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In the Grip of Bifurcation

Whitehead has no intention of bringing reason to bear on our irrational hopes and foolish enterprises. To civilize is neither to domesticate nor to placate. Whitehead does not propose to define what we know to build consensus. Giving common sense the power to resist does not mean giving precedence to concrete knowledge in opposition to the abstraction of specialized forms of knowledge. What allows specialized forms of knowledge to work is not abstraction per se, but the authority claimed by certain modes of abstraction, which has the capacity to separate us from what we know.

The Bifurcation of Nature

Whitehead the mathematician turned to philosophy in a bid to bring coherence to what for him was the flashpoint of modern thought, what he calls the "bifurcation" of nature. The bifurcation of nature, separating nature into two distinct registers, generates modes of abstraction leading to what he considered pure and simple absurdity, the mother, as it were, of all the battles waged against common sense. On the one hand, there is an objective nature, ruled by causality. It causes our perceptual experience in particular. On the other hand, there is nature as we perceive it, rich in sounds, colors, and odors, as well as values, emotions, fear, and wrath. It is mere appearance, for which the human mind alone would be responsible. Those who dare admire a sunset, then, are admiring what they themselves bring into existence. "The poets are entirely mistaken. They should address

their lyrics to themselves and should turn them into odes of self-congratulation on the excellency of the human mind."[1]

Fighting against such absurdity does not mean promoting truth. To stick with this bifurcation of nature regardless of the absurdities it generates offers a powerful example of foolish enterprise and irrational hope. Yet the example itself does not point us in the direction of wisdom and reason. In this instance, Whitehead wants to make us aware of a pure and simple abuse of power to be rejected as such. Thus, refusing any negotiation with the bifurcation of nature, he writes: "Everything perceived is in nature. We may not pick and choose. For us the red glow of the sunset should be as much part of nature as are the molecules and electric waves by which men of science would explain the phenomenon."[2]

Let us not mistake his point. Whitehead is not announcing a project to reconcile what is irreconcilable. His protest concerns inconsistency in the mathematical sense, an arbitrary disjunction between principles of intelligibility. Each principle is given as self-sufficient, as if each could be defined independently of the other, when in fact each is defined in opposition to the other. Objective nature is defined as independent of mind, while also being an object for consciousness, capable of prevailing over appearances. Apparent nature, for its part, would be quite capable of laying claim to all that we know, making the human mind alone responsible for the knowing of molecules and electromagnetic waves. Whitehead's turn of phrase, to "be as much part," affirms the necessity of creating a coherent conception of nature, not trying to overcome an opposition that derides any possible conciliation.

In his first genuinely philosophical work, *The Concept of Nature,* then, Whitehead does not attempt to conceive a nature that would be at once the one whose beauty the poet celebrates and the one that scientists explain objectively. He creates a concept of nature: that of which we are aware in perception. In Whitehead's articulation, perception is not a matter of what is perceived by the human mind. Perception concerns "that of which" there is experience. Nature thus defined is neither in itself nor for us. Nature is conceived in terms of the "grasp" it affords for the variety of perceptual experiences, be it the experience of poetry, the scientist's experience, or the rabbit about to leap. The concept of nature is designed to forestall any con-

tradiction between an objective nature that would be responsible for our perceptions and an apparent or subjective nature that would refer to our own responsibility. It highlights diversity of kinds of grasp, modes of abstraction to which nature is susceptible.

Throughout his career, Whitehead's principal interlocutors were Newton, Hume, and Kant, three thinkers who, in his view, had contributed immensely to instituting the bifurcation of nature, constituting it as the insurmountable horizon of thought.

I will largely dwell on Newton here, because it is Newton, and the line of mathematical physicists till Einstein who followed in his footsteps, who expanded the authority of the bifurcation of nature well beyond the bounds of the philosophical distinction between primary and secondary qualities already promoted by the atomists. The establishment of Newton as a figure of almost legendary proportions, independently of his actual ideas, insights, and aims, can be associated with the triumphant discovery of an objective nature, ruled by universal laws that could be formulated through simple observation and calculation. Pierre-Simon Laplace captured this triumph in his famous response to Napoleon: "There will never be a second Newton because there was only one world to discover." For Whitehead, Newton's triumph lies in the notion of self-sufficient fact. Newton could stick to the facts: the observation of successive positions over time of a certain planet proved sufficient for determining its orbit through increasingly complex calculations. Additional observations proved sufficient to show that this orbit obeyed the same law that governed the movement of all other planets, as well as the trajectory of the mysterious comet whose periodic return to our skies had been an object of observation for centuries.

For physicists, the idea that nature is "knowable as it is in itself" does not pose a philosophical problem. Because nature is typically associated with universal laws, no one raises an eyebrow when someone declares that, if extraterrestrials somewhere in the universe were to develop an active interest in the functioning of reality and were to learn how to observe and calculate, they would inevitably formulate the same laws. To call on extraterrestrials is to evoke beings whose modes of thought and feeling, culture and ideas, are utterly unknown to us. We have no idea what apparent nature would be for them. Facts, however, are sufficient in themselves, and the rest may

be bracketed: it suffices that these extraterrestrials be able to observe and capable of mathematical reason for them to reach an agreement about the physical reality they study.[3]

Of course, other laws have replaced Newton's for characterizing "the one world to discover." Max Planck, who introduced the extraterrestrial argument, enthroned the conservation of energy. Others today propose the quantum theory of fields. Needless to say, the general relativity of Einstein still enjoys pride of place, resituating as it does Newtonian physics in terms of an approximation valid only for slow and heavy bodies.

Whitehead's historical moment saw the refutation of the Newtonian theoretical edifice, till then thought to be unshakeable. Whitehead compared this episode to a Greek tragedy, whose essence, he wrote, "resides in the solemnity of the remorseless working of things."[4] But Einstein's new universe did not convince Whitehead with its absorption of universal gravitation into the geometry of space-time. As early as 1922, Whitehead proposed an alternative to Einstein's general relativity, whose conceptual structure failed to satisfy him.

Other theoretical alternatives were proposed at the time. Some specialists maintain, however, that the one proposed by Whitehead still holds. That his theory has not captured the interest of physicists is not all that surprising, for in contrast with Einstein, Whitehead's alternative calls into question the triumphant attainment of universal laws of physics. In effect, Whitehead's theory quietly proposes that physics become a science among others. He proposes that physics, like other sciences, is dealing with entities that affect their milieu and are, in turn, affected by it. According to this approach, it belongs to each body that physicists associate with a mass to define its own spatiotemporal stratification, its own discrimination between space and time. Gravitation, then, no longer communicates with a law to which the movement of a body is subjected. Gravitation is the manifestation of relations between stratifications defined by those different bodies, each on its own account. In other words, Whitehead's theory does not merely reject the absorption of Newton's gravitational physics into Einsteinian space-time. It calls into question the universality of gravitational physics as such.

Whitehead did not seem surprised that his alternative formulation of general relativity won the appreciation of only a handful of

experts. In 1922, he took the path that would make a philosopher of him. The important thing for him was to have shown that general relativity, as innovative and pertinent as it may be, did not require the universe to be "reduced to static futility—devoid of life and motion," to a changeless order "conceived as the final perfection."[5]

Yet Newton's laws have been applied well beyond the domain that first attested to this immutable order. Laplace invented his famous demon in reference to the perfect knowledge that the Newtonian order makes possible. In cases in which we have to resort to probabilities, in the so very numerous cases when it is not possible to realize the deterministic forecasting associated with the Newtonian order, the demon provides a justification. With his demon, Laplace evoked a pure intelligence capable, in the manner of an astronomer, of contemplating any instantaneous state of the (Newtonian) universe, and thus of deriving the past and the future of this universe from the definition of that state. Probabilities do not belong to Newtonian physical reality, but thanks to Laplace's demon, they do not call it into question: it is only because our human means of observation and calculation are approximate that the course of things appears indeterminate to us. His demon enables a situation where "one objective nature" rules beyond "appearances," whatever the challenging variety of the so-called appearances. It is a gesture that has been repeated any number of times. Today we hear neurophysiologists affirm: if we could define the instantaneous state of someone's central nervous system in terms of interactions among all its components, we would be able to deduce from this definition his or her experience in that instant; we would at last relegate all ideas about liberty and spontaneity to the outdated past. Naturally, neurophysiologists have not enjoyed the same success as contemporary physics, but they can recycle the ideal of perfection associated with Laplace's demon: "if only we could . . ."

Exorcising this idea of perfection, then, would involve dramatizing the fact that Laplace's demon, supposed to be able to foresee all, not only would reduce what matters to us to static futility but also would not provide answers to any of our questions. In effect, from the so-called omniscient point of view, nothing poses any questions. Our questions attest to our imperfect knowledge. This is why Whitehead insisted that the ideal of perfection results in pure tautology, a

succession of states defined in terms of their very equivalence.[6] The demon seems to have escaped appearances, to have exited Plato's well-known cave, but in the physicist's version, once outside, he distinguishes nothing. In a daze, as if blinded by the sun, he is incapable of wondering about anything whatsoever. Thus, Whitehead writes with respect to the physics of his era, it can only repeat, "that is so,"[7] in the form of a "mystic chant."[8]

The bifurcation of nature would find its second thinker in the person of David Hume. Hume envisaged a perceptual field meticulously purified of anything that might afford access to a self-sufficient reality, holding together by itself. Here apparent nature has the upper hand. In the end, humans are responsible for constructing interpretations about how nature holds together. Nothing of what we call nature may claim the least intrinsic intelligibility. In particular, nature does not authorize the objective identification of causes and effects. "Pure sense perception does not provide the data for its own interpretation."[9]

Whitehead addresses Hume as if he is a fellow philosopher who has plainly exaggerated to make his case. In order to deny that reality has the power of causing anything whatsoever, Hume must engage in make-believe. When he argues, he claims that visual sensations are born in our souls by unknown causes. Elsewhere, however, when he forgets himself, Hume writes what everyone well knows: it is through the eyes that we see. And Whitehead remarks: "The causes are not a bit 'unknown,' and among them there is usually to be found the efficacy of the eyes. If Hume had stopped to investigate the alternative causes for the occurrence of visual sensations—for example, eyesight, or excessive consumption of alcohol—he might have hesitated in his profession of ignorance. If the causes be indeed unknown, it is absurd to bother about eyesight and intoxication. The reason for the existence of oculists and prohibitionists is that various causes are known."[10]

The entrance of oculists and prohibitionists onto the scene as partners in a philosophical argument may well startle the serious philosopher. It is as if Whitehead makes an alliance with common sense, or even with the Thracian servant girl who famously made fun of Thales when he fell into a well, too absorbed by the heavens

to see what was directly beneath his feet. Whitehead is not particularly impressed by the grand battle carried out by Hume against attributing the cause of vision to what we see. For Whitehead, the efficacy of the eyes does not present a daunting challenge. "For example, 'I see a blue stain out there,' implies the privacy of the ego and the externality of 'out there.' There is the presupposition of 'me' and the world beyond. But consciousness is concentrated on the quality blue in that position. Nothing can be more simple or more abstract. And yet unless the physicist and physiologist are talking nonsense, there is a terrific tale of complex activity omitted in the abstraction."[11] The omission of complex activity proves all the harder to sustain because Hume must not even allow himself to perceive, for instance, blue clothing: the fact "of blue, out there" must remain sterile, not pure, but actively purified of all that invites interpretation. Sensualism is hyperintellectualism.

Is it possible to be heir to both Newton and Hume? We thus arrive at Kant, "the first philosopher who in this way combined Newton and Hume. He accepted them both, and his three Critiques were his endeavor to render intelligible this Hume-Newton situation."[12] Kant may be credited not only with establishing the bifurcation of nature as doctrine. He invented another doctrine of bifurcation, within human experience as such, between the empirical experience of values and moral law, empty yet imperative.

It is worth noting that Kant ratified the universal character of the mode of explanation associated with Newtonian physics. But this mode of explanation no longer refers to the world as it exists independently of the perceiver. It characterizes how the Kantian subject constitutes the object it perceives. In other words, the Newtonian achievement is neither speaking about the world nor explaining it. For Kant, his genuine achievement is to have disclosed and put to work categories that correspond to the constitutive principles of any perceived object. The perceived facts seem sufficient to define the object because they answer to categories of perception. As such, they are bound to provide evidence of the object in terms of those principles.

Not surprisingly, physicists welcomed this news somewhat coldly. But it was a godsend for sciences that strove to imitate physics without being able to match its achievements. It allowed them to claim:

"We have no choice; the only rational approach to what we are dealing with is to follow the example of physics." Such sciences no longer need resort to the infinite knowledge of Laplace's demon. A form of principled determinism suffices to introduce the bifurcation between the empirical, abounding with accidents and events—Life and Movement, as Whitehead often says—and its rational intelligibility. Each science has then to put into words categories that do no more than explain the principles "pre-forming" its object. But it is here that Kant introduced a supplementary bifurcation that steps in to protect morality. The danger is that the subject, if it is described rationally, will be understood in terms of what determines it. The subject will then be understood as inherently irresponsible; its most heroic or criminal decisions will be causally explainable. It will be a matter of preserving responsibility instead of what matters or has a sense of value. Kant thus institutes a transcendental subject that stands outside the stuff of causality, ensuring that an act can be imputed to the one who committed it. This imputation puts in place a pure responsibility: no excuses, no good intentions, no explanations. The bifurcation has made a clean cut. Responsibility remains unstained by empirical attachments. Indifferent to circumstances and reasons, the inflexible authority of universal moral law declares, "You should not have!"

Kant, I might add, not only combined Newton and Hume. He also established domains of territorial legitimacy and proscribed all smuggling operations. The Three Critiques ensure exclusive rights of sovereignty to the tenants of separate territories, each ruled by its own Critique. What had been the domain of Truth is now a matter of Pure Reason, while Good is now dependent on Practical Reason, and Beauty on Judgment. Here we see the grasp and the stability of the regime of bifurcation. Bifurcation provides the conditions for the guardianship of each territory, as well as for the attempts at annexation to which the territory is sporadically subjected. We are forbidden from taking into account forms of knowledge running counter to the framework thus instituted. As for common sense, it must remain outside the game. Thus, when neurophysiologists claim to naturalize the mind and the outraged guardians of human subjectivity mobilize themselves, common sense is a perplexed witness to the conflict between the representatives of the irresistible

advance of science and the heroic defenders of a subject attacked by barbaric powers. Territorial peace is an armed peace. The only point of agreement between the confronting sides is that people, if they are meant to take part, are supposed to learn to distinguish legitimate voices from those of impostors. People are not to become involved with the defining of territories.

One may nonetheless argue that Newton, Hume, and Kant are far from us today. Why do I feel I can describe them as if their power remained intact?

The Trick of Evil

"Surely you believe that physical reality exists independently of what we think about it?" During the renowned science wars, critical thinkers contended with this sort of challenging question, sometimes accompanied with a proposition to throw themselves out the window on the fifth floor, or even higher. In the previous chapter, I have underscored the rather aberrant nature of this proposition, which implies that one of the achievements of modern physics had been to establish that such a fall would have disastrous consequences. Now I turn to another aspect of this provocation. The fall of a heavy body was proposed instead of, say, the precise date and time of the next solar eclipse and the regions of the world where it would be visible. It seems that the successful outcome of such a forecast does not matter. Even the most ignorant human or the first dog to come along is aware of the necessity of not confusing a door with a window. For the physicists, however, when they are at war, the predictable crash belongs to physical reality just as much as celestial mechanics do. "Physical reality" is how they refer to nature independent of the human mind, the nature that is what it is. Simply put, their challenge brings into play the bifurcation of nature.

I would like to develop an association between the thought-crushing manner in which the physicist plans to back the doubter into a corner and what Whitehead characterized as the "trick of evil," when something new claiming consideration arouses a furious and dogmatic rejection. "Insistence on birth at the wrong season is the trick of evil. In other words, the novel fact may throw back, inhibit, and delay."[13]

The same idea appears in *Religion in the Making,* but in the guise of an evil that promotes its own elimination as felt painfully at cross purposes with what feels "good." Evil is eliminated when the capacity to feel the pain is destroyed, which is also the capacity to admit into feeling what threatens the definition of what is good. Which means partial anesthesia, when we sadly accept what was previously intolerable. "It must be noted that the state of degradation to which evil leads, when accomplished, is not in itself evil, except by comparison with what might have been. A hog is not an evil beast, but when a man is degraded to the level of a hog, with the accompanying atrophy of finer elements, he is no more evil than a hog. The evil of the final degradation lies in the comparison of what is with what might have been."[14] There is no "evil in itself" in either instance. The intrusion is bad only because it arouses a furious or dogmatic rejection. But this rejection may be provisional. If the inhibition happens to be lifted, what had been greeted as an intolerable contradiction may perhaps be transformed into contrast. Such a possibility, however, is not programmed in advance, nor may it be deduced from a position of transcendence. For Whitehead as for William James, what is required is to think in its presence. What is needed is a mode of thinking that does not allow one to transcend the era or to see ahead and nevertheless refuses to ratify "by right" what at the time seems excluded or impossible.

Whitehead introduces the trick of evil precisely where we might feel tempted to adopt the venerable figure of the "truth that hurts": the truth that claims recognition through the difficulty of its acceptance and the unhappy reactions it provokes. So doing, he strips truth of all heroism, of any claim to be the bearer of a radical rupture, which would explain its rejection. Whitehead evokes the trick of evil to place this rejection under the aegis of "we do not know." We do not know whether, if it had been presented otherwise, what was proposed might have proved somewhat disturbing, but not threatening. The phrase "we do not know" is that of a mathematician, for whom a contradiction is always relative to the manner in which its terms are defined. A contradiction is liable to vanish if a definition is modified, which typically means that a part of what this definition omitted gets explained in the form of a restrictive condition of its validity. What the trick of evil represses, inhibits, and defers is the possibility of an inflection of

the relation that a state of affairs maintains with what justifies it, which makes claims become stringent and uncompromising.

To place the science wars under the aegis of the trick of evil implies that there was nothing necessary about them. They did not simply translate an already existing and insurmountable conflict between critical thinkers and scientific practitioners. Critical thinkers did not in fact need to repeat the skeptical gesture of Hume and, doing so, mobilize scientists around the affirmation of a bifurcated nature. They did not need to define reality as mute, unable to provide justification for its interpretation but at best providing some constraints on interpretative freedom. In fact, many of them were already studying science "as it is done," in the field and through archives. Insightful new accounts of the sciences had already been produced that brought active, enterprising, and fully equipped scientists to the fore instead of staging a subject of knowledge interrogating itself about the legitimacy of its interpretation of facts. As for scientists themselves, they had been dealing for ages with highly constructed facts, obtained through what their instruments gave them the power to observe, instead of facts obtained from perception. To evoke Whitehead's turn of phrase, to obtain such highly constructed facts presupposes "a terrible history of complex activity." Generations of researchers and technicians developed and tested apparatuses (*dispositifs*) that were later transformed into a variety of means for making new facts possible. In short, the ancient bifurcation between primary and secondary qualities mobilized by scientists feeling under critical attack seems far off the mark.

In my opinion, the season was wrong because the theme of bifurcation had not lost any of its power over scientists and over critical thinkers. The sciences, for all their proliferating diversity, now found unity through a common claim. They reproduced the disqualification of nonscientific claims by endorsing the bifurcation of nature to relegate them to the realm of mere appearances.

Today the institution called Science systematically produces bifurcation in everything it touches. At every hand, it opposes the objectivity of facts to the subjectivity of opinions. The unity of Science is obviously a façade. A highly respected physicist will have nothing but scorn for the "facts" of a psychologist. However, once the epistemological claim to a form of knowledge that owes its authority

to objective facts becomes common property, Science becomes a predatory machine. It arms the institution against whatever it calls opinion. As a corollary, scientists must make common cause because they are all contributing to the advance of objective knowledge. It is surely because their target was the authority claimed by Science that critical thinkers came to occupy the antagonistic position offered to them by the bifurcation: intransigent skepticism. Their will to demystify could not be bothered by such secondary questions as the difference between the objective measurement of radioactivity and the objective measurement of human intelligence, IQ.

The trick of evil, if such there was, lay in the critics' choice of epistemological terrain. Although these critical thinkers had learned to tell complex stories about the sciences, they gave to these stories a simple vocation, to demystify the power of facts. Their stories always returned to the same conclusion: facts are in themselves incapable of producing agreement among scientists; only after scientists reach an agreement by other means do the facts acquire objective meaning. If critical thinkers had focused on complicating the claims of Science, they might have activated critical thinking about the diversity of facts laying claim to objectivity. They might thus have called attention to the diverse stakes arising when diverse facts take on authority, and to the diverse stakeholders who stand to gain (*cui bono?*). Instead, they created a common cause. Speaking as a "we," scientists who did not have all that much in common unified in defense of science under attack.

I previously introduced the example of the measurement of radioactivity in contrast with the measurement of IQ because the latter has been a target for a number of scientists belonging to the Science for the People movement. This movement contested forms of knowledge it considered to be vectors of inequality and discrimination. Among them, the measurement of IQ was denounced as scientifically destitute and politically malignant because it was founded on school-type performances and translated sociocultural differences into intrinsic attributes of a person. Hilary Rose, a biologist involved in this movement, strove to ally herself with critical thinkers. She speaks of her uneasiness when she realized that they were not prepared to criticize IQ measurement as bad science because they did not feel there were any "good" sciences.[15] They looked on her with

the ironic indulgence suited to dealing with scientists with good intentions but desperately naïve. They themselves would not be dupes. They would get to the root of the problem, which they located, once again as always, in the scientists' claim that nature had the power to produce agreement when in fact scientists relied on the power of social constructions to produce agreement.

On the whole, social studies of science and technology today have abandoned the vocation of demystification. Still, knowing how to speak about scientific facts remains an urgent question. The terrain is not the same as it was some twenty years ago at the height of the academic war around sciences. The trick of evil today could reside in the temptation to consider as a consequence of that war that those who find facts inconvenient now feel free to attack or deny them. The temptation is to reinforce the sacred union around scientific facts, to defend them whatever they may be, as innocent victims of obscurantism. To resist this temptation, we must recall that there is nothing innocent about the institution called Science. No one will get me to march in the streets in defense of Science. It is this institution that confuses facts worthy of being defended with impoverished facts deriving nourishment from the sempiternal opposition that perpetuates the bifurcation: "You believe; we know."

In contrast, anti-GMO activism is a profound source of inspiration, for activists learned how to distinguish between GMOs in the laboratory and GMOs as an agricultural innovation. They understood that a fact may be solid but only from the point of view of trials that put its solidity to the test. It remains mute about everything that these laboratory trials demand to omit. In the case of IQ, such understanding is beside the point because, in this case, the *will* to omit is the very point of the measurement. The fact harkens back to its conception, to the very project of making intelligence into a trait that is objective in the sense of being independent of life histories and the inequalities marking those histories. Is it any surprise that the result is what Stephen J. Gould called a "history of mismeasurement"?[16] In the case of the genetic modification of a living being, omission is not a project, but the price for the effective verification of the modification. This is why the obtained facts have no legitimate claim to mute the questions associated with the consequences of this innovation beyond the laboratory. We need not reduce their objectivity

to an imaginary social construction. We need only emphasize that the objective definition of the modification is situated. It has been acquired or obtained in a particular territory, and is intrinsically precarious when it leaves this territory. The only objective definitions that escape this precariousness are those that have been designed to rule on any territory whatsoever, like the IQ definitions. Objective definitions then occupy territory, as it were, and like an occupying army, demand silence and submission.

We need to avoid the temptation to conflate these two kinds of objectivity, the objectivity obtained in the laboratory and the objectivity identified with the imperative to silence so-called subjective judgments. A highly significant operation is indicated in the use of the same word in both instances: the question of bifurcation is then translated from the philosophical register into a political register. It is thus not surprising that the philosophical bifurcation has survived so long. Philosophy does not bifurcate nature at all; it bifurcates the value of forms of knowledge. It is with its passage into a political register that the bifurcation begins to operate as a veritable machine of government, distributing responsibilities in a binary and asymmetrical mode. On the one hand, the ceaseless bustle of beliefs and value judgments are considered arbitrary, for ultimately, humans alone are deemed responsible for them. On the other hand, objective definitions are attributed the power to bring humans into agreement, or if not, the power to silence them. Everywhere the same imperative prevails, which puts Science in the service of public order: please provide us with the facts granting authority to your definition.

The Importance of Facts

Resisting the bifurcation of nature nonetheless demands more than the denunciation of pseudoscientific facts and the defense of true facts obtained through free and disinterested research. For Whitehead, it is a matter of resisting the idea, propagated since Galileo ("and yet it moves"), that facts obtained through science are free of values, and that it is how they can arbitrate between humans torn asunder by their conflicting values. Facts would vanquish opinion, because they are what they are regardless of what we may think about it.

For Whitehead, facts in the concrete sense of the term, in the sense of "it happened," are what we must live and think with. Yet even though such facts inexorably are what they are, their value is certainly not that of impartial judge. Facts in themselves do not have a privileged relationship to knowledge. A fact matters not only because it has happened and stubbornly leaves its mark on the future, but also because it did not have to happen, or not like that. One of Whitehead's favorite examples makes the point clearly: "Napoleon was defeated at the battle of Waterloo." Countless books explore the whys and wherefores of this fact, while others speculate about alternative histories in which Napoleon would have triumphed. The fact of Napoleon's defeat is important because it happened and might not have.

The death of a tightrope walker is a tragic fact. The fact is not that his body, like any other heavy body, fell to the ground. This fact recalls the terrible moment when he lost his balance. Such a moment can make us feel what Whitehead calls a fact "in the concrete sense." *This* fact affirms its individuality because it could possibly not have happened and yet it did, making an indelible impression on those who witnessed it. Facts that arbitrate in the world of sciences, however, are never individual. They arbitrate only because they are defined by the stakes of the situation that they arbitrate, and these stakes are general, depriving the situation of its felt individuality (which may then be called anecdotal).

As soon as we confuse the concrete individual fact and the fact that stands as proof, we fall under the sway of what Whitehead calls the myth of "finite" facts. We claim that facts in general can be isolated and defined, in manner of facts that prove. The myth of finite facts asks us to take as concrete what should demand the vigilance that we need to bring to our modes of abstraction. It thus leads to the "fallacy of misplaced concreteness."[17] But it also bears witness to the importance that the fact that proves has for us. We would wish to consider facts as divorced from values. "And yet the notion of importance is like nature itself: Expel it with a pitchfork, and it ever returns."[18] When we affirm that facts are impartial arbitrators, foreign to the values and significations that have importance for us, we are attesting to the value that renders so important this power of arbitration.[19]

Whitehead does not practice irony: he does not endeavor to make those who swear by facts confess that their facts are factious. When he highlights how facts owe their definition to the importance they take on for those who define them, he strives not to diminish facts, but to activate the vigilance needed to resist the myth of finite facts. What served as proof when dealing with the movement of celestial bodies in an ideally rarefied milieu must not be generalized as a method.

To be sure, to consider a fact to be purely and simply itself and definable as such is legitimate for certain specialized practices. It is the very stake which defines success in experimental sciences. It is the very condition for the exercise of mathematics and logic. It is what is produced by the verdict in law. But the roles facts play do not point toward a role that would reunite them, which the myth would come to generalize. The logical fact that Socrates is a man and the fact upheld by the verdict of the tribunal that will determine the guilt of Socrates have nothing in common.[20] As for the experimental fact that the neutrino has mass, which resolved an anomaly that had plagued physicists for years and was celebrated by a Nobel prize,[21] I side here with Steven Weinberg: "To tell a physicist that the laws of nature are not explanations of natural phenomena is like telling a tiger stalking prey that all flesh is grass."[22] To be able to claim as a fact that neutrinos have mass exemplifies the success that matters to experimenters.

To be sure, the neutrinos did not directly provide evidence of their mass, and the experimenters never directly experienced this mass as the tiger feels its jaws close on its prey, warm blood filling its mouth. But if we may speak in this instance of "obtained" objectivity, it is because for experimenters to obtain objectivity is not the same as what critical thinkers call social construction. Such an obtaining evidently supposes a number of such constructions, and critics may track, for instance, how it was first necessary to persuade fund-granting institutions and colleagues in competition for the same funds. Obtaining funds for the extraordinarily costly and sophisticated apparatus needed to prove that the neutrino had mass indeed required a social history of negotiations, alliances, and argumentation that contributed to making the presupposed mass of the neutrino something of importance to "anyone." Ascertaining the possibility that the neutrino has a mass became so desirable and so

eagerly awaited by everyone involved that it was in the interest of each of them to find proof of its hypothetical existence. But this is also where experimenters may take mortal offense and feel ready to go to war. Interest does not explain that it indeed has a mass.

What mattered to experimenters is that the exceedingly costly and sophisticated apparatus for which they made arrangements allowed them to create an unprecedented relationship with something they call neutrinos. That this bringing into relationship (*mise en rapport*) may permit them, depending on the outcome, to attribute mass to neutrinos, has for the experimenters a very particular meaning: in case of success, no one should be able to assert that the attribution of mass is merely the product of human interpretation or of agreement among humans. Obtaining such a success signifies that, for experimenters, any social construction that brought the sophisticated apparatus into being is only a means. It has value only through the outcome, the conclusions, the answer to the question obtained.

This is why saying to experimenters, "this neutrino henceforth endowed with mass is still and always nothing but an abstraction for which humans are responsible," is like saying "all flesh is grass." The passion of the tiger for flesh is correlated with the possibility of capture and the risk of failure. Grass does not flee before grazers. The mode of abstraction invented in the laboratory has the singular value of supposing that the attempt at capture may fail. Neutrinos must be rendered capable of ruining human expectations. The specialists' concern over the difference between a neutrino with mass and without mass, then, is a case suited neither to logicomathematical abstractions nor to juridical abstractions (if accusations are judged insufficient, a different fact will be established: Socrates is not guilty). In this respect, the experimental fact is not *exemplary,* but *exceptional.* This is why experimenters are known to dance in their laboratories, which is not the case with logicians and jurors. Still, they remain aware that their success risks failing to interest anyone but their concerned colleagues.

What scientists call disinterested research thus does not at all mean research that ignores the set of interests that it may arouse. Yet it demands that these interests remain suspended until success, of which they alone may be judge. They alone are called on, and they alone are able to put to the test what is presented as an experimental

fact, to determine whether success has really occurred. Is it possible in such a case to attribute responsibility to the interrogated phenomenon for the answer obtained? Is it possible to assert that the phenomenon authorizes the scientist to speak in its name?[23] Such questions imply that the experimental mode of abstraction, as carried out through the apparatus, needs to confront the possibility that it might have omitted something of importance, something whose omission may imply that the fact obtained does not authorize anything at all.

The criterion of experimental success explodes the myth of the isolated fact, making the possibility of isolation a rare success, potentially costly and, more than anything, situated. The fact, which may claim to be purely and simply itself, and capable as such of imposing itself against all subjective interpretation, is a fact obtained in the laboratory. As such, its capacity to impose itself is limited to the collective of concerned experimenters. It does not impose itself against subjective interpretations, but against competent objections on the part of those whose responsibility it is to voice them: "Take care, your apparatus has overlooked this possibility, and if you do not succeed in ruling it out, it may all be wrong!" The experimental sciences have been able to subscribe to bifurcation, but also, thanks to their successes, to expand the manner in which allegedly objective nature is populated—with the caveat that speaking here of nature implies a propaganda operation that often seeks justification in the thesis that people are incapable of understanding the requirements and obligations associated with experimental success.

The objectivity thus obtained does not tolerate irony (this is but a construction), and yet, if those who obtain it had confidence in the capacity of people to get interested in what matters for them, it might open itself both to humor (there exist worlds beyond the laboratory!) and to the vigilance it requires. As we have seen with GMOs, what the protected and well-equipped environment of the laboratory permits experimenters to omit may take on great importance upon a single step beyond its wall. Put another way, experimenters might behave in a "civilized' manner." They might contribute to a thoughtful culture of facts, respecting their intrinsic diversity. They might not define themselves against opinion.

In contrast, what we call Science today has claimed for itself a definition of objectivity that amalgamates the idea of our forms of knowledge irresistibly advancing, like an oversized yet blandly monotonous wave, with the necessity of arbitration to ensure public order. Science insists on the bifurcation, even if it strips away, to the point of absurdity, everything that makes a situation matter to us. For Science, the only question of any value is: "How can we redefine a situation in a manner that will bend it to an objective definition?" Worse, Science today demands that experimenters accept that their successes count for very little with their granting agencies, who set a premium on innovation as the bearer of growth.

Even in desperation we must resist the apocalyptic idea declaring that we now live in a post-fact era, which would also be post–common-sense because our compasses are all lost or broken. Whitehead, too, lived through an era that spelled the defeat of common sense yet proposed to weld common sense and the imagination. Today, he would surely say that it is now all the more important to learn to speak well of facts. Surely the manner in which facts have been enlisted to silence and disqualify doubts and protests does not suffice to explain what is happening today when the right "not to believe" in facts is claimed. It reminds us, however, that coming up with a "good" answer to this question may not be the point. The point may rather be to let ourselves be situated by a task. If we have to learn today how to speak well of facts, it is because we have tolerated too many myths and abuses. This is what situates us. This is what incurs our responsibility.

There is so much to do because there are so many kinds of facts! There is an entire culture of facts for us to activate, to vivify, to make matter, but also to prevent from doing harm. The fallacy of misplaced concreteness can have devastating consequences. From Alice Rivières, I learned how a fact well-established through experimental means could shatter a life. The fact concerned the genetic mutation responsible for Huntington's disease, a neuroevolutionary disease against which contemporary medicine is powerless. It presents a classic case of an effectively finite fact: the existence of a well-identified genetic mutation makes possible a perfectly reliable presymptomatic diagnosis. But the doctor who announced to her

the results of her test acted as the spokesperson of the laboratory, thinking it his duty not to leave her with any illusions about what awaited her. His was an error of exceedingly misplaced concreteness. Not only is the course of the disease very unpredictable, but his mode of address also introduced a bifurcation between objective prediction and the "subjective" response to the ordeal. The doctor acted as if Alice's capacity to anticipate, prepare for, and live with what awaited her did not matter, or was none of his business. The abstract truth-telling of the test was transformed into a staggering verdict, transforming the landscape of possibilities into a wasteland.[24]

It is an entirely other matter with the facts obtained through experimental science but produced by the functioning of detector apparatuses such as Geiger counters. The detected fact is really and truly finite, but in this case, it does not arbitrate on anything at all. It signals something of importance but does not define the situation. For better or worse, in the zones affected by the catastrophes of Chernobyl and Fukushima, Geiger counters are now part of the everyday life of inhabitants, like a sensory organ, rendering perceptible and localizable what would otherwise be a diffuse and omnipresent threat. The finitude of the fact of detection does not separate Science and opinion. It adds, for better *and* worse, to the entanglement of ingredients that enter into a concrete situation and demand attention.

The same is not true for the fact called "global warming." This fact cannot be separated from a political initiative, the creation of the International Panel on Climate Change (IPCC), whose mission was to evaluate information for governments and populations to better understand the risks connected to climate change of human origin. It is thus a deliberate attempt by scientists to get out of laboratories and convince people that the threat really exists, with consequences demanding action. Those who deny climate change insist the IPCC does politics, not science. This implies that scientists would create arguments out of nothing, calculated simply to promote a political position. The deniers are right in one and only one respect. The climatologists involved in the IPCC know their climatological models are designed first and foremost for the public and politicians, not to generate disinterested knowledge. Their observations and models have allowed them to speak effectively about global warming as a fact,

showing how the ongoing increase in gas emissions is responsible for the greenhouse effect. But the success of this fact has not inspired researchers to dance in their laboratories. In addition, unlike those scientists who put on display the grand opportunities for innovation made possible through their research, the IPCC scientists know they must convince skeptical, reluctant interlocutors. Stephen Schneider, who was on the front line until his death in 2010, often found himself consciously caught between his scientific ethic (to include doubts, precautions, and conditionals with respect to facts) and his loyalty to the earth and its inhabitants.[25] The earth itself certainly had *in fine* the power to convince even the most recalcitrant, but could do so only through the sort of concrete, dreadful facts that had to be avoided. Here we feel the cruel lack of a culture of facts, the understanding of what one may and may not ask of climate models and the acceptance that they will not tell us how to respond to the questions they impose on us.

Finally come all those facts referenced in our regulations that allow or forbid, that arbitrate between divergent interests, and that intervene in concrete domains of practice that should cause our modes of abstraction to stammer. Contrary to experimental facts, these facts do not herald the realization of a possibility, the happy ending of a suspense. They belong instead to the regime of governmental necessity. To make arbitration possible, facts are essential—facts on which stakeholders come to agree and not facts that allow them to reach an agreement. Such facts may be called "conventional" facts. This appellation is not intended to denigrate conventions. Neither does it oppose conventions to a truth superior to them. A convention derives its value from the agreement it institutes and from the care devoted to maintaining the quality of this agreement. This is why, when it comes to conventions, the bifurcation is truly poisonous. The bifurcation compounds conventional agreements with the theme of the objective fact. It thus confers on the conventional agreement the authority to rule out what is deemed merely subjective. The care required to maintain conventions is forgotten. Forgotten too is the rare and highly selective character of the facts defined as objective through experimental sciences. The possibility of an objective definition is no longer an event. It is required in order to mute

opinion. Compounded with objectivity, conventional agreement is now used against an opinion that is defined as dangerously suggestible, always ready to succumb to panic, or to side with charlatans.

The Art of Conventions

Whitehead might be faulted for considering modernity in terms of its symptoms. His work helps us draw up a clinical picture without identifying the disease. This may be for the best. After all, analyses of the disease, commonly called capitalism, have relentlessly gained in complexity, and even the most famous run the risk of being outdated.[26] Karl Marx understood capitalism in terms of class struggle. And so he also imagined the possibility of capitalism producing within itself the force capable of overcoming it. Today such a perspective is liable to be accused of validating implacable modernization. Only reactionary nostalgia for the past would cause lingering over what has been destroyed, the interwoven ways of living and dwelling, human and nonhuman.

Whitehead's attention to the bifurcation of nature brings something else into play: the defeat of commonsense, the misuse of facts, and also, I would now add, the transformation of convention into an instrument for the maintenance of public order. It may be why his thought is contemporary to us. When activists today declare, "we do not defend nature, we are nature defending itself," they may not be criticizing the bifurcation of nature as such, but neither are they activating the trick of evil. Their stance has got the power to make hesitate those who suddenly realize how much the question of nature has changed.

The activists call on a nature to which humans belong. They thus abandon what might have been expected to unite all of us, be it the cult of an objective knowledge of nature or the call for everyone to respect its rights and accept our duty to protect them. At the same time, they uphold a sense of proximity to peoples for whom what we call nature has never been considered in terms of objective knowledge nor of moral righteousness but in terms of attentiveness, care, and prudence, as well as fear and gratitude. The activists' sense of proximity with Indigenous peoples is not limited to alliance with their struggles. It extends to learning from Indigenous peoples who

are struggling today what has sustained their ongoing resistance to modernization. This sense of proximity thus situates those who experience it in a mode that resonates with the question of this book. Are they contributing to a "becoming civilized" of modernity, or to a becoming civilized marking the end of modernity?

Needless to say, activists do not have the answer, and whatever their answer might be, it would have nothing to do with the pet themes of academics who expound on our so-called era, be it postmodern or posthuman. The answer belongs, in fact, to those who in the future, if future there be, will recount to their children what made this future possible.

While we do not know how these stories will be told or whether they will narrate the becoming civilized of our civilization or its end, they matter to us because they provide imaginative nourishment for our inquiry without answer. Some of these stories might well look back on how we gave disproportionate importance to facts that could lay claim to a strange power to bring all parties concerned into agreement. They might dramatize the corresponding absence of a culture of facts, of those conventional facts to which we must give authority in order to stop disputes. These stories would be as strange for them as are to us the memories of a time when confessions extracted through torture were held to be truthful.

Asking what memories we will leave is not an epistemological question. The bifurcation of nature explains neither the role of modern conventional definitions to ensure public order nor the privilege of successfully obtained objective definitions to establish an agreement. Dividing the territory between them, the two kinds of definitions work in a mode that renders the art of reaching an agreement null and void at the outset. But an art of agreement has been cultivated throughout the world, notably among the Indigenous peoples of the American continent and in Africa, where Portuguese colonizers christened it *palavra.* The term *palavra,* or "words" in Portuguese, speaks directly to what surprised the Portuguese colonizers: the interminable exchanges of words, which often felt idle, that the African peoples imposed on them in order to reach the least agreement. If there is proximity today between activist movements and Indigenous peoples, it arises especially through the necessity that is felt to work for the resurgence of such arts.

We do not know what happened in those meetings in which African peoples encountered those who were to "civilize" them. I am among those who have had the opportunity today to participate in this kind of exchange in the African milieu, and I have experienced exchanges that have nothing idle about them. But they oblige acceptance of constraints unusual for lettered Europeans. The exchange is not a matter of democratic debate subordinated to an abstract principle of equality, because those who participate in it are enrolled as elders. Nonetheless, this assumed role does not put them in a position to make decisions. An elder cannot be contradicted, but she herself is obliged by her role to draw from her experience syntaxes, rhythms, and manners of speaking that do not address the possibility of a contradiction. She will not put forth an "I" with intention to defend her reasons. Her speech brings into existence the impersonal experience that makes an elder of her. Each word she speaks must be produced so as to express a given dimension of the question that brings everyone together, even though the question brings them together because there are hesitations, points of divergence, and risk of conflict.

We can speak, with regard to this apparatus, of an art of convention. Certain peoples summon beings in whose presence they are to speak (and others not), but the principal trait in common, it seems to me, is the efficacy of that which, by reference to what we have inherited from the Greeks as a natural form of discussion, should be called "artifice." In effect, this apparatus has as its effect to impede what is required for us as the very principle of free deliberation: each has the right to express herself, reasons come into conflict, and victory must be given to one of the rivals.[27]

To speak of artifice is to avoid giving priority to the question of beliefs that we would no longer share. Thus, I speak of an art, of practices whose existence depends above all on their efficacy. The role of elder belongs to this art, because it contributes to a mode of meeting in which the manner of listening to others will not involve preparations for a counterargument or an act of interpretation seeking intentions behind what is said. Each speech participates in a long and often apparently repetitive process, and if the process generates decision, no one will be able to appropriate the decision, and noth-

ing will be able to guarantee that it is the best possible decision. The decision has received *its* reasons.

We may expect the modern proponent to object: "All these histories of efficacy and generativity are first and foremost a manifestation of your credulity: nothing guarantees that the agreement will amount to much more than a clandestine play of influences, rhetorical effects, and group conformity. Besides, those who meet all know they are supposed to come to some kind of agreement. Even if they are not conscious of it, each is already prepared to let themselves be influenced by the others." Such an objection gives expression to another facet of the bifurcation of nature. Apparently, for the modern proponent, the fundamental danger is being a dupe, of not seeing that influences are at play in the decision. Or, in other terms, the danger of being duped is promoted to eliminate possibilities opened by the efficacy of *palavra.*

Those who practice nonviolent direct action today, however, have need of the art of consensus decision making, because they know such a practice may help them to resist the test that awaits them. They know that they will confront provocations and violence that will make it difficult for them to stick to their commitment of not responding in kind. They are keenly aware that, if influence games, conformism, and submission to a dominant rhetorical stance have determined their choice of action, it may not hold up during the action, and during the aftermath when everything will be done to divide them. This is why they have invented roles and constraints whose efficacy is formulated explicitly. Decisions are made with respect to a situation that must not be reduced to isolated facts that would provide the argument for a thesis or objections to the thesis. The situation must be unfolded out as concretely as possible, and to do so demands that many divergent voices be heard, not as contradicting each other, but rather as expressing its many different dimensions.[28] Arriving at a decision implies the efficacy of an artifice. Refraining from bending the situation to an argument goes against our ingrained habits. It constrains one not to hear the others in the usual manner: not to object to them and defend one's position. The efficacy of this apparatus consists in giving the situation the power to make everyone hesitate, to attune diverse reasons, and to generate

statements that lose the power of contradicting others. If a decision is obtained, it will express the way in which the situation has gained the power of making sense in common. The decision is something obtained, not the result of artifice. Artifice is necessary in its way to ensure vigilance toward our modes of abstraction. It counteracts the tendency to define a situation in terms that insist on the importance of knowing who is right. Artifice allows a decision to be obtained without anyone being the victor.

The culture of what I will call "generative apparatuses" is central to practices of direct democracy. As activists acquire skills in these practices, they are discovering that many of the Indigenous peoples knew how to preserve them despite the devastating effects of colonization. These ways of making sense in common are today making possible actions in common against the devastation pursued in the name of economic growth. If future there be, these apparatuses may then appear as obvious and multifarious as the situations a collective may confront. Will they have contributed to a process in which modernity civilized itself? Or will modernity be relegated to the past because it deemed such apparatuses impossible or deceptive?

In any event, we now have a better understanding of the modern bifurcation between facts (neutral and impartial) and values (synonymous with bias). When the moderns turned to free discussion to determine what actions to take, they transformed the difficult art of reaching an agreement into a two-step process. They needed the authority of facts to define what is, and then would freely argue about what should be. They thus took for granted what, in the case of experimental facts, is artfully obtained.

In a way, experimental facts indeed depend on a rather particular art of agreement. As we have seen, they exist only because they have obtained the agreement of those who are united by the possibility of such an agreement. Competent colleagues do not wish to come to an agreement, but to be forced to agree by the experimental situation. Competent objections are thus welcome, as they are needed to unfold the requirements of a successful experimental outcome. Such an agreement is generated by the power given to the experimental situation to make experimenters think and imagine together, but its scope is intrinsically precarious, because it depends on the exact-

ing demands defining such a situation and the correlatively involved competency.

In contrast, the activist's art of consensus or the *palavra* do not hinge on the power of an obtained well-defined fact to impose agreement. They rather aim for the creation of what Whitehead calls the experience of an individual concrete fact, a fact that does not attest to reasons more general than it is, that thus cannot be abstracted from the process from which it issues, reducing it to a mere means. The agreement thus created attains an individuality that is inseparable from a process of composition allowing new possibilities for speaking and feeling to emerge. It makes possible the transformation of antagonistic reasons into contrasts that matter. It separates words from the purpose of conveying intentions and significations that should be accepted by everyone. It allows for as many expressions of a situation as there are aspects that come to matter. Yet it does not claim any ability to define the situation. A common sense may come into existence, a consensus we might even say, but not in the sense of a unanimous agreement or a unique and totalizing voice. The situation makes sense in common. It generates a feeling together, each one in their manner, but with others and thanks to others.

The success associated with the experimental fact and the success sought through generative apparatuses are of two kinds, to be contrasted but not opposed to one another. I propose, in order to contrast them, returning to the divergence between two adventures whose common trait is that their successes refuse to be dismembered in terms of mutually exclusive responsibilities. In fact, when the experimenter dares to say nature has spoken, responsibility is attributable neither to nature nor to the human mind. What is celebrated is a rare event—that which the human interrogated has agreed to assume the role proposed for it by the experimental apparatus conceived by the human. But the second kind of success is an event too. An agreement has been created that is capable of making sense in common with respect to a problematic situation, and the reason for the agreement can be attributed neither to the situation nor to the manner in which humans have interpreted it.

There is nothing exceptional about such events. Take the apparatus put in place by Citizens' Conventions, which gather around

questions bearing on technoindustrial innovations.[29] Such an apparatus gives some sense of what a culture of conventional facts might be. Citizens' Conventions take on conventional facts that are today omnipresent yet poorly nurtured, left to obscure meetings among experts who represent divergent interests. They make possible for "ordinary" people, previously "ignorant," to think and learn together how to listen to debates among experts without desperately seeking the right answer or the legitimate position. They acquire the skills and imagination to formulate questions, propositions, and objections whose pertinence and clarity are able to make the experts stammer.

This apparatus calls on an ancient artifice, the drawing of lots. Its particular efficacy is to select participants independently of their particular merits in regard to the problematic situation. In this way, it introduces into the situation the possibility of a relationship that we may call disinterested in the sense that it does not privilege a specific concern that would in turn correspond to a particular competency on the part of the person selected, justifying her selection. The participant knows she is elected only in her capacity as anyone whosoever. She knows that her identity and personal merits are not in play. Her legitimacy is not the point of reference and will not have to be demonstrated. What is effectively at stake is the quality of her participation in the creation of the collective space of thought demanded by the situation to be explored with others.

Participating in the drawing of lots implies a prior acceptance of a role that makes demands: for several weekends, the elected familiarize themselves with the dossier, posing questions of experts, which may lead to calling in additional experts. The crucial point is that they create a relationship with expert forms of knowledge in a manner that breaks with "natural" pedagogical procedures which advance from ignorance to knowledge already mapped in advance. What makes them collectively intelligent is the unmapped question bringing them together, which no single form of expertise would suffice to define. While experts approach the situation in terms that validate their respective forms of knowledge, the group operates by problematizing those forms of knowledge. The group plunges the known into the possible, activating unknowns that situate the known in the mode of "yes but." It densifies and intensifies the question. It

does not dismiss anything, yet troubles the power of expert modes of abstraction to define the situation. The group spurs the emergence of values that till then have been only a stammering within speech. To evoke Donna Haraway, the capacity to accept "staying with the trouble" becomes the object of an affirmative realization—*sheer disclosure.*[30]

The creation of a group in which common sense and imagination may become welded together is remarkable in itself. But equally remarkable is the intensity experienced by those who participate in it. They find themselves capable of actively taking part in the collective exploration of a problem that was supposedly beyond them. The feelings of joy and new esteem for self and others, as well as the desire to revive the experience, are diametrically opposed to the heinous feeling of humiliation that I have come to associate with the unflagging support Donald Trump elicits from his supporters. But this joy is fragile: it may give way to disenchanted cynicism if the group feels betrayed. A sense of betrayal could set in if the advice offered remains without consequence, as is often the case today, or if it turns out that the terms for the problem posed to citizens had in effect been decided in high places already.

While it is the efficacy of such generative apparatuses to produce intelligence in the sense of a capacity to think, imagine, and explore what matters, intelligence is not an attribute of the apparatus. It is obtained. Just as it is routinely destroyed by other kinds of apparatuses that, in one way or another, presume ignorance, manufacture fears of being mistaken and a lack of confidence, or create a situation in which each person wishes her interest to prevail and remains suspicious of others' interests. Generative apparatuses testify that intelligence can be regenerated where brooding has not been eradicated, where the refusal to think and to imagine has not prevailed, and where joy has not given way to hatred of the world.

Whitehead's remarks on the solemnity of the world help to situate the success of generative apparatuses. "All forms of realization express some aspect of finitude. Such a form expresses its nature as being this and not that. In other words, it expresses exclusion; and exclusion means finitude. The full solemnity of the world arises from the sense of positive achievement within the finite, combined with the sense of modes of infinitude stretching beyond each finite

fact."[31] What a generative apparatus obtains comes without guarantee. Because it entails the realization of an individual concrete fact that determines itself in this way and not any other, its reason cannot be grounded on something more general. The importance of the generative apparatus lies not only in the quality of what they allow us to obtain. It also comes of the keen sense of positive achievement arising from the obtaining. This manner of obtaining generative togetherness enables the experience of how not to "deface the value experience which is the very essence of the universe."[32]