

by reason and rules, which means that it can be investigated only empirically by means of an emphatically historical analysis. Among the historical circumstances to be considered Feyerabend includes ceremonial and stylistic elements of the religious traditions, the effects of wars and periods of confusion, and also the hoplite phalanx, which undermines traditional heroic ideals. He places special emphasis on the impact of neighboring Eastern cultures. Furthermore, the critique of myths is already implicit in the myths themselves, as exemplified by Achilles' struggle for a new substantial concept of honor.¹⁵ Feyerabend illustrates the novel features of the Pre-Socratic substance universe in the fifth chapter. The most notable characteristics of the thinkers of this time include giving priority to conceptual considerations over sensual experiences. According to Feyerabend, the early Greek philosophers' metaphysical presuppositions, especially the distinction between an allegedly simple and uniform reality and the merely apparent diversity in the world, denaturalize and dehumanize reality in favor of a dogmatic world of theory.¹⁶ In this context he discusses Anaximander's cosmology, Xenophanes' criticism of religion and science, and especially Parmenides' substance universe. Most prominent are his frequently presented arguments for an alternative interpretation of Xenophanes' criticism of myths.¹⁷ And yet he regards the Eleatic philosophy of Being in particular as the starting point of Western conceptions of nature due to its significant, and not always beneficial, influence: "On the contrary," he wrote in *Philosophy of Nature*, "a way of thinking such as Parmenides', that denies the existence of motion, thus leading Western thought astray for centuries, must strike us today as infantile and dreamlike."

In the sixth chapter Feyerabend outlines the way Western thought was led astray as well as how Western science, in his view, managed to retrace its steps to more holistic and dynamic concepts in the recent past. He often makes an effort here to develop a counter-position to the prevailing view, thus aiming to "strengthen the weaker argument"

¹⁵ Feyerabend's brief reference in section 18 (ch. 4.3) to Achilles and Odysseus' exchange about honor was later developed into a detailed discussion in his *Conquest of Abundance* (1999a: 19ff.).

¹⁶ Feyerabend expressed this criticism also in *Against Method* (1975a: 184f.), and it subsequently reappeared time and again in his later works. It is also the main topic of *Conquest of Abundance* (1999a); see Heit (2006).

¹⁷ It is interesting that Feyerabend's criticism of Xenophanes became more radical in his later writings than in *Philosophy of Nature*, especially in that he later explicitly rejected Xenophanes' refutation of the Homeric gods on the basis of a *reductio ad absurdum* as a fallacy (Feyerabend 1984c; 1986; 1987a). In *Conquest of Abundance* his judgment of Xenophanes once again became a little more balanced, though without thereby relativizing the content of his criticism (Feyerabend 1999a: 49ff.).

(*ton hetto de logon kreitto poiein* – Protagoras, DK 80B6b). Thus he emphasizes the advantages of the Aristotelian conception of science, which in contrast to Descartes' mathematical approach to nature establishes a systematic connection between the theoretical and the practical elements of the scientific concept of nature. According to Feyerabend the most striking characteristic of early modern science is the lack of a genuine empirical foundation despite its accompanying empiricist rhetoric. In this context he defends Bacon from the accusation of an insincere empiricism, something that may be displayed in the naïve acquisitiveness of the Royal Society but is not reflected in Bacon and Galileo's ultimately theory-driven observations of nature. Perhaps most remarkable are Feyerabend's observations locating the roots of empiricism in Agrippa's occultist theories or in the experiments, which appear bizarre to us today, that were used to identify witches. In a detailed discussion of Hegel's observations Feyerabend suggests how a theory of concept dynamics is eventually reintroduced into Western thought. He closes by discussing the problems resulting from a concept of nature as a mere mechanism for the sciences and philosophy of science, using the examples of Newton, Leibniz, and Mach. He recognizes the beginning of a new, procedural, and once again more philosophical-mythological form of science, especially in David Bohm's physical theories. According to Feyerabend, the realization gradually sinks in that "There are more things in heaven and earth [. . .] Than are dreamt of in your philosophy" (*Hamlet*: I, 5). Understood correctly, this is not a plea for envisioning ghosts, but one for the flexible use of scientific philosophy with the awareness of its possibilities and limits. It is Feyerabend's objective in *Philosophy of Nature* to make explicit and promote the advantages of such an image of nature as well as of the corresponding more open-minded approach to science and its alternatives.

Note on Images in the Text

Feyerabend copied some of the images used in the text from other books, redrew others on the basis of originals, and designed the remainder himself. We replaced all copied images with printable scans, though not always from the original source that Feyerabend used. Simon Sharma artfully reconstructed Feyerabend's own drawings.

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The Editors

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