

What Is Given in Experience?

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Every synthesis begins “anew” and has to be taken up from the start as if for the first time.

—Isabelle Stengers, Penser avec Whitehead: Une libre et sauvage creation de concepts

It could be one of those little games journalists play on television talk shows about books: “Who was the greatest philosopher of the twentieth century whose name begins with W?” Most learned people in America would answer “Wittgenstein.” Sorry. The right answer is “Whitehead”—another philosopher whose name begins with W, to be sure, but one who is vastly more daring, and also, unfortunately, much less studied. Among his many misfortunes, Whitehead had the very bad one of provoking too much interest among theologians and too little among epistemologists. His reputation in America is thus skewed toward his theological innovations to the detriment of his epistemological theories. He also suffers from the terrible stigma of having indulged in metaphysics, something one is no longer supposed to do after the edicts of the first “W,” even though those who think that metaphysics is passé know usually much less science than Whitehead and swallow—without an ounce of criticism—hook, line, and sinker the entirety of metaphysical beliefs about nature that one can easily derive by lumping together the least-common-denominator views of geneticists and so-called cognitive scientists. As Isabelle Stengers says in her recently published masterpiece about Whitehead, “critical consciousness admits so many things without criticizing them” (74).

What makes Stengers’s book, Penser avec Whitehead—in English, “to think with Whitehead”—such an important work for Anglo-American philosophy is that in it the greatest philosopher of the twentieth century is finally studied in great detail by someone who is one of the most innovative philosophers of science of the present time. Now we finally have, in other words, after years of embarrassed commentaries in which people had eulogized Whitehead’s God and disparaged Whitehead’s science, a book in which Whitehead’s science and Whitehead’s God are each given their rightful place. This development is not going to put process theology on a new footing. After having worked for years on the physics of time with Ilya Prigogine,¹ and then after having written her seven-volume treatise laying out her own version of Cosmopolitics,² Stengers has

dedicated 572 pages to her favorite philosopher, retranslating herself many pages of this most difficult of authors for the sake of her analysis in French.³

For people who have read for years both Stengers and Whitehead, the prospect of reading the prose of the first commenting on the prose of the second might be somewhat daunting. And yet, one gets exactly the opposite result: Stengers illuminates the most obscure passages of Whitehead in a style that is supple, often witty, always generous. So readers should not be put off by the surprising subtitle, which Stengers actually borrowed from Deleuze: there is nothing “wild” in this book, except as that word might be used to characterize the freedom and invention of the author. Of those virtues the book is stuffed full.⁴

Following Whitehead, Stengers has been able to turn around many of the metaphors usually borrowed from critical thinking: “To think with Whitehead today means to sign on in advance to an adventure that will leave none of the terms we normally use as they were, even though none will be undermined or summarily denounced as a carrier of illusion” (24).

Whitehead is thoroughly put to the test here, and yet I have no doubt that, had he lived, Deleuze would have celebrated this book as a major event in the geopolitics of philosophy: a great but neglected Anglo-American is reimported into France through Belgium, and the event is taken as the occasion to reinterpret pragmatism, Bergsonism, and empiricism. What a wonder! What an interesting ecological “inter-capture”!

Although the book is a close reading, in chronological order, of the major books of Whitehead, and although it makes good use of the body of existing scholarship, it does not simply try to explain or popularize the history of Whitehead’s thought. As the title indicates so well, the aim is to think with Whitehead. Because she is herself a philosopher of science who has explored minutely many of the same fields as Whitehead—chemistry, physics, Darwinism, ethology, and psychology (but not mathematics nor logic, although she takes very seriously the fact that Whitehead thinks as a mathematician)—Stengers’s book can be seen as an effort to test out Whitehead’s most daring concepts on new materials and in new examples. But contrary to the rather cavalier way in which Whitehead treats his own predecessors, Stengers is very precise and follows with great attention Whitehead’s own hunches. Have no doubt: when we read this book, we are thinking with Stengers and with Whitehead all along; we are not thinking with Whitehead about what is on Stengers’s mind.

The whole book turns around the most arduous question of Whitehead, without making any attempt either to avoid the difficulties or to obfuscate his philosophy by bringing in new irrelevant conundrums. The basic question is to decide whether or not empiricism can be renewed so that “what is given in experience” is not simplified too much. Against the tradition inaugurated by Locke and Descartes, then pushed to the limits by Kant, until it was terminated by William James, Whitehead offers another role for the object of study to play: “The object [for him] is neither the judge of our production nor the product of our judgments” (93).⁵

What has been least critically considered by the philosophical tradition, and especially by the anti-metaphysical one, is the feature of Western thought that occupied Whitehead for most of his career, what he calls “the bifurcation of nature,” that is to say, the strange and fully modernist divide between primary and secondary qualities.⁶

Bifurcate is a strange and awkward word, strange to the tongue and ear, but what it betokens is something even worse for our thinking. Bifurcation is what happens whenever we think the world is divided into two sets of things: one which is composed of the fundamental constituents of the universe—invisible to the eyes, known to science, real and yet valueless—and the other which is constituted of what the mind has to add to the basic building blocks of the world in order to make sense of them. Those “psychic additions,” as Whitehead calls them, are parts of common sense, to be sure, but they are unfortunately of no use to science, since they have no reality, even though they are the stuff out of which dreams and values are made.⁷

If I could summarize Stengers’s version of Whitehead by a sort of syllogism, it could be the following one: modernist philosophy of science implies a bifurcation of nature into objects having primary and secondary qualities. However, if nature really is bifurcated, no living organism would be possible, since being an organism means being the sort of thing whose primary and secondary qualities—if they did exist—are endlessly blurred. Since we are organisms surrounded by many other organisms, nature has not bifurcated. Corollary: if nature has never bifurcated in the way philosophy has implied since the time of Locke, what sort of metaphysics should be devised that would pay full justice to the concrete and obstinate existence of organisms? The consequence of considering this question is radical indeed: “The question of what is an object and thus what is an abstraction must belong, if nature is not allowed to bifurcate, to nature and not to knowledge only” (95; my emphasis).

Hence the roughly three equal parts of the book (although Stengers divides her book in two): How to overcome the bifurcation of nature? What is an organism of a creative sort? What sort of strange God is implied for this new philosophical business?

“Organism” is not, of course, a scientific concept. It is, rather, the metaphysical alternative to the notion of substance. In the long philosophical tradition, substance is what endures by itself and is expressed by attributes. Organisms, on the other hand, have to pay the full price of their duration by repeating and sometimes reproducing themselves, that is, also risking themselves, through interaction with the other things that make them exist. Being attentive to any one thing leads us to consider so many others just to understand what they are, that is, how they remain in existence.⁸ This is, in a way, a basic tenet of pragmatism, but extended very far, as far as is necessary to hold organisms in existence.⁹ In a way that is much truer than for Bergson, one could say that Whitehead was the first philosopher to take Darwin’s discoveries as seriously as those of Newton or Einstein: “The problem of Whitehead was to avoid wheeling metaphysics in to make it play the sad role of rendering thinkable what the bifurcation of nature has rendered unintelligible: a nature without sound, nor odor that a mind would hastily clothe with sound and odor” (127).

In this way, Whitehead undid what Kant had done by a “beautiful and perverse stroke that reveals exactly the sort of power Whitehead wants to forbid philosophy to play: the power to transform a refusal to think things through, and to do so in a paradoxical way that is supposed to reveal the limits of thought” (130).

This does not mean that Stengers is going to champion Whitehead’s attempts to account for Einstein’s relativity, quantum physics, and Darwinian evolutionary theory by gathering new and better proofs borrowed from her own experience of

contemporary science—for instance, by drawing on her long association with Prigogine. No, one has to recognize that Whitehead's attempts at rethinking the science of his time have been so many bets waged in the thirties that have not yielded any gain. This proves nothing for or against them: history is not finished, nor is the real rational. It is the philosophical import of those attempts that Stengers wants to fathom. Whitehead's interpretations of the twentieth-century discoveries have shown that there exist many other ways to take seriously "what is given in experience." Stengers's version of Whitehead offers not another critique of empiricism but, on the contrary, another way to get at experience, a new attempt to open what could be called a second empiricism.

Naturally, in the same historical venture, phenomenologists, too, had tried to enrich experience, and so had the strangest of all phenomenologists, namely, Martin Heidegger. Yes, but they abandoned science to its bifurcating ways and enriched only the realm of the lived experience where human intentionality operates. Although this was certainly a wonderful thing to accomplish, it made no difference to our understanding of the cosmos, and for Whitehead it is the cosmos that is the given for human experience, not just what is the result of human intentionality and the "lived" world. But is this not what Bergson had tried to analyze as well? The problem is that Bergson could not reintroduce duration without having to criticize the sciences for their sad intoxication with space, geometry, and mastery of technology. What Bergson gained by extending his analyses to time was unfortunately paid for by an immense loss—the ability of science to account for the experience of the cosmos. Is this not, then, what pragmatists had tried to achieve? To be sure, James is one of the heroes of Whitehead's story, but if we have to recognize that James closed the parenthesis opened by Locke, we must also see that he did not offer an alternative, since, here again, as with Bergson, rationalism is not given its full due. As to the other "W" and those who have totally abandoned cosmology and metaphysics in order to retreat into language, they should remain where they are and where they belong: silent in the shelter of the various university campuses where they reside.

By taking seriously Whitehead's attempt at embracing what science tells us about experience when it is not limited simply to Lockean empiricism, Stengers offers a route completely different from that offered by critical theory, social constructivism, or deconstruction. Against all hermeneutics, she shows that the key notion of "interpretation" directs our attention not to the human mind, but, so to speak, back to the world. It is the world itself that is "open to interpretation," not because of the weakness of our limited mind but because of the world's own activities.

One of the key discoveries of Stengers's Whitehead is that an emphasis on perspective, far from celebrating the point of view that a given subject "has on" some state of affairs, is rather a telling witness of what perception offers to the living organism. In a long and admirable commentary on The Concept of Nature—a terribly difficult book she renders crystal clear (well, with some remaining calcifications . . .)—she reveals that Whitehead overcame the obsession with perception by going forward toward the world in its determination and indeterminacy instead of backward toward the knowing subject, as is so often the case, in order to raise the trite question of how we are sure of what we know. Thus, perspective is no longer a proof of subjectivity but a proof of the grasp of reality of what Whitehead calls "the passage of nature": "The passage is neutral, the point of view does not belong to you, except that you occupy it,

but it is much more accurately described as what keeps you busy rather than what you own" (82). There are many more interesting questions to ask about science than that of its degree of certainty.

Hence the two crucial results for the second empiricism: (a) Perception is not what stops access to things and directs attention to the mind, to its activity and to its "additions." Rather, perception is what marks the event and the beginning of an attention directed toward everything else that has been present in perception and that cannot be eliminated. (b) Perception refers back to a point of view, a locus, but this point of view is the least relativist and the least subjective element, since it is what is seized and grasped by the panorama being embraced. The results of these two different kinds of perception are very different: one destroys objectivism, the other destroys subjectivism; although the first keeps everything the sciences might add to experience, the other keeps everything that counts in the localization and incarnation of some experimenting organism.

To avoid the bifurcation of nature, there was only one thing that needed to be added, an understanding of the event of the grasping itself by science as being something that happens not only in the world but to the world. But to be able to succeed in this undertaking, Whitehead has literally to move heaven and earth, that is, to completely redo cosmology": "Neither nature nor mind is in command" (127). When commenting upon the discovery of the nature of the atom as grasped by chemistry and physics, Stengers explains, "These atoms are in no way an answer to the question of deciding what pertains to 'our' projection and what pertains to nature. They are an answer to the type of attention associated with the experimental effort" (116).

Science has been the captive for much too long of theories of knowledge. This is the most difficult and crucial point in Stengers's interpretation of Whitehead: at one and the same time, the invention of the scientific object, "independent of perception," can be used to celebrate a new grasp of nature that intensifies what nature is made of (this is Whitehead's second empiricism) or to completely disqualify the poetic and subjective world of lived human experience (the first empiricism). Hence the example of a butterfly detecting a flower:

It is the proper ambition of the chemist to be able to define, then to synthesize an "object" common to humans and to butterflies, a molecule whose presence plays a determining role both in what we call "odor" and for the detection of which the flight of the butterfly bears witness. Such a success would not have had any meaning independently of the physical object, the "odorant flower" from which perfume makers have long learned to extract and conserve its "active principle."
 . . . The scientific object implies the existence of the physical object, even when it declares itself independent from the perceiving event. (118)

Thus, scientific activity is freed from the rather absurd choice of having to choose between "being of this world" and "being of another world." Rather, science adds its knowledge to the world, folding itself, so to speak, into it one more time.

Again and again in the first and second part of the book, Stengers comes back to this total renewal of the empiricist scene in agonizing details, but she follows carefully Whitehead's own agonizing path. If Whitehead is difficult—if Stengers is sometimes difficult, too—it is because they both have to climb back up a steeper slope than the one

Sisyphus had to ascend, and with a heavier load than he had, too. What happens to all our accounts of the world when we no longer play the game of the eliminativists who split the world into primary and secondary qualities? The objects of science are no longer placed behind the feelings of, for instance, poetry, but are implicated, folded into them. The singing bird and the “material” birds are no longer split into two: “The bird as a living being implies that what should come to the fore in science [is] the question of what is the order of nature for which this bird, as an organism, bears witness and also what is the nature for the continuation of which this bird, as far as it possesses habits, is betting” (129; my emphases).

This does not mean that the biologist tries to somehow get beneath the living bird and to forget its singing to figure out how the bird employs the cold machinery that makes it sing. It means, as in the butterfly story, that it is because the bird endures in its existence that another interpretation, proper to the biologist interested in the extent of this duration, can be made. In this new version, biologists add their own grain of salt to the broth—but only as long as there is a bird. The ethnologist is not destroying the romantic, superficial, and superfluous poetry of the singing bird by substituting for them cold facts. She is allowed by the poet to look for what in the bird responds when interrogated in another way. Yes, Whitehead offers a correspondence theory of truth, and a very “realist” one at that, but one in which the tired old word co-respond gains fresh meaning. For we must understand that the bird is an organism that bets on life, and so too is the inquiring scientist.¹⁰

Such is the real mechanism devised by Whitehead to block bifurcation. The same scientific results might be celebrated because their successes led to the elimination of all the other ingredients of the cosmos—“thus you are wrong to think there is anything else in the world of nature”—or because they drew attention to new stabilizing entities (such as the atom or the synthesized flavor) that are also present in the world of nature. Realism can be achieved much better by giving up the unification of the concept of nature. And even when nature is unified, no one can use it to condemn its other ingredients—ingression being one of the Whitehead’s most technical terms. The big problem, of course, is that the epistemological fundamentalists have rewritten history to change the successes of some sciences into a winner-takes-all game, a sort of philosophical equivalent of a military all-terrain Jeep that can overcome some bumps and climb some hills and is turned into the Little Engine that Could Climb Every Mountain: “The scientific object became no longer the answer to the experimental grasp, but an all purpose explanation of what we perceive in general even in the absence of any perception” (119).

Needless to say, for science students—philosophers, historians, or sociologists of science—this argument provided an extraordinary resource to get out of the tired old drama of realism versus relativism that has occupied so many of us for so long.¹¹ No one is at once more relativist than Whitehead—even an atom is a point of view—and more realist—even an atom is a point of view!

According to Stengers’s portrait, only Whitehead went far enough to explain why the first empiricism did not respect the cosmological and rationalist dimensions of the sciences. And contrary to all of his predecessors—Kant and Hegel—and contemporaries—Bergson, James, Husserl, and, of course, Heidegger—he did not try to impose limits to science, to overcome their limits, to feed on their weaknesses, but added

another dimension to them. (In general, Whitehead ignores negativity or even criticisms so totally that he keeps adding, including to his own texts, at the last minute, without even bothering to cancel out his own earlier thoughts—“adjunctions,” Stengers calls them). Whitehead always digs further into what is given by the scientific activity and what is learned about the world in addition to what scientists say about their own work.

What remains incomprehensible is why this lesson has been ignored—or why it has degenerated into a vague process theology that has been developed in total ignorance of what the sciences did to the world. It is Stengers’s essential contribution to have given us back the full lesson of Whitehead’s books after three-quarters of a century in which they were abandoned.

The second third of the book aims at understanding what on earth Whitehead could have meant by such a notion of organism. Against the artificial conundrums of the mind-body problem, which are themselves the consequence of the bifurcation of nature, Whitehead reveals that if we humans are organisms, then a completely different cosmology is implied. As I have said, an organism can’t learn anything from the bifurcation of nature except that it should not exist. In that sense, philosophies that accept the bifurcation of nature are so many death warrants.

To use a familiar literary topos, when Sartre’s Roquentin, out of despair, vomits on a tree root, he certainly does not realize that the tree, the root, the rhizome have exactly the same problem as his: that they too are existential entities and not substances, that they are organisms which wage a bet on life in the sense that they have to exist, to get out of themselves and apprehend—hence the word prehension, so necessary for Whitehead—and that many other beings are necessary for the continuation of their existence. A world made of substance and essences, in the way Sartre imagines it to be, where only intentional human entities such as Roquentin would have a meaningful existence, is indeed a place to detest and desert. Fortunately, it is not the existence of humans but existentialism as a doctrine that represents one of the lowest points in the abandonment by philosophy of the world as it is known to science and experienced by living creatures.

But, of course, there is no way to abandon existentialism and embrace the sort of naturalism produced by the first empiricism by simply adding sequences of matters of fact one after another. It is not simply because you turn, for instance, to genes instead of Roquentin’s mal de vivre that you understand what is given in experience. It all depends on which sort of genes you are turning to.¹² If the philosophy of organism had to swallow Darwinism, it would require something more than Dawkins’s selfish gene: “Objects that we use as standards and signposts, which are elected and stabilized as ‘what’ we perceive, do not faithfully bear witness to what is nature, but they bear witness for nature, thanks to the judicious character of the reason why they have been selected in the first place. Judicious and not justified: nature does not explain nor justify anything, but it is pragmatically implicated in the consequences that verify or falsify the consequences of having chosen this or that signpost, the adequation to this type of attention” (132).

The third part of Stengers’s book is a close commentary on what Whitehead had to do in order to be faithful to this intuition that “a subject, or rather a superject,

emerges from the world,” instead of, as Kant believed, to have a world emerge out of a subject.

To summarize Stengers’s interpretation of Process and Reality would require a commentary as long as her own book is, although—and this is the extraordinary gift of the author—the reader may feel, after having read it, that it is the novelty of Whitehead’s argument, much more than its intrinsic difficulty, that has caused most of the problems we have comprehending him. In the end, the argument seems plain enough. And yet, Stengers goes through all the difficulties one by one: subject, superject, positive and negative prehension, and this most disturbing of all concepts, the eternal objects: “Whitehead will never change his mind on this point: the eternal object cannot provide a weapon for any judgment, give a foundation to any argument, grant a privilege to any power, communicate with any ‘pure’ experience” (240).

Most of the problems we have with Whitehead are due to a disrespect for the simplicity of his argument and to what he famously called “misplaced concreteness.” We always try to translate his metaphysics into what we imagine metaphysics has to deliver: an insurance against risk, when it does exactly the opposite. It takes as much risk as the experience it tries to describe: “What the reader should always be reminded of is the Whiteheadian decision to take the following statement literally: ‘this thing is present in my experience in as much as it is present elsewhere as well,’ and to stick to this statement no matter how fanciful the consequences to which it leads” (330).

It would be ridiculous for me to claim that Process and Reality, under Stengers’s watch, reads like a novel. And yet it shares, in the end, some of the power of fiction. If the bifurcation of nature is impossible, then it means that every entity has to explore what, in the rest of the world, may offer it some grasp on life in order for it to continue existing. This grasp is intensely objective since it mobilizes so many other entities; but it is also intensely subjective, since it represents, like Leibniz’s monads, a very particular version of what the world looks like, that is, an interpretation, a bet, a risk taken, a confidence shared, a choice.

This new distribution of the former functions of subject and object is what Whitehead calls actual occasion. In his hands, the two arch-modernist concepts of subject and object, instead of designating spatial domains of the world, have become temporal markers: past (object) and present (subject). Eternal objects are not there, as in Plato, to guard the substance against dissolution into appearance but to guard the organism against becoming either an isolated atom or a mere cause of something else. They are there “to deprive the continuous of its explanatory power” (219). Eternal objects are there so that we keep being able to say, “Creativity is what the world is about.” Try to take eternal objects out, as so many embarrassed readers would like to, and, immediately, Whitehead’s argument becomes another theory of emergence, another form of naturalization, or even worse, some type of panpsychism. Stengers is right in using Deleuze’s crucial distinction between the potential/real couple and the virtual/actual one. Eternal objects protect us against the confusion between the two.¹³ It is because they play no direct role but are present nonetheless that events can play the full role. They don’t explain, but they allow the scene of the world to be fully deployed.

I think it is with Whitehead’s God that Stengers’s book reveals its ultimate power. Commentators have often tried either to drag Whitehead in theology

seminars—forgetting that his God is there to solve very precisely a technical problem of philosophy, not of belief—or to get rid of this embarrassing appendix altogether. Stengers does not hesitate to go all the way in the direction of Whitehead’s argument: if nature can’t be seen as bifurcated, if actual occasions are the stuff out of which the world is made, if “negative prehensions” are the only way actual occasions have to envisage the world, to apprehend it, if eternal objects are there as guardians against the shift back to substance and foundations, then a God-function is implied in this philosophy.

But, of course, everything now turns around the word implied, or implicated. Taken superficially, it shifts the concept of God into one of a king who sits on a throne or some great plant ensconced in a sort of flower pot, holding this position in order to close a book of metaphysics—the equivalent in philosophy of the Queen of England in politics. Or else, taken as a belief, God gives some philosophical luster to parts of the creed of some church, becoming what you confide in when you have lost confidence in the world and especially in science. Without disregarding those possibilities, Whitehead means something else altogether. Implied is not only a logical function—who is less a logician than the Whitehead of the famous team “Russell and Whitehead”?—but a thoroughly ontological involvement into the world. God is the feeling for positive, instead of negative, prehensions. After years (or should I say centuries?) of associating God with negativity—think, for instance, of Hegel—it will take some time to see his role as consisting of a positivity, but that would be a welcome change! “Divine experience is, in that sense, conscious but also incomplete. God does not envisage what could be. His existence does not precede nor predict future actualisations. His envisagement comes from the thirst for some novelty that this thirst is going to induce but which, by definition, will go beyond it” (525).

In a way, it is not surprising that theology has found Whitehead so congenial, since innovations in theology are few and far between. But Stengers redresses the usual imbalance and places Whitehead’s invention of a God implicated squarely inside the world—and unable to “explicate” it, nor to “extricate” himself out of it—as the most daring but also the most indispensable consequence of his early refusal to let nature bifurcate. No more than you can choose in nature to eliminate either primary or secondary qualities can you choose, in Whitehead, between his epistemology and his theology. And, of course, it would be impossible to say that the modernist philosophy has “no need for God,” as philosophers are so proud of saying and say frequently. Their crossed-out God—to use my term—is always there but only to fill gaps in their reasoning. By taking Whitehead’s God as seriously as Whitehead’s epistemology, Stengers is leading us in the first systematic attempt at finding a metaphysical alternative to modernism. The reason why her attempts are so beautifully moving is that Whitehead has a gift of the most extraordinary rarity: he is not a creature of the culture of critique. “He knows no critique,” as one could say of a saint “she knows no sin.”

What does it mean to “speak Whiteheadian”? Amusingly, Stengers’s book begins with some of those long Whiteheadian sentences that Grendel, the dragon hero of John Gardner’s remake of *Beowulf*, thunders when he wishes to frighten his human victims out of their wits. Stengers’s book is a frightening one, no question about that: five hundred pages of purely speculative metaphysics. But Grendel, as we learn when we read the story, is not there to eat all of us up. On the contrary, he is there to remind us

of our lost wisdom. How can it be that America, nay, the Harvard Philosophy Department provided a shelter to the most important philosopher of the twentieth century and then has utterly forgotten him? Why has it taken us so long to understand Grendel's moaning? Probably because it does not offer the easy grasp of the usual domesticated philosophical animals presented in zoos behind bars, always there to be inspected and endlessly monitored. Maybe this is what Deleuze meant by "a free and wild invention of concepts." "Wild" does not mean "savage," but out in the open, as when we go searching for some elusive wildlife.

I have always felt that Whitehead-watching had a lot to do with whale-watching as it is practiced, for instance, on the coast of San Diego in the winter. You stay on a boat for hours, see nothing, and suddenly, "There she blows, she blows!" and, swiftly the whale disappears again. But with Stengers at the helm, the little ship is able to predict with great accuracy where the whale will emerge again, in a few hours. Come on board, prepare your binoculars, and be confident in the captain's watch.

Book Reviewed: Isabelle Stengers, Penser avec Whitehead: Une libre et sauvage création de concepts (Paris: Gallimard, 2002). This work is cited parenthetically.

I thank Lindsay Waters for his valuable comments on earlier drafts of this essay.

1. Because of this long and friendly collaboration, Stengers has been associated with the physics of complexity pioneered by Ilya Prigogine. In her own work since, Prigogine's influence is important not because she tried to prolong some more elaborated naturalism but because she learned from Prigogine's experience to which extent scientists would go to ignore something as crucial as time. Hence her admiration for science and her deep-seated suspicion for its sleight of hand.

2. From Cosmopolitiques—Tome 1: La Guerre Des Sciences (Paris: La découverte & Les Empêcheurs de penser en rond, 1996), to Cosmopolitiques—Tome 7: Pour En Finir Avec La Tolérance (Paris: La Découverte-Les Empêcheurs de penser en rond, 1997).

3. Isabelle Stengers teaches philosophy in Brussels. Only a small part of her works is available in English: Power and Invention, with a foreword by Bruno Latour (Minneapolis: University of Minnesota Press, 1997); The Invention of Modern Science, trans. Daniel W. Smith (Minneapolis: University of Minnesota Press, 2000); Bernadette Bensaude-Vincent and Isabelle Stengers, A History of Chemistry, trans. Deborah Van Dam (Cambridge, Mass.: Harvard University Press, 1996); and Leon Chertock and Isabelle Stengers, A Critique of Psychoanalytic Reason: Hypnosis as a Scientific Problem from Lavoisier to Lacan, trans. Martha Noel Evans (Stanford, Calif.: Stanford University Press, 1992). I have attempted to present Stengers's epistemological principle in "How to Talk About the Body? The Normative Dimension of Science Studies," in Part 3: Body Collective of "Bodies on Trial," ed. Marc Berg and Madeleine Akrich, special issue, Body and Society 10, no. 2–3 (June–September 2004): 205–29.

4. The choice of the subtitle is even more bizarre, since on page 307 Stengers reveals a clear contrast between the positivity of Whitehead and the exaggerated tropism of Deleuze for chaos and organicism.

5. "It is because William James has refused to give to reflexive consciousness and to its pretensions to invariance, the privilege to occupy the center of the scene, that James has explicated so well [for Whitehead] what human experience requests from metaphysics, and more precisely, to what it requests metaphysics to resist" (230). Far from psychologizing everything, Whitehead sees in James—and especially in his celebrated essay on consciousness—the thinker who has ended all the pretensions of the mind. If the "actual occasion" is depsychologized, it is thanks to James.

6. Here is a standard definition of the problem: "However, we must admit that the causality theory of nature has its strong suit. The reason why the bifurcation of nature is always creeping back into scientific philosophy is the extreme difficulty of exhibiting the perceived redness and warmth of the fire in one system of relations with the agitated molecules of carbon and oxygen with the radiant energy from them, and with the various functioning of the material body. Unless we produce the all-embracing relations, we are faced with a bifurcated nature; namely, warmth and redness on one side, and molecules, electrons and ether on the other side. Then the two factors are explained as being respectively the cause and the mind's reaction to the cause" (Alfred North Whitehead, The Concept of Nature [Cambridge: Cambridge University Press, 1920], 32).

7. On the political dimension of this divide, see my own footnote on Whitehead's argument in Politics of Nature: How to Bring the Sciences into Democracy, trans. Catherine Porter (Cambridge, Mass.: Harvard University Press, 2004).
8. Gabriel Tarde, one of the (forgotten) founders of sociology, and, like Whitehead, a decisive influence on Deleuze, called "societies" what is called here "organisms," but with very much the same argument. Witness his slogan "Exister c'est différer." See his Monadologie et Sociologie, réédition (Paris: Les empêcheurs de penser en rond, 1999). One of his most original book lives again on the Web: G. Tarde, Social Laws: An Outline of Sociology (1899), trans. Howard C. Warren (Kitchener, Ont.: Batoche Books, 2000), available at <http://socserv2.socsci.mcmaster.ca/~econ/ugcm/3ll3/tarde/laws.pdf>.
9. On the difference between the two, see my own attempt, "Why Has Critique Run Out of Steam? From Matters of Fact to Matters of Concern," in "The Future of Criticism—A Critical Inquiry Symposium," special issue, Critical Inquiry 30, no. 2 (2004): 225–48.
10. A colleague of Stengers, another Belgium philosopher, Vinciane Despret, has developed empirically in great detail this crucial insight. See her books, Ces Émotions qui nous fabriquent: Ethnopsychologie de l'authenticité (Paris: Les empêcheurs de penser en rond, 1999); and Quand le loup habitera avec l'agneau (Paris: Les Empêcheurs, 2002).
11. For a nice but totally derivative rehashing of the same old arguments, see James Robert Brown, Who Rules in Science? An Opinionated Guide to the Wars (Cambridge, Mass.: Harvard University Press, 2001).
12. See the small but marvelous book written by Stengers and a dissident biologist, Pierre Sonigo, L'évolution, Collection Mot à Mot (Les Ulis, France: EDP Sciences, 2003).
13. If you realize a potential, nothing really happens, since "everything was already there in potentia." If you actualize virtualities, it is only retrospectively, because of the radically new event of the actual occasion that the real can be seen as what has emerged out of what was possible. On this distinction, see François Zourabichvili, Le Vocabulaire De Deleuze (Paris: Ellipses, 2003).