CHAPTER ONE

The Cosmology of the Moderns

My primary aim is to take up, while also trying to update, Whitehead's protest against what he calls "the bifurcation of nature." Although this phrase might, at first sight, appear a little puzzling, it designates the collection of experiential, epistemological, and political operations that were present at the origin of the modern conception of nature, a concept whose effects can still be felt today. Before moving on to a full analysis, I will start by providing some context.

The phrase "bifurcation of nature" appears in Whitehead's first truly philosophical book, *The Concept of Nature*, published in 1920. By this time, Whitehead had already produced an important body of work. He was well known for his work in mathematics, especially for co-writing *Principia Mathematica* with Bertrand Russell. However, *The Concept of Nature* marked a turning point. This is the first text in which Whitehead sets out the task that will characterize all his later philosophical developments: "The object of the present volume and of its predecessor is to lay the basis of a natural philosophy which is the necessary presupposition of a reorganised speculative physics."[1] It is certainly possible to find ideas in Whitehead's earlier texts that lead up to *The Concept of Nature*, notably in *An Inquiry concerning the Principles of Natural Knowledge*, which appeared in 1919. But it is only in this text from 1920 that Whitehead starts a systematic inquiry into the abstractions of science, one that will later develop and extend to cover

all aspects of experience, most notably in his magnum opus, *Process and Reality*. For the moment, the important point to note is that in this text from 1920 Whitehead presents himself as a scientist, declaring a fundamental crisis in his discipline, namely the natural sciences. Getting beyond this crisis will involve a complete reorientation. This is one of the constant obsessions of his work, and Whitehead clarifies his point in a later text, *Science and the Modern World*: "The progress of science has now reached a turning point. The stable foundations of physics have broken up: also for the first time physiology is asserting itself as an effective body of knowledge, as distinct from a scrap-heap. The old foundations of scientific thought are becoming unintelligible. Time, space, matter, material, ether, electricity, mechanism, organism, configuration, structure, pattern, function, all require reinterpretation."[2]

This situating of bifurcation within the context of modern science does not, however, restrict its importance to one particular field. The whole of modern philosophy is touched by the error of bifurcation. Whitehead says no more about this, and it is up to us to grasp the implications for ourselves, including the shift from modern science to the whole of modern natural philosophy. Nevertheless, two elements can be identified in this brief passage that will help clarify the status of bifurcation. First, importance appears to be relativized. It is not a constant that runs through the history of the experience of nature, setting itself up as some transcendental form, of which different conceptions of nature are merely figures or expressions. Instead, importance is historically situated. It would certainly be wrong to state that there is one moment that represents the absolute genesis of bifurcation, for the historical influences are numerous, and its conceptual conditions are rooted in the distant past. However, in no way does this vitiate the idea that this bifurcation is, in its efficacy, genuinely historically located. Implicitly, it is a matter of an epochal, or historical, theory of nature. Second, Whitehead grants bifurcation a field of application that seems, a priori, to be unlimited, as he states that the modern period is "entirely coloured" by it.[3]

The concept of bifurcation originated in the development of modern science. There is no doubt about this. It was during an analysis of the invention of the modern science, and its particular place in the

history of science, that Whitehead coined the term, to identify its constitutive operation. Nevertheless, even if its origin can be located in experimental practices, the question of bifurcation is not restricted to one specific domain of modern experience: it is the origin of a global transformation at all levels of experience. In other texts, Whitehead talks of a "predominant interest"[4] that operates as both the source and the expression of any cosmology, affecting all dimensions, from the epistemological to aesthetic and moral experiences of nature. It is at this point that he attributes a first function to philosophy, one that will subsequently configure its other functions: "Philosophy, in one of its functions, is the critic of cosmologies. It is its function to harmonise, refashion, and justify divergent intuitions as to the nature of things. It has to insist on the scrutiny of the ultimate ideas, and on the retention of the whole of the evidence in shaping our cosmological scheme."[5]

Thus, these two aspects coincide: locating bifurcation within a particular epoch might seem to reduce its importance by making it "historical," but it enables Whitehead to grant it an unrivalled scope, one which operates at all levels of experience.

The Gesture of Bifurcation

Having clarified the context in which the concept of bifurcation originated, it is now possible to give more detail regarding its constitution and to ask directly: What exactly is the bifurcation of nature? In the very first pages of *The Concept of Nature*, Whitehead provides a definition, in the form of a protest: "What I am essentially protesting against is the bifurcation of nature into two systems of reality, which, in so far as they are real, are real in different senses. One reality would be the entities such as electrons that are the study of speculative physics. This would be the reality that is there for knowledge; although on this theory it is never known. For what is known is the other sort of reality, which is the byplay of the mind."[6]

This passage has been the subject of a series of misreadings and misunderstandings with regard to how bifurcation should be understood. It is necessary to take this passage at face value, in order to develop a better grasp of what is at stake in the challenge that it makes and to inherit

from it in an adequate way. The first impression is that, in one way or another, bifurcation returns us to "dualism." The terminology and the oppositions used certainly seem similar. Does the difference between a "reality which is there for knowledge" and a reality established by "the byplay of the mind" or, equally, between "causal nature" and "apparent nature," not return us to the distinction between extension and thought, between matter and spirit? If this were the case, would bifurcation not simply be a new way of thinking about dualism and, furthermore, a new approach to developing a critique of dualist philosophy, principally that of Descartes, and its influence on the modern epoch? If Whitehead's philosophy is read in this way, it might certainly gain something from its proximity to other critiques of dualism, but it would lose its originality. Yet, it is this reading of bifurcation, as offering a new critique of dualism, that has predominated. It can be found in the lectures that Merleau-Ponty gave on Whitehead's philosophy,[7] and in the work of Jean Wahl,[8] but it is Félix Cesselin who makes the point most starkly: "I think that it is only possible to fully grasp Whitehead's thought by starting with a reading of what he understands by the rejection of the "bifurcation" of nature. The bifurcation of nature is dualism. In particular, it is Cartesian dualism."[9] This interpretation is far from being an isolated case. It expresses most clearly and succinctly what the majority of readers of Whitehead believe they have found in bifurcation.

I would like to suggest a different way of inheriting this concept by affirming *a radical difference between bifurcation and dualism*. This is not to claim that previous readings of bifurcation are wrong, but they have reduced its importance. If the concept of bifurcation is to be given its true force, another approach needs to be taken. In order to substantiate this hypothesis, three elements will be introduced. First, although Whitehead often refers to dualism in his writings, notably Cartesian dualism, he also talks of bifurcation, its constituent elements and its influence in the experience of modernity, without invoking any relationship to dualism. If bifurcation really were just another name for dualism, and Whitehead was trying to outline the constitutive role of the latter in the development of modern science, then why did he not take the time to link them in some way? The most plausible interpretation is that the two problems seemed so different to Whitehead that

he did not think it necessary to comment on the distinction. It seems that, for Whitehead, the obvious difference between the two required no explanation. Second, according to Whitehead, the only possible relation is one of an inversion. One of the rare occasions on which Whitehead does link bifurcation and dualism can be found in *Science and the Modern World*, when he writes, "The revival of philosophy in the hands of Descartes and his successors was entirely coloured in its development by the acceptance of the scientific cosmology [the bifurcation of nature] at its face value."[10] This is a particularly important remark that merits a careful reading. Far from identifying bifurcation with dualism, Whitehead is clear that both Cartesian dualism, and dualism more generally, are dependent upon the question of bifurcation. It is Cartesian philosophy that accepts "at its face value" the cosmology of the bifurcation of nature. This rare allusion to the relation between bifurcation and Cartesian philosophy makes Whitehead's position absolutely clear, although he does not draw out its implications. Third, the reading of this passage offered here entails that the notion of bifurcation outlines a concept that is broader and more fundamental than that of dualism, which, ultimately, is only one of its manifestations. Taken in the most direct, literal, sense, these two notions designate fundamentally different realities. The notion of bifurcation manifests the idea of process, of a movement of differentiation. It is the trajectory through which nature is divided into two distinct branches. The phrase says nothing about how this division occurred, and even less about that which produced it, but it already points to a primary and important difference with respect to dualism. If dualism is understood in terms of a duality of substances, regardless of how these are characterized, bifurcation indicates something very different, namely, how a single reality, nature, came to be divided into two distinct realms.

I will use the terms "gesture"[11] and "operation" to account for this division of nature, as they seem to capture most accurately the particular character of bifurcation. The fundamental question is not that of knowing whether nature is genuinely, in itself, composed of two realms, each with distinct attributes. Rather, it is a question of the means by which the differentiation of these attributes was established. It is the modus operandi of the division, the gesture of the constitution

of this division, that needs to be addressed, not its consequences, as expressed in a dualist vision of nature.

As such, the origin of bifurcation should be sought not in the relations between thought and extension, mind and body, the real and the apparent, but in the characteristics of bodies themselves. Bifurcation gains its sense at the intersection of a range of questions: What is a natural body? What are its qualities and how do we experience it? Can we identify characteristics that are common to the multiplicity of physical and biological bodies, and what would these be? These are the same questions as those posed by the distinction between the primary and secondary qualities of bodies that lies at the origin of the modern conception of nature, of which we are still the heirs.

One of the classic texts that most clearly states the difference between the qualities of bodies, and provides the basis for Whitehead's development of his critique of bifurcation, is Locke's *An Essay concerning Human Understanding*. Of course, Locke's *Essay* cannot claim to have invented the problem. For example, Boyle's book *The Origin of Forms and Qualities according to the Corpuscular Philosophy*, published in 1666, undoubtedly influenced Locke's thought, and this text contains the essentials of the difference between the qualities of bodies. However, what is important at this stage is not an outline of the history of bifurcation, as such. Rather, the task at hand is to trace its dispersed invention and how it became consolidated within both experimental practice and those texts that provided its conceptual expression. Locke's *Essay*, particularly the chapter "Some Further Considerations concerning Our Simple Ideas" is, in this sense, paradigmatic. Locke constructs the distinction as follows:

> First such as are *Primary qualities* utterly inseparable from the body. [. . .] These I call original or primary qualities of body, which I think we may observe to produce simple ideas in us, viz. solidity, extension, figure, motion or rest, and number. Secondly, such qualities which in truth are nothing in the objects themselves but power to produce various sensations in us by their primary qualities, i.e. by the bulk, figure, texture, and motion of their insensible parts, as colours, sounds, tastes, etc. These I call secondary qualities.[12]

In this passage, Locke assigns the qualities of bodies to two different realms. First, there are *primary qualities*, which are "inseparable from the body." The term "primary" should be taken in its strong sense, as it indicates that these qualities are fundamental to the body and characterize its deepest reality. Primary qualities express the purified state of the body, unadorned by any variations to which it could be subjected. The qualities that Locke lists in this passage all refer to a physicomathematical order: solidity, extension, figure [number], motion, and rest. As such, it is now possible to give a first response to the question "What is a natural body?" It is a particular articulation between physicomathematical qualities. Locke gives an example that has become well known: "Take a grain of wheat, divide it into two parts; each part has still *solidity*, *extension*, *figure*, and *mobility*: divide it again, and it retains still the same qualities and so divide it on, till the parts become insensible; they must retain still each of them all those qualities."[13] The phenomenal variations, such as the color of the grain, its particular texture, the sensations that we have of it, in no way undermine the status of the primary qualities with which they are associated. Even when division renders a body imperceptible, so that it falls short of producing an empirical experience, because these qualities are of a specific kind and refer to what might be called a nonsubjective aspect of nature, they must still be constitutive of all experiences of bodies. This is why it is necessary to insist that without these primary qualities, nature would be "soundless, scentless, colourless; merely the hurrying of material, endlessly, meaninglessly."[14] It would be wrong to think that this is an outdated conceptual approach; its legacy can still be found in contemporary science. As Whitehead puts it, in *Science and the Modern World*:

> There persists, however, throughout the whole period the fixed scientific cosmology which presupposes the ultimate fact of an irreducible brute matter, or material, spread throughout space in a flux of configurations. In itself such a material is senseless, valueless, purposeless. It just does what it does do, following a fixed routine imposed by external relations which do not spring from the nature of its being. It is this assumption that I call "scientific materialism."

> Also it is an assumption which I shall challenge as being entirely unsuited to the scientific situation at which we have now arrived.[15]

The critique of bifurcation is, therefore, linked to a radical critique of materialism. Raymond Ruyer, one of the most original readers of Whitehead, gives what he calls a "quaint," almost "humorous," image of the materialism that Whitehead is criticizing. Recalling Carlyle, he imagines a law court, as viewed through the eyes of a materialist who is an heir to the bifurcation of nature: "It undergoes a curious metamorphosis, a sort of denuding [. . .]. The halo of meaning, essence, values, all that which for an ordinary spectator transfigures the materiality of the scene, and yet is almost overlooked, all this dissipates like a mist."[16] What remains, for the materialist, is the functioning "of a kind of complicated mechanism, fully given in the present and in space, where morsels of matter push one another. A man speaks: the state of his brain controls the physical formulation of his speech: the vibrations of air modify other elements of the nervous system and control movements or the preparations for movement. No intention, no purpose, guides the phases of the scene, since intention is no more than the present state of the brain."[17]

Ruyer caricatures this tendency of materialism, a materialism that can be termed physicalist, in order to draw out other possible routes, other approaches and directions. Similarly, Whitehead's criticism of scientific materialism is linked to his affirmation of a superior materialism, a materialism that he sometimes calls "organicist,"[18] which, far from returning to bifurcation, has connections with the philosophies of thinkers such as Diderot and Spinoza.[19] The materialism that Whitehead critiques is one which posits, on the one hand, "a material [which] is senseless, valueless, purposeless" with, on the other, phenomenal experiences that, since they must be given their due place, receive all the qualities excluded from this purified matter. It will be remembered that both primary qualities, and the materialism that follows from them, want to reject all so-called subjective elements, that is to say, all the sensations, values, and modes of being that somehow mask natural bodies.

Having set out this primary realm of bodies, Locke turns to the second realm, which he indeed calls "secondary." In the passage cited

above, he gives some examples: colors, sounds, taste, and so on. It is important to note a subtle point here. Secondary qualities are not described as simple projections by the mind onto bodies, as if the perceiving subject projects forms or impressions that are completely external or unrelated to the bodies that are experienced (the law court in the previous example). This is the difficulty presented at the end of the quotation taken from Locke's *Essay*. Here he writes that secondary qualities are nothing other than the "power to produce various sensations in us by their primary qualities."[20] Locke is invoking a complex relation of dependence and difference. The mind is clearly involved, since it is in the activity of perception that primary qualities are altered, forming the different aspects by which we experience them, but the mind's capacity is intimately linked to the *power* of primary qualities to affect. In short, although secondary qualities are radically distinct from primary qualities, they are derived from them, as they are an aspect of them. Secondary qualities constitute what might be called the domain of "psychic additions." It is through such an addition that materialism is able to give a place to subjective experience: "We perceive the red billiard ball at its proper time, in its proper place, with its proper motion, with its proper hardness, and with its proper inertia. But its redness and its warmth, and the sound of the click as a cannon is made off it are psychic additions, namely, secondary qualities which are only the mind's way of perceiving nature."[21]

In the context of bifurcation, the theory of psychic additions enables a link to be established between primary and secondary qualities. This theory appears to give a place to the phenomenal experience of bodies by inscribing the latter in an order of nonphenomenal qualities. In our immediate experience, we encounter only hybrid qualities, ones derived from the power of bodies but altered by the mind. In this sense, and in more contemporary terms, it is possible to reread the previous examples and state, "What is given in perception is the green grass. This is an object which we know as an ingredient in nature. The theory of psychic additions would treat the greenness as a psychic addition furnished by the perceiving mind, and would leave to nature merely the molecules and the radiant energy which influence the mind towards that perception."[22]

What is fundamental is that the distinction between primary and secondary qualities starts from an empirical base—the perception of a grain of wheat, the red billiard ball, the green grass, the law court—in order to then differentiate between nonperceptual qualities and those subjective qualities which are supposedly derived from the former, while also expressing them. This is the heart of the operation of bifurcation. It is here that the moment of bifurcation is located. Starting with immediate experience, bifurcation operates by splitting such experience into two regimes of existence. In doing so, it takes that which constitutes the primary experience of nature and places it into a derivate, phenomenal realm. Once this bifurcation is established, once the two regimes are stabilized and subjective experience is rendered as epiphenomenal, it is possible to state that even if a fundamental knowledge of primary qualities is permanently postponed *in fact*, such knowledge would, *by right*, allow for knowledge of secondary qualities, by derivation, even if secondary qualities are the only things that we know, practically speaking. As a result, there is no need for an exploration of bodily perceptions, as such. On this basis, it is possible to define the process of knowledge that is at the root of all epistemologies that are derived from the operation of bifurcation as an operation of correlation between secondary qualities (simple appearances), and primary qualities (which are purely conjectural).

> Another way of phrasing this theory which I am arguing against is to bifurcate nature into two divisions, namely into the nature apprehended in awareness and the nature which is the cause of awareness. The nature which is the fact apprehended in awareness holds within it the greenness of the trees, the song of the birds, the warmth of the sun, the hardness of the chairs, and the feel of the velvet. The nature which is the cause of awareness is the conjectured system of molecules and electrons which so affects the mind as to produce the awareness of apparent nature. The meeting point of these two natures is the mind, the causal nature being influent and the apparent nature being effluent.[23]

The conclusion to be drawn is that the modern invention of nature did not originate in an ontological position, either dualist or monist,

but in *local operations* of the qualification of bodies. The ontology of the moderns comprises the manner in which they have attempted to express the permanently repeated gesture of dividing bodies and their qualities while continually masking this very operation. In short, this ontology presupposes the gestures, techniques, and operations of division.

The same applies to experimental apparatuses. Thus, for example, Galileo's invention of an inclined plane, described in his notes published in 1608, perfectly illustrates how the operative apparatuses that are at the origin of bifurcation have a preeminence over all those theories that later come to justify it. As Stengers writes in *The Invention of Modern Science*:

> This schema represents an experimental apparatus, in the modern sense of the term, an apparatus of which Galileo is the *author*, in the strong sense of the term, because it is a question of an artificial, premeditated setup that produces "facts of art," artifacts in the positive sense. And the singularity of this apparatus, as we will see, is that it *allows its author to withdraw*, to let the motion *testify* in his place.[24]

The apparatus is thus a construction, signed and dated, a wholly invented artifact, whose function is to introduce a difference between ways of explaining motion. The apparatus does not reproduce a direct observation on a different scale, nor does it generalize and augment a local phenomenon. The experimental apparatus breaks with all direct relations of resemblance, conformity, or reproduction. It certainly does not gain its justification by simply making a purported experience visible. The success of the apparatus is to be found elsewhere: in the withdrawal of its creator in favor of the testimony of motion itself. In this sense, "the fictive world proposed by Galileo is not simply the world that Galileo knows how to interrogate, it is a world *that no one could interrogate differently than he*. It is a world whose categories are *practical* because they are those of an experimental apparatus that he invented."[25] According to the terms in which the problem has been set out so far, it is possible to state that through the construction of an artifact, the apparatus aims to make nature bifurcate into two branches—the primary qualities of nature that express themselves in motion, and the second-

ary qualities that are the explanations given of such motion—while simultaneously effacing the constructed character of this operation.

I am, therefore, suggesting that the bifurcation between primary and secondary qualities is the constitutive operation of the modern experience of nature. This places my argument firmly within current attempts to give due importance to the debate over such qualities. Thus, for example, in *After Finitude*, Quentin Meillassoux laments that the debate over the difference between primary and secondary qualities has fallen into disuse: "The theory of primary and secondary qualities seems to belong to an irremediably obsolete philosophical past."[26] This is a recurrent theme of the book, as confirmed a few lines later: "For the contemporary reader, such a distinction might appear to be a piece of scholastic sophistry, devoid of any fundamental philosophical import."[27] I fully support Meillassoux with regard to the importance of this debate over the constitution of modern experience. The main aim of the arguments developed in previous pages has been to express, as strongly as possible, the importance of this difference between the qualities of bodies. However, I would like to distance my approach from that of Meillassoux on two points: first, I have attempted to show that the impression that the difference between qualities has fallen into disuse, or appears to belong to a bygone past, does not mean that its effects on contemporary thought have diminished—rather, it clearly remains its condition. This division between qualities continues to have effects while the operations that constitute this split remain in the background, functioning implicitly within all areas of experience, prior to the elaboration of any ontological standpoint. If "rehabilitation," as Meillassoux calls it, makes sense, it is certainly not because it aims to revive a project that has remained bracketed within contemporary thought, since it has never been more effective. Such a "rehabilitation" only makes a genealogical sense; it involves bringing these gestures and operations to the surface, in order to better identify the theoretical and ontological assumptions that they imply. Second, Meillassoux maintains that the condition of a renewal of "thought's relation to the absolute"[28] will find its full expression in a new form of materialism. This is the direction that he takes when posing the question of the current legacy of this differentiation. I have attempted to demonstrate

that the materialism that results from bifurcation is essentially a formal one (a discussion of this will be taken up in the following pages). It involves constricting all the forms of existence in nature onto one of the two branches of a purely operative division. These operations have had localized effects, but their reification into a more general ontological form can be achieved only at the expense of fundamental aspects of the plurality of forms of existence in nature. The only reason why it is crucial to return, today, to a clear and sustained analysis of the debate over primary and secondary qualities is as follows: in order to get beyond this opposition and the conception of nature that is derived from it. If a new materialism is to emerge, it will not come from within the legacy of bifurcation, but from going beyond it.

The Localization of Matter

Bifurcation leaves a murky zone in its wake, one produced by its own operations. Since all modern experience of nature inhabits this bifurcation and points toward the primary qualities of bodies, which are both constitutive of experience and yet inaccessible to it, a more detailed investigation into these natural bodies in themselves is necessary. The question of quite what these primary qualities are in themselves is put center stage, dramatized, and intensified to the maximum by this murky zone. But bifurcation leaves open the question of knowing how to characterize bodies when they are extricated from their phenomenal dimension. The operation of bifurcation only repeats, permanently, the separation of the qualities of bodies into various registers—that of physics, the biological and social. But this separation continually leads back to a series of questions that receive no adequate response: What *is* a body when it is separated from its secondary qualities? How can we make sense of such a body, since we only have access to secondary qualities? What kind of knowledge would allow us to penetrate into the interior of these nonobservable qualities? According to the interpretation provided above, the inability to provide a characterization of primary qualities is not a weakness of the modern conception of nature; it is where it draws its strength. It is the dramatization of this difficulty that constitutes this modern conception. It was necessary to

push this point to the extreme, in order to give due weight to the second operation that is constitutive of modern cosmology. Whitehead gives it a new name: "the simple location of matter." It is this that will provide the abstractions that are required to deal with natural bodies. I will cite the long passage in which Whitehead describes this:

> To say that a bit of matter has simple location means that, in expressing its spatiotemporal relations, it is adequate to state that it is where it is, in a definite finite region of space, and throughout a definite finite duration of time, apart from any essential reference of the relations of that bit of matter to other regions of space and to other durations of time. Again, this concept of simple location is independent of the controversy between the absolutist and the relativist views of space or of time. So long as any theory of space, or of time, can give a meaning, either absolute or relative, to the idea of a definite region of space, and of a definite duration of time, the idea of simple location has a perfectly definite meaning.[29]

Whitehead appears to affirm that, in the modern conception of nature, the possibility of being localizable, of having a simple location, is a characteristic of matter. It is important not to misunderstand his point. The proposition is more radical than that: matter is *only* localization. This represents the crucial element of the passage. With regard to the question "What is matter in modern experience?," I would offer the response "A *localizable* point." It is a minimal definition, but it has a radical effect. For questions about the origin, form, and nature of matter are replaced by a question of a quite different order—where is it situated? In this sense, it is possible to say, with Ruyer, that "that which characterizes science [. . .] is that it is knowledge of that which is in space and in time.'[30] Thus, it is as if the body, detached from "psychic additions," is no more than an element that is localizable in space-time. It is possible to understand "scientific materialism" only if we take into account the circularity of its definition of matter and of space-time, which leads to the reduction of matter to a localizable element. "The characteristic common both to space and time is that matter can be said to be here in space and here in time, or here in space-time, in a

perfectly definite sense which does not require for its explanation any reference to other regions of space-time."[31]

There is a multiplicity of here-and-nows that precisely delimit zones of matter and the boundaries that separate it from other areas of the universe. According to this perspective, one space-time is sufficient, in itself, and does not need to make any reference to other space-times. Consequently, the response to the question "What is the world made of?" that emerged in the seventeenth century was as follows: "The world is a succession of instantaneous configurations of matter, or of material, if you wish to include more subtle stuff than ordinary matter, the ether, for example."[32] Whitehead sees Newtonian physics as one of the most important examples of this cosmological outlook: "Newtonian physics is based upon the independent individuality of each bit of matter. Each stone is conceived as fully describable apart from any reference to any other portion of matter. It might be alone in the Universe, the sole occupant of uniform space. But it would still be that stone which it is. Also the stone could be adequately described without any reference to past or future. It is to be conceived fully and adequately as wholly constituted within the present moment."[33]

Whitehead's critique of the notion of "simple location" can be developed by delineating three premises that are fundamental to modernity's cosmology and that need to be analyzed further. The first premise is that *matter can occupy only one space-time*. Clearly, the reason for this is that this premise is based on the idea of *simple* location. This simplicity must be taken literally. It describes the mode of localization, a quality that has a profound place in modern thought. Schematically, it is possible to say that matter is placed *here* in space and, even more so, *now* in time; it is a question not only of the spatial and temporal framework but also of nature itself. Nature is envisaged as a multiplicity of localizable material points that form the bodies and locales of all existence. Thus, Whitehead rejects the first premise of localization and states that the simple existence of matter is a myth or, more precisely, an abstraction that has had disastrous consequences. As Wahl puts it, "Time as a succession of instants does not correspond to anything of which I have any direct knowledge. I can only think of it with the help

of metaphors, either as a succession of points on a line, or a set of values of an independent variable in certain differential equations. That of which we are aware is a duration of nature with temporal extension. The present contains antecedents and consequents within it, antecedents and consequents which are themselves temporal extensions."[34] While the division of space and time into points and instants is useful in many cases, it is made possible by the work of an abstraction; when it is generalized and posited as a principle of matter itself it creates innumerable difficulties and false problems. The questioning of this first premise will lead Whitehead to develop a relativistic theory of time and space.

The second premise is that *other modes of existence of matter are exclusively phenomenal*. It is in this premise that simple location most clearly displays its relation to the bifurcation of nature. Indeed, the same gesture of differentiation between two orders of reality can be found here, but now situated in a more technical framework: on one side, the localizable points that constitute matter; on the other, all the derivative forms such as duration, persistence of matter, and the variations and intensifications of existence. This is bifurcation redeployed at another level, with its psychic and phenomenal additions, yet always reducible to the material, brute existence of simple location. This construction "is beautifully simple. But it entirely leaves out of account the interconnections between real things. Each substantial reality is thus conceived as complete in itself, without any reference to any other substantial reality."[35]

The third premise is that *matter is that which is more concrete*. This is the paradox of scientific materialism. Material points, the ultimate existents of matter, which are called upon to occupy a central and primary place in any explanation of nature in general, are unthinkable without a formalization of space-time. Yet, how is it possible to locate a point and establish an instant without positing, either beforehand or simultaneously, a space and a time within which these can be established? This premise demonstrates one aspect of the relation between materialism and formalism:

> Matter (in the scientific sense) is already in space and time. Thus matter represents the refusal to think away spatial and temporal

> characteristics and to arrive at the bare concept of an individual entity. It is this refusal which has caused the muddle of importing the mere procedure of thought into the fact of nature. The entity, bared of all characteristics except those of space and time, has acquired a physical status as the ultimate texture of nature; so that the course of nature is conceived as being merely the fortunes of matter in its adventure through space.[36]

The geometrical forms of space-time become the real and constitutive structures of matter. Ruyer provides a remarkable summary when he writes, "We now perceive the essence of materialism. It is a doctrine which takes a simple operative abstraction to be the supreme reality, the correspondence between two fields which substantiate, under the name of atoms of matter, the endpoint of relations."[37]

According to the interpretation given above, bifurcation necessarily entails the localization that completes it and provides it with its formal tools. The three premises that I have tried to outline form the axes from which this relation between bifurcation and localization draws its effectiveness. Whitehead's position is unambiguous: "I shall argue that among the primary elements of nature as apprehended in our immediate experience, there is no element whatever which possesses this character of simple location."[38]

The Reification of Abstractions

The idea that the notion of matter that follows from bifurcation is organized around a principle of simple location has some analogy with the thought of Bergson.[39] Whitehead was undoubtedly inspired by Bergson, to whom he paid homage on many occasions. In *The Concept of Nature* he writes, "I believe that in this doctrine I am in full accord with Bergson,"[40] and *Process and Reality* opens with the statement that Whitehead is "greatly indebted to Bergson, William James, and John Dewey. One of my preoccupations has been to rescue their type of thought from the charge of anti-intellectualism, which rightly or wrongly has been associated with it."[41] It is not a question of outlining all the elements of the influence of Bergson's thought, which would

have to be linked to that of James, on Whitehead's philosophy. The problem is both more limited and more incisive than that of some kind of philosophical influence. It concerns the way of diagnosing the modern conception of nature and the conditions for going beyond this.

Therefore, I will take up only those elements of Bergson's thought that seem linked to, and able to clarify, Whitehead's conceptualization of localization, in order to outline both the similarities and differences that animate these two philosophical positions, and which represent two ways of resisting the bifurcation of nature.

In *Creative Evolution*, Bergson writes,

> Perfect spatiality would consist in a perfect externality of parts in their relation to one another, that is to say, in a complete reciprocal independence. Now, there is no material point that does not act on every other material point. [. . .] It is undeniable that there is no entirely isolated system, yet science finds means of cutting up the universe into systems relatively independent of each other, and commits no appreciable error in doing so.[42]

The independence of parts, and the possibility of science to define matter in terms of spatiality, correspond exactly to what Whitehead understands by "localization." Nevertheless, if the two terms—"localization" and "spatialization"—outline similar characteristics, they can be distinguished at a more general level, that of the relations that exist between abstractions and experience. To outline this, I will discuss how Bergson describes the function and status of science. Again in *Creative Evolution*, he explicitly poses the question "What is the essential object of science?": "It is to enlarge our influence over things. Science may be speculative in its form, disinterested in its immediate ends: in other words we may give it as long a credit as it wants. But, however long the day of reckoning may be put off, some time or other the payment must be made. It is always then, in short, practical utility that science has in view. Even when it launches into theory, it is bound to adapt its behaviour to the general form of practice."[43]

In this passage, Bergson clearly identifies science with practical activity. Asking the question "What is science?" therefore amounts to asking "How can knowledge act upon things?" Bergson clarifies his

point: "Action, we have said, proceeds by leaps. To act is to readapt oneself. To know, that is to say, to foresee in order to act, is then to go from situation to situation, from arrangement to rearrangement."[44] And it is this practical orientation of science that is the foundation of the generalization of spatialization as a scientific interpretation imposed upon the world. Thus, "science may consider rearrangements that come closer and closer to each other; it may thus increase the number of moments that it isolates, but it always isolates moments."[45] The difference between classical science and modern science, between research that privileges certain places and times and research that demonstrates an indifference to specific places and times (all instants are equal), changes nothing about the essence of science: "Modern, like ancient, science proceeds according to the cinematographical method. It cannot do otherwise; all science is subject to this law."[46] It is at this point that Bergson is able to establish a link between common sense and science, through a general conception of the function of intelligence: "The science of matter proceeds like ordinary knowledge. It perfects this knowledge, increases its precision and its scope, but it works in the same direction and puts the same mechanism into play."[47] Spatialization is reduced to a natural inclination of intelligence, its vital dimension.

While Whitehead and Bergson agree on the importance of spatialization, nevertheless they part ways when it comes to determining its causes and consequences. "On the whole," Whitehead writes, "the history of philosophy supports Bergson's charge that the human intellect 'spatializes the universe'; that is to say, that it tends to ignore the fluency, and to analyse the world in terms of static categories. Indeed Bergson went further and conceived this tendency as an inherent necessity of the intellect. I do not believe this accusation; but I do hold that 'spatialization' is the shortest route to a clear-cut philosophy expressed in reasonably familiar language."[48]

Whitehead says no more on this. Nevertheless, it is possible to use this passage to bolster his critique. Their positions seem very close, and yet the difference is important and can be expressed in one word—exaggeration. At first sight, this is a strange way of rejecting Bergson. Yet, this is the latent core of Whitehead's position: he would have

been prepared to follow Bergson in his analyses, in the way in which he describes spatialization, but he would have liked him to have slowed down the speed of his critique. The Bergsonian conception of spatialization is relevant, but his exaggeration raises it to a level where it becomes illegitimate and, more seriously, renders it incapable of the surpassing that it calls for.

What exactly is this exaggeration? Certainly, the history of philosophy (and one could add the history of science to Whitehead's remark) has confirmed Bergson's analysis, but nothing authorized him to make spatialization a necessity that is inherent to the intellect. For example, when Bergson states, in *The Creative Mind*, that "*our intelligence*, *when it follows its natural inclination*, *proceeds by solid perceptions on the one hand*, *and by stable conceptions on the other*. It starts from the immobile and conceives and expresses movement only in terms of immobility,"[49] he adds a dimension to spatialization that exceeds the framework in which it was established. From this there follow two consequences, which Whitehead rejects. First of all, by making spatialization a necessity of the intellect, Bergson is forced to place all the different ways of doing science under one general rubric. He recognizes fundamental differences between, for example, classical science and modern science, but, ultimately, these share the same approach. The diversity of methods, the divergences within the history of science, the multiplicity of models, and the tensions in the processes of experimentation seem to conjoin within the same underlying activity. It is the enormity of Bergson's diagnosis that comprises the exaggeration. The analysis of scientific activity, for Bergson, is possible only in terms of the extreme generality within which it is posed. As a result, and this is a problem that is even more important for Whitehead, the dramatization of the identification of spatialization with intelligence leaves little room for alternatives. Second, Bergson states that "*to philosophize means to reverse the normal direction of the workings of thought*,"[50] and he is obliged to look for the conditions of nonspatialized thought. Hence, the metaphysics to which he appeals necessarily takes on the appearance of a science "which claims to dispense with symbols."[51] The exaggeration that Whitehead denounces is the belief that science would be profoundly vitiated by a spatializing intelligence. Thus, Jean Wahl, seeking to de-

velop Whitehead's remarks, writes, "There has been a confusion of science with the materialist conception with which it has too often been linked. Bergson and the Romantics have made of science a static and dogmatic conception; Einsteinian relativism and more recent theories would allow for an integration of what had been thought to escape science into a more supple science."[52] There is, however, no need to invoke new sciences, as Wahl does; scientific abstractions do not have a unique character that corresponds to a function that is linked to practical activity. Making such an assertion runs the risk of underestimating the transformative capacity of abstractions.

One of the functions that Whitehead gives to philosophy is as follows: "Philosophy is the criticism of abstractions which govern special modes of thought."[53] It would be completely wrong to think that by stating that the function of philosophy is to criticize abstractions, Whitehead is attempting to rescue experience from their grip, as if an experience without abstraction were possible. The term "criticism" that Whitehead uses in this passage, rather than referring to its usual oppositional sense, has more of a Kantian connotation: determining the limits of abstractions, the conditions of their action, and their effects in experience. It would be no exaggeration to see Whitehead's philosophy as one of the boldest attempts to give abstractions a fundamental role in experience. Abstractions are neither representations nor generalizations of empirical states of affairs but *constructions*, the "true weapons with which to control our thought of concrete fact."[54] It should be noted that the term "abstraction" already goes well beyond the logicomathematical model of abstractions and forms of substantialization in language with which it has been too often identified, notably by Bergson, thereby becoming the key to all interpretation of experience. Abstractions have their own constraints, their own modes of fabrication, their own ways of moving and acting. It is thus an inquiry into the mode of existence of abstractions and their function in the most concrete experiences (of which they are not simply formal reproductions), that is fundamental to the philosophy of Whitehead.

Whitehead never engages in a general denunciation of the notion of intelligence, but he does develop a critique of a specific scientific formalism, one that is constitutive of a physicalist materialism that has

imposed itself during the last three centuries. It is against this that he offers another scheme of thought, another cosmology. While Whitehead agrees with Bergson that spatialization is central to all the difficulties of modern science with regard to thinking matter, space, the relations between entities, and so on, he nevertheless limits its scope to its influence during a specific period, and linked to specific abstractions. Thus, Whitehead's criticism is as much to do with spatialization considered as a theoretical model as it is to do with the attribution of this error to intelligence in general. It is in this sense that Whitehead's protestation in *Science and the Modern World* should be taken: "One main position in these lectures is a protest against the idea that the abstractions of science are irreformable and unalterable."[55] Similarly, Whitehead writes that the task of philosophy is not to reject abstractions but to demonstrate the limits of the abstractions that we have inherited, and the inconsistencies that they exhibit, and to reform our abstractions, where reform is still possible, or even to abandon them in favor of constructing new ones.

Going even further, it is not simple location that is the mistake, nor, moreover, the bifurcation of nature, for "by a process of constructive abstraction we can arrive at abstractions which are the simply-located bits of material, and at other abstractions which are the minds included in the scientific scheme."[56] The bifurcation of nature and localization are, above all, abstractive operations, tools that act as guides for experimentation upon nature. In this sense, they have a legitimate reality, and Whitehead comes to talk of them with great admiration: "We must note its astounding efficiency as a system of concepts for the organization of scientific research. In this respect, it is fully worthy of the genius of the century which produced it. It has held its own as the guiding principle of scientific studies ever since. It is still reigning."[57] The error lies not in what they have made possible but in the confusion of registers, in the reversal of orders. The paradoxes and the false excesses "only arise because we have mistaken our abstraction for concrete realities."[58]

The abstraction of the bifurcation of nature is one that is both produced and invented. Having found its efficacy in the operation that it enables, it now finds itself, through a strange procedure, reified; as if nature really were bifurcated in itself, as if the primary elements of

experience really reflected the idea of simple location. The abstract has been confused with the concrete, effect with cause, the product of a process with its origin. In so far as "simplicity is the goal of our quest," Whitehead writes, "the guiding motto in the life of every natural philosopher should be, Seek simplicity and distrust it."[59] As long as the process of abstraction, the gestures and operations that were discussed earlier, remain active, and are assessed in terms of what they allow, there is no reason to question them. But, once this abstraction is reified, is taken to be the "real" foundation of a metaphysics, rather than a tool, this is when false problems take precedence over experience, doing "violence to that immediate experience which we express in our actions, our hopes, our sympathies, our purposes, and which we enjoy in spite of our lack of phrases for its verbal analysis."[60]

Whitehead calls the operation by which abstractions are reified the "fallacy of misplaced concreteness." Whitehead sums up the operation of reification that is at work in modern thought as follows: "My theory of the formation of the scientific doctrine of matter is that first philosophy illegitimately transformed the bare entity, which is simply an abstraction necessary for the method of thought, into the metaphysical substratum of these factors in nature which in various senses are assigned to entities as their attributes."[61]

A whole tranche of modern philosophy has strayed into bifurcation and localization, losing itself in their effects, notably that of dualism, without ever returning to the source of the operations that they claim to have gone beyond. Whitehead paints a picture that is undoubtedly incomplete but gives the general image of the kind of thought that was founded on bifurcation: "There are the dualists, who accept matter and mind as on an equal basis, and the two varieties of monists, those who put mind inside matter, and those who put matter inside mind."[62] The range of positions is clear, as they all share the same space, a common problem—one which accepts the primary existence of bifurcation but tries to reduce its effects while still confirming its importance. Thus, Whitehead writes, "the enormous success of the scientific abstractions, yielding on the one hand matter with its simple location in space and time, on the other hand mind, perceiving, suffering, reasoning, but not interfering, has foisted onto philosophy the task of accepting them as

the most concrete rendering of fact."[63] Therefore, we do not have to choose between these alternatives, as they all confirm the gestures at the origin of this image of thought. It does not make sense simply to be in opposition to modern ontologies, as the operations from which they are derived remain implicit, and find their efficacy in their effacement. The modern experience of nature has consisted in trying to connect conjecture (real nature) to a dream (phenomenal nature).

Nature as Event

Bifurcation needs to be overcome. How is this to be achieved? All routes seem blocked. We are at a crossroads of different possibilities, but Whitehead's diagnosis of the emergence of the concept of nature within modernity seems to make any path forward suspect, to say the least. As has been seen, the alternatives are only superficial; the different ontologies that have been presented as ways to overcome bifurcation mask the operations and gestures upon which they rely. Through an analysis of the concepts of bifurcation and of localization, I have outlined the overriding interests at work in the construction of the concept of nature. These interests are essentially operative, practical, and derived from gestures of differentiation that aim to enable possible formalizations of nature, as well as ways of acting upon nature. We appear to be in a situation where everything is reversed: operations replace ontology, and abstraction replaces the concreteness of things, and the possibility of the knowledge of existence in itself.

However, in *The Concept of Nature*, Whitehead offers a way out of bifurcation, out of the strange correlation between abstract matter and illusory experience. It should be made clear straightaway that his solution comes at too high a price for it to be taken up. It requires that the concept of nature is instantiated on a basis that is entirely phenomenal and rejects any metaphysical stance. Whitehead subsequently changes his mind on this point, and this is the reason why, with regard to the critique of the cosmology of the moderns that runs through *The Concept of Nature*, it is only on the basis of his later works that it is possible to envisage a complete going-beyond of bifurcation. However, before turning to this metaphysical alternative to bifurcation, it is important

to outline the solution that Whitehead had in mind at this stage, one that has notable similarities with phenomenology.[64] This will enable a better understanding of the requirements to which this foray into a phenomenological approach appeared to respond (although it should be noted that Whitehead was not aware of phenomenology as a philosophical movement as such), as he moves to his later metaphysics of nature, which in no way claims to invalidate his former theory but tries to circumscribe its limits. Several readers of Whitehead, such as Jean Wahl and Merleau-Ponty, have treated Whitehead's approach in *The Concept of Nature* as foundational for the rest of his philosophy. That is to say, they maintain that it is possible to draw from this book a philosophy of nature, one based on a phenomenal experience of nature. As a result, their readings of Whitehead are linked to a specific perspective that exaggerates the remit of *The Concept of Nature*. This is not an approach that will be followed here. Instead, the question of interest is that of knowing why a mathematician became an epistemologist and developed a general metaphysics. How is it that the solution offered in *The Concept of Nature*, based on a phenomenologization of the experience of nature, is both complete and partial, requiring the delimitation of a field of investigation while leaving in suspense those elements that are too insistent for Whitehead to hold back? The key phrase is "Nature is that which we observe in perception through the senses."[65]

This is primarily a methodological statement. It has nothing to do with any ontological assertion about nature itself, its qualities, its form, or the modalities of its existence. It only indicates a site, the primordial point of the experience of nature, and outlines the legitimate arena in which statements can be made about nature. Above all, this stance represents a decision through which Whitehead is able to establish the qualities of nature by making an appeal solely to immediate experience. The demand that Whitehead makes is that nothing is added that would overburden the significance of experience, but, especially, that nothing is subtracted from it—in a nutshell, "All we know of nature is in the same boat, to sink or swim together."[66] This is the moment of the setting out of a genuine method. Whitehead does not put it in exactly these terms, but implicitly his statements comprise a method that *The Concept of Nature* follows in the strictest possible way and that,

once transformed and deployed in its most radical form, will become the proper method of speculative thought. Without doubt, the evolution of Whitehead's thought, the path toward a speculative approach, is linked to this method, which he never renounces: subtract nothing from experience. In his last work, *Modes of Thought*, Whitehead takes this up again and identifies it with a demand that is proper to philosophy in contrast, notably, to science: "Philosophy can exclude nothing."[67] This principle expresses a striking filiation with the philosophical movement that runs through the radial empiricism of William James, whose formulation is very close to Whitehead's method: "To be radical, an empiricism must neither admit into its constructions any element that is not directly experienced, nor exclude from them any element that is directly experienced."[68] It is this radical empiricism that is at work in *The Concept of Nature* and that compels Whitehead to focus on the perceptual experience of nature. It is this same empiricism that will later impel him to develop a general metaphysics whose speculative audacity Deleuze hailed at the conclusion of *Difference and Repetition*: "Philosophy has often been tempted to oppose notions of a quite different kind to categories, notions which are really open and which betray an empirical and pluralist sense of Ideas: 'existential' as against essential, percepts as against concepts, or indeed the list of empirico-ideal notions that we find in Whitehead, which makes *Process and Reality* one of the greatest books of modern philosophy."[69]

How, in *The Concept of Nature*, does this method transform the experience of nature? I will take as a starting point the method to which empiricism appeals. What is given to us directly in perception when we subtract nothing nor add any external element? Whitehead's response to this question is slightly disconcerting, as it opens up perception to a new level: "The immediate fact for awareness is the whole occurrence of nature. It is nature as an event present for sense-awareness, and essentially passing."[70] There are two distinct elements in this passage. The first is the "whole occurrence," that is to say the totality of nature that we witness from a perspective that is determined by the position of the body. We do not have clear access to nature in its totality, as this remains "veiled," but we have a vague experience of it. "We are aware of an event which is our bodily life, of an event which is the course

of nature within this room, and of a vaguely perceived aggregate of other partial events."[71] Nature is perceived as dependent on perception, as we experience it only according to a perspective, and nature is also perceived as independent, as the vague perceptions of partial events are experienced as something beyond our current perception. The body, the perceived room, the building, provide a background of events that are not the actual object of perception but persist within it and open it up to aspects that are only vaguely perceived.

The second element is indicated toward the end of the paragraph. Whitehead ends by granting a particular quality to nature that he views as so utterly fundamental that he has no qualms in talking of its "essence." It is from this quality that all others in the experience of nature will be derived, as so many cases, or actualizations, of this first principle: passage. It is possible to talk here of an ultimate principle of the concept of nature, for nothing else is able to explain it except its relevance to those instances of perception that affirm its importance. Whitehead turns to Bergson once again to clarify his point: "I am in full accord with Bergson, though he uses 'time' for the fundamental fact which I call the 'passage of nature.'"[72] The task at hand is to take Bergson's notion of passage in its broadest sense. It points not only to a temporal transition, an evolution or a becoming, but also to a spatial change, a shifting of place or a movement. There is no reason to attribute any primacy to either of these dimensions. Any passage is directly or, to be precise, immediately temporal and spatial. Hence, as Wahl writes, "It could be said that the event which is the assassination of Caesar occupies space. The relationships of events to space and time are, in almost all respects, analogous. It is not that there are, on one side, objects in space and on the other, happenings in time; rather, there are happening-objects which are events."[73]

Passage is therefore an "event." This is the first time in Whitehead's work that the notion of event takes on such importance. From here on, from this decision to make event the primary characteristic of nature and the ultimate point of its experience, the whole of Whitehead's philosophy will become a vast inquiry into the notion of event. As Deleuze writes, in the chapter of *The Fold* dedicated to the philosophy of Whitehead,

> With Whitehead's name there comes for the third time an echo of the question, *What is an event*? He takes up the radical critique of the attributive scheme, the great play of principles, the multiplication of categories, the conciliation of the universal and the individual, and the transformation of the concept into a subject: an entire hubris [. . .] an event does not just mean that "a man has been run over." The Great Pyramid is an event, and its duration for a period of one hour, thirty minutes, five minutes . . ., a passage of Nature, of God, or a view of God.[74]

Thus, the passage of nature is an event, as are the perspectives through which we experience it and the parts of it that we differentiate in our perception. All is event within perception.[75] I will provide some examples that will be grouped according to the aspects of events they demonstrate. There are three broad groups that can be identified through three statements:

> 1. "YESTERDAY A MAN WAS RUN OVER ON THE CHELSEA EMBANKMENT."[76] The idea of an accident or a particular occurrence is the most common characteristic of an event: something has happened. An accident, the unexpected overturning of a situation, the emergence of a reality that has seemingly broken with the causal chain to which it can be retrospectively linked, the greater or lesser rupture in the continuity of an experience—all fall under the idea of an event as an occurrence within nature. There is nothing surprising here. Whitehead is only taking up the usual conception of event and collecting various statements under the term "occurrence." However, by going a little deeper, a background of presuppositions can be found that are particularly acute in the "Chelsea" example. Where, exactly, is this idea of "occurrence" situated? Is it in the subject to whom something has happened and who preexisted this event? In this sense, is the eventual element only an attribute? To clarify: In this statement, is the event situated in the man who was run over, or is it, rather, a broader reality, linking the witnesses, the victim, the driver, and perhaps the reports that populate the Chelsea embankment? Clearly something happened, but when we look more closely, it seems to be disengaged from any support, from

any subject to which it could be assigned or from which it emerges. Whitehead's stance, which simply follows the method that he has imposed on himself, is that we have no reason to reduce the event to something other than itself, that is, to what is given in immediate awareness. This change of perspective needs to be given its rightful place: in so far as the event is this occurrence, then it is the latter which gains real substantiality, and the man, the witnesses, the Chelsea embankment, and the narrator become its attributes. This is a crucial point. Whitehead wants to make the occurrence the basis of the event, its real substantiality, refusing to attribute anything else to it, except itself. There is more. The occurrence—"a man was run over"—unfolds within a multiplicity of spatial relations that become evident when we try to explain their meaning. It happened "adjacently to a passing barge in the river and the traffic in the Strand."[77] But this is also a temporal occurrence that is inserted within an infinite multiplicity of other past or contemporary occurrences. Thus, "The man was run over between your tea and your dinner"[78] expresses the temporal location of the occurrence within a constellation of others. This spatiotemporal relation of the occurrence, which situates it at the center of a collection of other events, is not an external context, as if time and space were only forms, receptacles, or axes within which events take place. Whitehead makes the relations between events the core from which time and space will gain their consistency.

2. "CLEOPATRA'S NEEDLE IS ON THE CHARING CROSS EMBANKMENT."[79] Granting the status of an event to the existence of this obelisk is a stance that, at first sight, seems to run counter to common sense. There is no notion of occurrence, passage, or temporal transition to be found here—notions that are clearly attributable to the events of the first category. What remains of the accidents, causal ruptures, and irruptions that form the substance of this first set of events? Looking more closely, the difference is not as marked as it might seem. It is possible to find the same elements but transposed to a new level. To make his case, Whitehead refers to a thought experiment, an imaginative change of perspective: "If an angel had made

the remark some hundreds of millions of years ago, the earth was not in existence, twenty millions of years ago there was no Thames, eighty years ago there was no Thames Embankment, and when I was a small boy Cleopatra's Needle was not there."[80] It all depends on the temporal perspective that is adopted. If we place ourselves within a particularly long time frame, the persistence of the obelisk becomes more ephemeral than it initially appeared. Additionally, when looked at in terms of a general overview, it is true that the obelisk seems not to change, but when we look more closely, if we immerse ourselves in its interior existence and analyze its constituent parts, we realize that beneath its apparent simplicity there is a multiplicity of modifications, variations, and interactions with its environment. Thus, a "physicist who looks on that part of the life of nature as a dance of electrons, will tell you that daily it has lost some molecules and gained others."[81] Whether we choose to look from a wider timescale or place ourselves within the miniscule variations that imperceptibly transform the obelisk, the result is the same: the continuity of the existence of the obelisk is an event that is not, in principle, so different from other occurrences within nature. The result, however, is important. If we agree with Whitehead, then all the "things" of our experience—material objects, physical objects, whether technical or biological—are events that manifest similar principles of passage and temporal transition. Whitehead's position displays a willingness to place all objects, in so far as they persist, within the domain of events. One instance of an event, an accident, or an occurrence does not directly display the idea of persistence but does presuppose it. In the case of the first example, it requires the persistence of the driver, the victim, the witnesses, of Charing Cross, in order for the accident as an irruption, a severing of the situation, to have a minimal level of reality. The accident unfolds against a backdrop of multiple persistences, in relation to which a difference is made. But what is persistence for Whitehead exactly? It refers to a notion of duration, to the maintaining of existence, to the very magnitude of being. As stated previously, if we place ourselves within these persistences, the deeper we delve, we find the multiplicity of little accidents, small changes, and transformations that,

beneath the apparent stability and continuity of the obelisk, change it in each moment of its existence. A general rule can be drawn from this: persistence presupposes occurrence.[82] The maintaining of existence of the obelisk is nothing other than the repetition, the resumption, that Whitehead will later call the "historic route," of a series of occurrences, of small events, which are completely ephemeral from the perspective of its own existence.

3. "THERE ARE DARK LINES IN THE SOLAR SPECTRUM."[83] At first sight, this statement seems linked to the first two and appears to confirm them. It is tempting to see it as a renewed insistence on either the idea of occurrence (the fact that a dark line has irrupted in the solar spectrum) or the idea of persistence (the spectrum whose existence is implied by the dark lines). However, it is clear that Whitehead wants to draw out a new component of the event from this statement. It is not a question of talking about the existence of "dark lines" or of the "solar spectrum" but of setting out the relations between these two events. It has already been shown how, in a way, all events are essentially relational; thus, the impression remains that this statement says no more than the other two. In what way does setting these two events in relation to each other differ from the relational existence of other events? The specific element of this statement can be located in the *operation* of their putting-into-relation, through the introduction of a new dimension that is added to the events "solar spectrum" and "dark lines." Whitehead does not provide a definition, nevertheless I propose to call it "objective correlation." Whitehead's statement poses the following question: Two events being given, what correlation can be established? This activity is at the heart of those theories, principally scientific ones, which Whitehead believes this particular example of the solar spectrum highlights. That is to say, "If any event has the character of being an exhibition of the solar spectrum under certain assigned circumstances, it will also have the character of exhibiting dark lines in that spectrum."[84] Whitehead wants to situate theoretical, abstract, and operative elements in his theory of events. And this has important consequences. First, it breaks the

initial distinction between the events of nature and the manner in which they are represented—factual states and representations—and places them directly on the same level, on the same plane. All is laid horizontally on the plane of nature:[85] the ways in which we link events make up a part of experience itself; these manners are factors of existence that are as real as the persistence of the obelisk. It should be remembered that Whitehead lays great store by his method, to which there can be no exception. Theories are as much the immediate data of awareness as is the accident in Chelsea or the persistence of the obelisk. Stating that correlations are events, in and of themselves, leads Whitehead to the second consequence of his theory of event, namely, the idea that theories should be treated like all other events of nature. The question of the consequences of this relation between theories and events is left hanging at the time of the writing of *The Concept of Nature*. It will find its full expression in *Process and Reality* in the form of a theory of propositions, which will be returned to in the final chapter of this book. The important point, at the moment, is that in *The Concept of Nature* the scene is set. Scientific theories are events, marked by the same characteristics of occurrence, of persistence, of historic routes, of mobile connections. Thus the meaning of the event, as set out in this third statement, is that the "solar spectrum" event is connected to another event, "dark lines," by the intermediary of a third type of event, that of correlation. A completely different space of events is established, one that is linked to other events, and whose existence is founded in the articulation of these other events. What I have called *objective correlation* now becomes a new mode of existence of events, and is added to "*occurrence*" and "*persistence*." There is a complex economy within which these three components, drawn from *The Concept of Nature*, all presuppose each other. The accident unfolds against the backdrop of multiple persistences, which themselves are a series of irruptions that are maintained over the course of a common historic route; theories form a background of presuppositions which themselves exist only through their correlation with persistences and accidents that are already at work. Clearly, it would be wrong

> to make any of these components the basis from which the others gain their primary condition of existence. To reiterate: the method that Whitehead implicitly follows consists in exploring experience in terms of the immediate fact of the passage of nature as contained in awareness. In this respect, it is the intertwining of these components that forms the primary array of the plane of nature: the accident, the obelisk, and the dark lines correlated with the solar spectrum and the immediate fact.

But all events are composed of entities that are not, themselves, "eventual." "As you are walking along the Embankment you suddenly look up and say, "'Hullo, there's the Needle.' In other words, you recognise it. You cannot recognise an event; because when it is gone, it is gone. You may observe another event of analogous character, but the actual chunk of the life of nature is inseparable from its unique occurrence."[86] Each event is a passage, inherently unique in its moment, different from all others, according to a rekindling of the principle of indiscernibles, but there are elements in all events that literally do not pass, elements which have neither spatial extension nor temporal thickness. We are having an experience each time we are able to say, "It is there, it is here again." This is the minimal, the most succinct, expression of the confirmation of the existence of an object. Something is here again. What exactly have we recognized? Variations of color, varying geometric forms, specific intensities of sound, particular sensa.

Whitehead, purely as a matter of convention, refers to these as "objects," knowing that their list is endless. As soon as something is recognized, it is an object. Whitehead's "realism" could be challenged by stating that all recognition is linked to habit, and that we only link the diverse qualities of events after we have reified them. If there is an experience of blue, it will always be through the repetition of particular experiences of "blue" that themselves are always different. But in what way are these cases of "blue" always different? If all events are different, if all experiences are changing, if each shade of blue is different from another, how can we recognize something? It is possible to go as far as one wants in this regression of explanation; in the end the question will always remain the same: How can we recognize something in what

appears to be an original experience? Terms can be inexact, words can fail and correspondences run astray, but the impression remains that something has returned (even if it is the first time that we have experienced it), that one aspect of the event is analogous to another, that we have already experienced it under a different form.

Whitehead says nothing about how we could know "objects" in themselves, how we might know this "blue" or a pure geometric form, but, instead, he does talk of how we experience them *locally* on each occasion and how all knowledge is situated in relation to an event. Events are the occasions of the experience of objects. This is Leibniz's principle, taken up in a slightly different way, transposed to the level of nature, according to which "there are ideas and principles which do not reach us through the senses, and which we find in ourselves without having formed them, though the senses bring them to our awareness."[87] We can, therefore, know them only on "occasions," that is, according to a local dimension. Everything is reversed. There are no events without the objects to which they are linked and specified in a particular way. Conversely, we experience objects only in evental situations, on those occasions in which we recognize something that points beyond the experienced event. This is a strange mix, since its two elements have opposed qualities. The obelisk as an event is unique in its existence; it has its own time and space. From the perspective that we experience it, we recognize innumerable qualities within the obelisk, the multiple forms that constitute it, the colors, their variations and modulations. These "objects" are not simple projections from the mind onto nature, as this would return us once more to bifurcation, as if the colors, the sounds, and the forms belonged to us. Quite the opposite—it is the mind that finds it conditions of existence in, and is derived from, them. It is because there is repetition within nature—that which is recognizable—that the mind is able to make comparisons and connections.

Within *The Concept of Nature*, it seems that Whitehead already had the elements of a possible way of going beyond bifurcation. All appears coherent and consistent. Since bifurcation differentiates between abstract qualities and phenomenal qualities, it seems that there is a possible way of reuniting them through a theory of the events of nature, by placing these events within perceptual experience. This is not a matter

of a historical analysis of the development of Whitehead's thought, of the development of an idea within his work. It signals a deeper problem, one that is much more important for the concerns of this book. If, as I have attempted to demonstrate, the theory of events relies on a method (taking only perceptual experience into account) and a premise (nature as a passage or an event of all events) does this, in itself, provide a systematic and coherent way of going beyond the modern bifurcation of nature? By choosing to place nature on a "phenomenal" plane, what must be given up and what needs to be excluded? What does the method that Whitehead follows in *The Concept of Nature* oblige him, despite everything, to deny?

To put it bluntly: the possibility of going beyond bifurcation was at this stage linked to a decision to exclude any metaphysical consideration of nature. Numerous ambiguities and misunderstandings in readings of the work of Whitehead are due to a lack of understanding of the stance that Whitehead took, and which he clarifies on several occasions: "I must repeat that we have nothing to do in these lectures with the ultimate character of reality."[88] He states that any deviation from this position would be disastrous, and puts his point dramatically: "The recourse to metaphysics is like throwing a match into the power magazine. It blows up the whole arena."[89] Whitehead's stance is not straightforward, and he recognizes that it places considerable limits on his enterprise. This is frustrating, as it continually points to a necessity beyond itself. In so far as the experience of nature as passage is both situated and autonomous in relation to perception, this inevitably leads to the question of the beings that compose nature. Whitehead is aware of this, and he recognizes that "it is difficult for a philosopher to realise that anyone really is confining his discussion within the limits that I have set before you. The boundary is set up just where he is beginning to get excited."[90] It seems as if the construction of the concept of nature on a phenomenal basis, and the theory of events that has already been outlined, forces those who follow this path to reject any metaphysical considerations. The method may well have been radical, as it goes beyond an investigation of nature in itself, and brackets all ontological and metaphysical questions. The question of the subject, and its relationship to nature, is only a heuristic one. This does not

invalidate Whitehead's project, as it is principally a matter of setting out "the basis of a natural philosophy which is the necessary presupposition of a reorganised speculative physics."[91] Going beyond the bifurcation of nature would be a local affair, limited to the history of science and the construction of a new speculative physics. This would not involve taking any position on reality or on a nature that is independent of perception. This was the condition of the success of the theory of events: renounce any metaphysical position.