

# Creative Evolution

By HENRI BERGSON

*In the Authorized Translation*

by ARTHUR MITCHELL

*With a Foreword by IRWIN EDMAN*

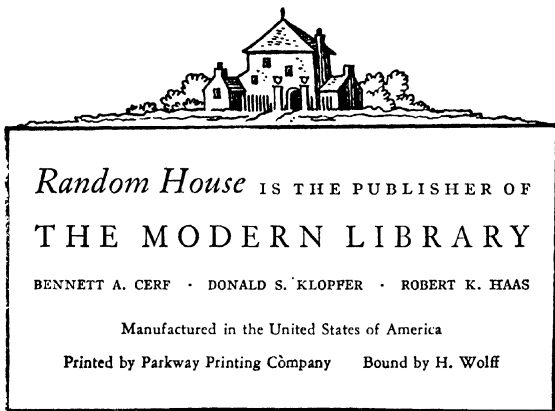
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## CHAPTER IV

### THE CINEMATOGRAFICAL MECHANISM OF THOUGHT AND THE MECHANISTIC ILLUSION—A GLANCE AT THE HISTORY OF SYSTEMS<sup>1</sup>—REAL BECOMING AND FALSE EVOLUTIONISM.

IT remains for us to examine in themselves two theoretical illusions which we have frequently met with before, but whose consequences rather than principle have hitherto concerned us. Such is the object of the present chapter. It will afford us the opportunity of removing certain objections, of clearing up certain misunderstandings, and, above all, of defining more precisely, by contrasting it with others, a philosophy which sees in duration the very stuff of reality.

Matter or mind, reality has appeared to us as a perpetual becoming. It makes itself or it unmakes itself, but it is never something made. Such is the intuition that we have of mind when we draw aside the veil which is interposed between our consciousness and ourselves. This, also, is what our intellect and senses themselves would

<sup>1</sup> The part of this chapter which treats of the history of systems, particularly of the Greek philosophy, is only the very succinct résumé of views that we developed at length, from 1900 to 1904, in our lectures at the Collège de France, especially in a course on the *History of the Idea of Time* (1902-1903). We then compared the mechanism of conceptual thought to that of the cinematograph. We believe the comparison will be useful here.

show us of matter, if they could obtain a direct and disinterested idea of it. But, preoccupied before everything with the necessities of action, the intellect, like the senses, is limited to taking, at intervals, views that are instantaneous and by that very fact immobile of the becoming of matter. Consciousness, being in its turn formed on the intellect, sees clearly of the inner life what is already made, and only feels confusedly the making. Thus, we pluck out of duration those moments that interest us, and that we have gathered along its course. These alone we retain. And we are right in so doing, while action only is in question. But when, in *speculating* on the *nature* of the real, we go on regarding it as our practical interest requires us to regard it, we become unable to perceive the true evolution, the radical becoming. Of becoming we perceive only states, of duration only instants, and even when we speak of duration and of becoming, it is of another thing that we are thinking. Such is the most striking of the two illusions we wish to examine. It consists in supposing that we can think the unstable by means of the stable, the moving by means of the immobile.

The other illusion is near akin to the first. It has the same origin, being also due to the fact that we import into speculation a procedure made for practice. All action aims at getting something that we feel the want of, or at creating something that does not yet exist. In this very special sense, it fills a void, and goes from the empty to the full, from an absence to a presence, from the unreal to the real. Now the unreality which is here in question is purely relative to the direction in which our attention is engaged, for we are immersed in realities and can-

not pass out of them; only, if the present reality is not the one we are seeking, we speak of the *absence* of this sought-for reality wherever we find the *presence* of another. We thus express what we have as a function of what we want. This is quite legitimate in the sphere of action. But, whether we will or no, we keep to this way of speaking, and also of thinking, when we speculate on the nature of things independently of the interest they have for us. Thus arises the second of the two illusions. We propose to examine this first. It is due, like the other, to the static habits that our intellect contracts when it prepares our action on things. Just as we pass through the immobile to go to the moving, so we make use of the void in order to think the full.

We have met with this illusion already in dealing with the fundamental problem of knowledge. The question, we then said, is to know why there is order, and not disorder, in things. But the question has meaning only if we suppose that disorder, understood as an absence of order, is possible, or imaginable, or conceivable. Now, it is only order that is real; but, as order can take two forms, and as the presence of the one may be said to consist in the absence of the other, we speak of disorder whenever we have before us that one of the two orders for which we are not looking. The idea of disorder is then entirely practical. It corresponds to the disappointment of a certain expectation, and it does not denote the absence of all order, but only the presence of that order which does not offer us actual interest. So that whenever we try to deny order completely, absolutely, we find that we are leaping from one kind of order to the other indefinitely, and that the supposed suppression of the one and

the other implies the presence of the two. Indeed, if we go on, and persist in shutting our eyes to this movement of the mind and all it involves, we are no longer dealing with an idea; all that is left of disorder is a word. Thus the problem of knowledge is complicated, and possibly made insoluble, by the idea that order fills a void and that its actual presence is superposed on its virtual absence. We go from absence to presence, from the void to the full, in virtue of the fundamental illusion of our understanding. That is the error of which we noticed one consequence in our last chapter. As we then anticipated, we must come to close quarters with this error, and finally grapple with it. We must face it in itself, in the radically false conception which it implies of negation, of the void and of the nought.<sup>1</sup>

Philosophers have paid little attention to the idea of the nought. And yet it is often the hidden spring, the invisible mover of philosophical thinking. From the first awakening of reflection, it is this that pushes to the fore, right under the eyes of consciousness, the torturing problems, the questions that we cannot gaze at without feeling giddy and bewildered. I have no sooner commenced to philosophize than I ask myself why I exist; and when I take account of the intimate connection in which I stand to the rest of the universe, the difficulty is only pushed back, for I want to know why the universe exists; and if I refer the universe to a Principle immanent or transcendent that supports it or creates it, my thought rests on this principle only a few moments, for the same problem recurs, this time in its full breadth and gener-

<sup>1</sup> The analysis of the idea of the nought which we give here (pp. 299-324) has appeared before in the *Revue philosophique* (November 1906).

ality: Whence comes it, and how can it be understood, that anything exists? Even here, in the present work, when matter has been defined as a kind of descent, this descent as the interruption of a rise, this rise itself as a growth, when finally a Principle of creation has been put at the base of things, the same question springs up: How—why does this principle exist rather than nothing?

Now, if I push these questions aside and go straight to what hides behind them, this is what I find:—Existence appears to me like a conquest over nought. I say to myself that there might be, that indeed there ought to be, nothing, and I then wonder that there is something. Or I represent all reality extended on nothing as on a carpet: at first was nothing, and being has come by superaddition to it. Or, yet again, if something has always existed, nothing must always have served as its substratum or receptacle, and is therefore eternally prior. A glass may have always been full, but the liquid it contains nevertheless fills a void. In the same way, being may have always been there, but the nought which is filled, and, as it were, stopped up by it, pre-exists for it none the less, if not in fact at least in right. In short, I cannot get rid of the idea that the full is an embroidery on the canvas of the void, that being is superimposed on nothing, and that in the idea of “nothing” there is *less* than in that of “something.” Hence all the mystery.

It is necessary that this mystery should be cleared up. It is more especially necessary, if we put duration and free choice at the base of things. For the disdain of metaphysics for all reality that endures comes precisely from this, that it reaches being only by passing through “not-being,” and that an existence which endures seems to it

not strong enough to conquer non-existence and itself posit itself. It is for this reason especially that it is inclined to endow true being with a *logical*, and not a psychological or a physical existence. For the nature of a purely logical existence is such that it seems to be self-sufficient and to posit itself by the effect alone of the force immanent in truth. If I ask myself why bodies or minds exist rather than nothing, I find no answer; but that a logical principle, such as  $A = A$ , should have the power of creating itself, triumphing over the nought throughout eternity, seems to me natural. A circle drawn with chalk on a blackboard is a thing which needs explanation: this entirely physical existence has not by itself wherewith to vanquish non-existence. But the "logical essence" of the circle, that is to say, the possibility of drawing it according to a certain law—in short, its definition—is a thing which appears to me eternal: it has neither place nor date; for nowhere, at no moment, has the drawing of a circle begun to be possible. Suppose, then, that the principle on which all things rest, and which all things manifest possesses an existence of the same nature as that of the definition of the circle, or as that of the axiom  $A = A$ : the mystery of existence vanishes, for the being that is at the base of everything posits itself then in eternity, as logic itself does. True, it will cost us rather a heavy sacrifice: if the principle of all things exists after the manner of a logical axiom or of a mathematical definition, the things themselves must go forth from this principle like the applications of an axiom or the consequences of a definition, and there will no longer be place, either in the things or in their principle, for efficient causality understood in the sense of a



free choice. Such are precisely the conclusions of a doctrine like that of Spinoza, or even that of Leibniz, and such indeed has been their genesis.

Now, if we could prove that the idea of the nought, in the sense in which we take it when we oppose it to that of existence, is a pseudo-idea, the problems that are raised around it would become pseudo-problems. The hypothesis of an absolute that acts freely, that in an eminent sense endures, would no longer raise up intellectual prejudices. The road would be cleared for a philosophy more nearly approaching intuition, and which would no longer ask the same sacrifices of common sense.

Let us then see what we are thinking about when we speak of "Nothing." To represent "Nothing," we must either imagine it or conceive it. Let us examine what this image or this idea may be. First, the image.

I am going to close my eyes, stop my ears, extinguish one by one the sensations that come to me from the outer world. Now it is done; all my perceptions vanish, the material universe sinks into silence and the night.—I subsist, however, and cannot help myself subsisting. I am still there, with the organic sensations which come to me from the surface and from the interior of my body, with the recollections which my past perceptions have left behind them—nay, with the impression, most positive and full, of the void I have just made about me. How can I suppress all this? How eliminate myself? I can even, it may be, blot out and forget my recollections up to my immediate past; but at least I keep the consciousness of my present reduced to its extremest poverty, that is to say, of the actual state of my body. I will try, however, to do away even with this consciousness itself. I

will reduce more and more the sensations my body sends in to me: now they are almost gone; now they are gone, they have disappeared in the night where all things else have already died away. But no! At the very instant that my consciousness is extinguished, another consciousness lights up—or rather, it was already alight: it had arisen the instant before, in order to witness the extinction of the first; for the first could disappear only for another and in the presence of another. I see myself annihilated only if I have already resuscitated myself by an act which is positive, however involuntary and unconscious. So, do what I will, I am always perceiving something, either from without or from within. When I no longer know anything of external objects, it is because I have taken refuge in the consciousness that I have of myself. If I abolish this inner self, its very abolition becomes an object for an imaginary self which now perceives as an external object the self that is dying away. Be it external or internal, some object there always is that my imagination is representing. My imagination, it is true, can go from one to the other, I can by turns imagine a nought of external perception or a nought of internal perception, but not both at once, for the absence of one consists, at bottom, in the exclusive presence of the other. But, from the fact that two relative noughts are imaginable in turn, we wrongly conclude that they are imaginable together: a conclusion the absurdity of which must be obvious, for we cannot imagine a nought without perceiving, at least confusedly, that we are imagining it, consequently that we are acting, that we are thinking, and therefore that something still subsists.

**The image, then, properly so called, of a suppression**

of everything is never formed by thought. The effort by which we strive to create this image simply ends in making us swing to and fro between the vision of an outer and that of an inner reality. In this coming and going of our mind between the without and the within, there is a point, at equal distance from both, in which it seems to us that we no longer perceive the one, and that we do not yet perceive the other: it is there that the image of "Nothing" is formed. In reality, we then perceive both, having reached the point where the two terms come together, and the image of Nothing, so defined, is an image full of things, an image that includes at once that of the subject and that of the object and, besides, a perpetual leaping from one to the other and the refusal ever to come to rest finally on either. Evidently this is not the nothing that we can oppose to being, and put before or beneath being, for it already includes existence in general.

But we shall be told that, if the representation of Nothing, visible or latent, enters into the reasonings of philosophers, it is not as an image, but as an idea. It may be agreed that we do not imagine the annihilation of everything, but it will be claimed that we can conceive it. We conceive a polygon with a thousand sides, said Descartes, although we do not see it in imagination: it is enough that we can clearly represent the possibility of constructing it. So with the idea of the annihilation of everything. Nothing simpler, it will be said, than the procedure by which we construct the idea of it. There is, in fact, not a single object of our experience that we cannot suppose annihilated. Extend this annihilation of a first object to a second, then to a third, and so on as long as

you please: the nought is the limit toward which the operation tends. And the nought so defined is the annihilation of everything. That is the theory. We need only consider it in this form to see the absurdity it involves.

An idea constructed by the mind is an idea only if its pieces are capable of coexisting; it is reduced to a mere word if the elements that we bring together to compose it are driven away as fast as we assemble them. When I have defined the circle, I easily represent a black or a white circle, a circle in cardboard, iron, or brass, a transparent or an opaque circle—but not a square circle, because the law of the generation of the circle excludes the possibility of defining this figure with straight lines. So my mind can represent any existing thing whatever as annihilated;—but if the annihilation of anything by the mind is an operation whose mechanism implies that it works on a part of the whole, and not on the whole itself, then the extension of such an operation to the totality of things becomes self-contradictory and absurd, and the idea of an annihilation of everything presents the same character as that of a square circle: it is not an idea, it is only a word. So let us examine more closely the mechanism of the operation.

In fact, the object suppressed is either external or internal: it is a thing or it is a state of consciousness. Let us consider the first case. I annihilate in thought an external object: in the place where it was, there is no longer anything.—No longer anything of that object, of course, but another object has taken its place: there is no absolute void in nature. But admit that an absolute void is possible: it is not of that void that I am thinking when I say that the object, once annihilated, leaves its place un-

occupied; for by the hypothesis it is a *place*, that is a void limited by precise outlines, or, in other words, a kind of *thing*. The void of which I speak, therefore, is, at bottom, only the absence of some definite object, which was here at first, is now elsewhere and, in so far as it is no longer in its former place, leaves behind it, so to speak, the void of itself. A being unendowed with memory or prevision would not use the words "void" or "nought"; he would express only what is and what is perceived; now, what is, and what is perceived, is the *presence* of one thing or of another, never the *absence* of anything. There is absence only for a being capable of remembering and expecting. He remembered an object, and perhaps expected to encounter it again; he finds another, and he expresses the disappointment of his expectation (an expectation sprung from recollection) by saying that he no longer finds anything, that he encounters "nothing." Even if he did not expect to encounter the object, it is a possible expectation of it, it is still the falsification of his eventual expectation that he expresses by saying that the object is no longer where it was. What he perceives in reality, what he will succeed in effectively thinking of, is the presence of the old object in a new place or that of a new object in the old place; the rest, all that is expressed negatively by such words as "nought" or the "void," is not so much thought as feeling, or, to speak more exactly, it is the tinge that feeling gives to thought. The idea of annihilation or of partial nothingness is therefore formed here in the course of the substitution of one thing for another, whenever this substitution is thought by a mind that would prefer to keep the old thing in the place of the new, or at least conceives

this preference as possible. The idea implies on the subjective side a preference, on the objective side a substitution, and is nothing else but a combination of, or rather an interference between, this feeling of preference and this idea of substitution.

Such is the mechanism of the operation by which our mind annihilates an object and succeeds in representing in the external world a partial nought. Let us now see how it represents it within itself. We find in ourselves phenomena that are produced, and not phenomena that are not produced. I experience a sensation or an emotion, I conceive an idea, I form a resolution: my consciousness perceives these facts, which are so many *presences*, and there is no moment in which facts of this kind are not present to me. I can, no doubt, interrupt by thought the course of my inner life; I may suppose that I sleep without dreaming or that I have ceased to exist; but at the very instant when I make this supposition, I conceive myself, I imagine myself watching over my slumber or surviving my annihilation, and I give up perceiving myself from within only by taking refuge in the perception of myself from without. That is to say that here again the full always succeeds the full, and that an intelligence that was only intelligence, that had neither regret nor desire, whose movement was governed by the movement of its object, could not even conceive an absence or a void. The conception of a void arises here when consciousness, lagging behind itself, remains attached to the recollection of an old state when another state is already present. It is only a comparison between what is and what could or ought to be, between the full and the full. In a word, whether it be a void of matter or a void of

consciousness, *the representation of the void is always a representation which is full and which resolves itself on analysis into two positive elements: the idea, distinct or confused, of a substitution, and the feeling, experienced or imagined, of a desire or a regret.*

It follows from this double analysis that the idea of the absolute nought, in the sense of the annihilation of everything, is a self-destructive idea, a pseudo-idea, a mere word. If suppressing a thing consists in replacing it by another, if thinking the absence of one thing is only possible by the more or less explicit representation of the presence of some other thing, if, in short, annihilation signifies before anything else substitution, the idea of an "annihilation of everything" is as absurd as that of a square circle. The absurdity is not obvious, because there exists no particular object that cannot be supposed annihilated; then, from the fact that there is nothing to prevent each thing in turn being suppressed in thought, we conclude that it is possible to suppose them suppressed altogether. We do not see that suppressing each thing in turn consists precisely in replacing it in proportion and degree by another, and therefore that the suppression of absolutely everything implies a downright contradiction in terms, since the operation consists in destroying the very condition that makes the operation possible.

But the illusion is tenacious. Though suppressing one thing consists *in fact* in substituting another for it, we do not conclude, we are unwilling to conclude, that the annihilation of a thing *in thought* implies the substitution in thought of a new thing for the old. We agree that a thing is always replaced by another thing, and even

that our mind cannot think the disappearance of an object, external or internal, without thinking—under an indeterminate and confused form, it is true—that another object is substituted for it. But we add that the representation of a disappearance is that of a phenomenon that is produced in space or at least in time, that consequently it still implies the calling up of an image, and that it is precisely here that we have to free ourselves from the imagination in order to appeal to the pure understanding. "Let us therefore no longer speak," it will be said, "of disappearance or annihilation; these are physical operations. Let us no longer represent the object A as annihilated or absent. Let us say simply that we think it "non-existent." To annihilate it is to act on it in time and perhaps also in space; it is to accept, consequently, the condition of spatial and temporal existence, to accept the universal connection that binds an object to all others, and prevents it from disappearing without being at the same time replaced. But we can free ourselves from these conditions; all that is necessary is that by an effort of abstraction we should call up the idea of the object A by itself, that we should agree first to consider it as existing, and then, by a stroke of the intellectual pen, blot out the clause. The object will then be, by our decree, "non-existent."

Very well, let us strike out the clause. We must not suppose that our pen-stroke is self-sufficient—that it can be isolated from the rest of things. We shall see that it carries with it, whether we will or no, all that we tried to abstract from. Let us compare together the two ideas—the object A supposed to exist, and the same object supposed "non-existent."



The idea of the object A, supposed existent, is the representation pure and simple of the object A, for we cannot represent an object without attributing to it, by the very fact of representing it, a certain reality. Between thinking an object and thinking it existent, there is absolutely no difference. Kant has put this point in clear light in his criticism of the ontological argument. Then, what is it to think the object A non-existent? To represent it non-existent cannot consist in withdrawing from the idea of the object A the idea of the attribute "existence," since, I repeat, the representation of the existence of the object is inseparable from the representation of the object, and indeed is one with it. To represent the object A non-existent can only consist, therefore, in *adding* something to the idea of this object: we add to it, in fact, the idea of an *exclusion* of this particular object by actual reality in general. To think the object A as non-existent is first to think the object and consequently to think it existent; it is then to think that another reality, with which it is incompatible, supplants it. Only, it is useless to represent this latter reality explicitly; we are not concerned with what it is; it is enough for us to know that it drives out the object A, which alone is of interest to us. That is why we think of the expulsion rather than of the cause which expels. But this cause is none the less present to the mind; it is there in the implicit state, that which expels being inseparable from the expulsion as the hand which drives the pen is inseparable from the pen-stroke. The act by which we declare an object unreal therefore posits the existence of the real in general. In other words, to represent an object as unreal cannot consist in depriving it of every kind of existence, since the

representation of an object is necessarily that of the object existing. Such an act consists simply in declaring that the existence attached by our mind to the object, and inseparable from its representation, is an existence wholly ideal—that of a mere *possible*. But the "ideality" of an object, and the "simple possibility" of an object, have meaning only in relation to a reality that drives into the region of the ideal, or of the merely possible, the object which is incompatible with it. Suppose the stronger and more substantial existence annihilated: it is the attenuated and weaker existence of the merely possible that becomes the reality itself, and you will no longer be representing the object, then, as non-existent. In other words, and however strange our assertion may seem, *there is more, and not less, in the idea of an object conceived as "not existing" than in the idea of this same object conceived as "existing"; for the idea of the object "not existing" is necessarily the idea of the object "existing" with, in addition, the representation of an exclusion of this object by the actual reality taken in block.*

But it will be claimed that our idea of the non-existent is not yet sufficiently cut loose from every imaginative element, that it is not negative enough. "No matter," we shall be told, "though the unreality of a thing consist in its exclusion by other things; we want to know nothing about that. Are we not free to direct our attention where we please and how we please? Well then, after having called up the idea of an object, and thereby, if you will have it so, supposed it existent, we shall merely couple to our affirmation a 'not,' and that will be enough to make us think it non-existent. This is an operation entirely intellectual, independent of what happens outside

the mind. So let us think of anything or let us think of the totality of things, and then write in the margin of our thought the 'not,' which prescribes the rejection of what it contains: we annihilate everything mentally by the mere fact of decreeing its annihilation."—Here we have it! The very root of all the difficulties and errors with which we are confronted is to be found in the power ascribed here to negation. We represent negation as exactly symmetrical with affirmation. We imagine that negation, like affirmation, is self-sufficient. So that negation, like affirmation, would have the power of creating ideas, with this sole difference that they would be negative ideas. By affirming one thing, and then another, and so on *ad infinitum*, I form the idea of "All"; so, by denying one thing and then other things, finally by denying All, I arrive at the idea of Nothing.—But it is just this assimilation which is arbitrary. We fail to see that while affirmation is a complete act of the mind, which can succeed in building up an idea, negation is but the half of an intellectual act, of which the other half is understood, or rather put off to an indefinite future. We fail to see that while affirmation is a purely intellectual act, there enters into negation an element which is not intellectual, and that it is precisely to the intrusion of this foreign element that negation owes its specific character.

To begin with the second point, let us note that to deny always consists in setting aside a possible affirmation.<sup>1</sup> Negation is only an attitude taken by the mind toward an eventual affirmation. When I say, "This table is

<sup>1</sup> Kant, *Critique of Pure Reason*, 2nd edition, p. 737: "From the point of view of our knowledge in general . . . the peculiar function of negative propositions is simply to prevent error." Cf. Sigwart, *Logik*, 2nd edition, vol. 1. pp. 150 ff.

black," I am speaking of the table; I have seen it black, and my judgment expresses what I have seen. But if I say, "This table is not white," I surely do not express something I have perceived, for I have seen black, and not an absence of white. It is therefore, at bottom, not on the table itself that I bring this judgment to bear, but rather on the judgment that would declare the table white. I judge a judgment and not the table. The proposition, "This table is not white," implies that you might believe it white, that you did believe it such, or that I was going to believe it such. I warn you or myself that this judgment is to be replaced by another (which, it is true, I leave undetermined). Thus, while affirmation bears directly on the thing, negation aims at the thing only indirectly, through an interposed affirmation. An affirmative proposition expresses a judgment on an object; a negative proposition expresses a judgment on a judgment. *Negation, therefore, differs from affirmation properly so called in that it is an affirmation of the second degree: it affirms something of an affirmation which itself affirms something of an object.*

But it follows at once from this that negation is not the work of pure mind, I should say of a mind placed before objects and concerned with them alone. When we deny, we give a lesson to others, or it may be to ourselves. We take to task an interlocutor, real or possible, whom we find mistaken and whom we put on his guard. He was affirming something: we tell him he ought to affirm something else (though without specifying the affirmation which must be substituted). There is no longer then, simply, a person and an object; there is, in face of the object, a person speaking to a person, oppos-

ing him and aiding him at the same time; there is a beginning of society. Negation aims at someone, and not only, like a purely intellectual operation, at something. It is of a pedagogical and social nature. It sets straight or rather warns, the person warned and set straight being possibly, by a kind of doubling, the very person that speaks.

So much for the second point; now for the first. We said that negation is but the half of an intellectual act, of which the other half is left indeterminate. If I pronounce the negative proposition, "This table is not white," I mean that you ought to substitute for your judgment, "The table is white," another judgment. I give you an admonition, and the admonition refers to the necessity of a substitution. As to what you ought to substitute for your affirmation, I tell you nothing, it is true. This may be because I do not know the color of the table; but it is also, it is indeed even more, because the white color is that alone that interests us for the moment, so that I only need to tell you that some other color will have to be substituted for white, without having to say which. A negative judgment is therefore really one which indicates a need of substituting for an affirmative judgment another affirmative judgment, the nature of which, however, is not specified, sometimes because it is not known, more often because it fails to offer any actual interest, the attention bearing only on the substance of the first.

Thus, whenever I add a "not" to an affirmation, whenever I deny, I perform two very definite acts: (1) I interest myself in what one of my fellow-men affirms, or in what he was going to say, or in what might have been

said by another *Me*, whom I anticipate; (2) I announce that some other affirmation, whose content I do not specify, will have to be substituted for the one I find before me. Now, in neither of these two acts is there anything but affirmation. The *sui generis* character of negation is due to superimposing the first of these acts upon the second. It is in vain, then, that we attribute to negation the power of creating ideas *sui generis*, symmetrical with those that affirmation creates, and directed in a contrary sense. No idea will come forth from negation, for it has no other content than that of the affirmative judgment which it judges.

To be more precise, let us consider an existential, instead of an attributive, judgment. If I say, "The object A does not exist," I mean by that, first, that we might believe that the object A exists: how, indeed, can we think of the object A without thinking it existing, and, once again, what difference can there be between the idea of the object A existing and the idea pure and simple of the object A? Therefore, merely by saying "The object A," I attribute to it some kind of existence, though it be that of a mere *possible*, that is to say, of a pure idea. And consequently, in the judgment "The object A is not," there is at first an affirmation such as "The object A has been," or "The object A will be," or, more generally, "The object A exists at least as a mere *possible*." Now, when I add the two words "is not," I can only mean that if we go further, if we erect the possible object into a real object, we shall be mistaken, and that the possible of which I am speaking is excluded from the actual reality as incompatible with it. Judgments that posit the non-existence of a thing are therefore judgments that formu-

late a contrast between the possible and the actual (that is, between two kinds of *existence*, one thought and the other found), where a person, real or imaginary, wrongly believes that a certain possible is realized. Instead of this possible, there is a reality that differs from it and rejects it: the negative judgment expresses this contrast, but it expresses the contrast in an intentionally incomplete form, because it is addressed to a person who is supposed to be interested exclusively in the possible that is indicated, and is not concerned to know by what kind of reality the possible is replaced. The expression of the substitution is therefore bound to be cut short. Instead of affirming that a second term is substituted for the first, the attention which was originally directed to the first term will be kept fixed upon it, and upon it alone. And, without going beyond the first, we shall implicitly affirm that a second term replaces it in saying that the first "is not." We shall thus judge a judgment instead of judging a thing. We shall warn others or warn ourselves of a possible error instead of supplying positive information. Suppress every intention of this kind, give knowledge back its exclusively scientific or philosophical character, suppose in other words that reality comes itself to inscribe itself on a mind that cares only for things and is not interested in persons: we shall affirm that such or such a thing is, we shall never affirm that a thing is not.

How comes it, then, that affirmation and negation are so persistently put on the same level and endowed with an equal objectivity? How comes it that we have so much difficulty in recognizing that negation is subjective, artificially cut short, relative to the human mind and still more to the social life? The reason is, no doubt, that *both*

negation and affirmation are expressed in propositions, and that *any* proposition, being formed of *words*, which symbolize *concepts*, is something relative to social life and to the human intellect. Whether I say "The ground is damp" or "The ground is not damp," in both cases the terms "ground" and "damp" are concepts more or less artificially created by the mind of man—extracted, by his free initiative, from the continuity of experience. In both cases the concepts are represented by the same conventional words. In both cases we can say indeed that the proposition aims at a social and pedagogical end, since the first would propagate a truth as the second would prevent an error. From this point of view, which is that of formal logic, to affirm and to deny are indeed two mutually symmetrical acts, of which the first establishes a relation of agreement and the second a relation of disagreement between a subject and an attribute. But how do we fail to see that the symmetry is altogether external and the likeness superficial? Suppose language fallen into disuse, society dissolved, every intellectual initiative, every faculty of self-reflection and of self-judgment atrophied in man: the dampness of the ground will subsist none the less, capable of inscribing itself automatically in sensation and of sending a vague idea to the deadened intellect. The intellect will still affirm, in implicit terms. And consequently, neither distinct concepts, nor words, nor the desire of spreading the truth, nor that of bettering oneself, are of the very essence of the affirmation. But this passive intelligence, mechanically keeping step with experience, neither anticipating nor following the course of the real, would have no wish to deny. It could not receive an imprint of negation; for, once again,



that which exists may come to be recorded, but the non-existence of the non-existing cannot. For such an intellect to reach the point of denying, it must awake from its torpor, formulate the disappointment of a real or possible expectation, correct an actual or possible error—in short, propose to teach others or to teach itself.

It is rather difficult to perceive this in the example we have chosen, but the example is indeed the more instructive and the argument the more cogent on that account. If dampness is able automatically to come and record itself, it is the same, it will be said, with non-dampness; for the dry as well as the damp can give impressions to sense, which will transmit them, as more or less distinct ideas, to the intelligence. In this sense the negation of dampness is as objective a thing, as purely intellectual, as remote from every pedagogical intention, as affirmation.—But let us look at it more closely: we shall see that the negative proposition, “The ground is not damp,” and the affirmative proposition, “The ground is dry,” have entirely different contents. The second implies that we know the dry, that we have experienced the specific sensations, tactile or visual for example, that are at the base of this idea. The first requires nothing of the sort; it could equally well have been formulated by an intelligent fish, who had never perceived anything but the wet. It would be necessary, it is true, that this fish should have risen to the distinction between the real and the possible, and that he should care to anticipate the error of his fellow-fishes, who doubtless consider as alone possible the condition of wetness in which they actually live. Keep strictly to the terms of the proposition, “The ground is not damp,” and you will find that it means two

things: (1) that one might believe that the ground is damp, (2) that the dampness is replaced in fact by a certain quality  $x$ . This quality is left indeterminate, either because we have no positive knowledge of it, or because it has no actual interest for the person to whom the negation is addressed. To deny, therefore, always consists in presenting in an abridged form a system of two affirmations: the one determinate, which applies to a certain *possible*; the other indeterminate, referring to the unknown or indifferent reality that supplants this possibility. The second affirmation is virtually contained in the judgment we apply to the first, a judgment which is negation itself. And what gives negation its subjective character is precisely this, that in the discovery of a replacement it takes account only of the replaced, and is not concerned with what replaces. The replaced exists only as a conception of the mind. It is necessary, in order to continue to see it, and consequently in order to speak of it, to turn our back on the reality, which flows from the past to the present, advancing from behind. It is this that we do when we deny. We discover the change, or more generally the substitution, as a traveler would see the course of his carriage if he looked out behind, and only knew at each moment the point at which he had ceased to be; he could never determine his actual position except by relation to that which he had just quitted, instead of grasping it in itself.

To sum up, for a mind which should follow purely and simply the thread of experience, there would be no void, no nought, even relative or partial, no possible negation. Such a mind would see facts succeed facts, states succeed states, things succeed things. What it would note at

each moment would be things existing, states appearing, events happening. It would live in the actual, and, if it were capable of judging, it would never affirm anything except the existence of the present.

Endow this mind with memory, and especially with the desire to dwell on the past; give it the faculty of dissociating and of distinguishing: it will no longer only note the present state of the passing reality; it will represent the passing as a change, and therefore as a contrast between what has been and what is. And as there is no essential difference between a past that we remember and a past that we imagine, it will quickly rise to the idea of the "possible" in general.

It will thus be shunted on to the siding of negation. And especially it will be at the point of representing a disappearance. But it will not yet have reached it. To represent that a thing has disappeared, it is not enough to perceive a contrast between the past and the present; it is necessary besides to turn our back on the present, to dwell on the past, and to think the contrast of the past with the present in terms of the past only, without letting the present appear in it.

The idea of annihilation is therefore not a pure idea; it implies that we regret the past or that we conceive it as regrettable, that we have some reason to linger over it. The idea arises when the phenomenon of substitution is cut in two by a mind which considers only the first half, because that alone interests it. Suppress all interest, all feeling, and there is nothing left but the reality that flows, together with the knowledge ever renewed that it impresses on us of its present state.

From annihilation to negation, which is a more gen-

eral operation, there is now only a step. All that is necessary is to represent the contrast of what is, not only with what has been, but also with all that might have been. And we must express this contrast as a function of what might have been, and not of what is; we must affirm the existence of the actual while looking only at the possible. The formula we thus obtain no longer expresses merely a disappointment of the individual; it is made to correct or guard against an error, which is rather supposed to be the error of another. In this sense, negation has a pedagogical and social character.

Now, once negation is formulated, it presents an aspect symmetrical with that of affirmation; if affirmation affirms an objective reality, it seems that negation must affirm a non-reality equally objective, and, so to say, equally real. In which we are both right and wrong: wrong, because negation cannot be objectified, in so far as it is negative; right, however, in that the negation of a thing implies the latent affirmation of its replacement by something else, which we systematically leave on one side. But the negative form of negation benefits by the affirmation at the bottom of it. Bestriding the positive solid reality to which it is attached, this phantom objectifies itself. Thus is formed the idea of the void or of a partial nought, a thing being supposed to be replaced, not by another thing, but by a void which it leaves, that is, by the negation of itself. Now, as this operation works on anything whatever, we suppose it performed on each thing in turn, and finally on all things in block. We thus obtain the idea of absolute Nothing. If now we analyze this idea of Nothing, we find that it is, at bottom, the idea of Everything, together with a movement of the mind

that keeps jumping from one thing to another, refuses to stand still, and concentrates all its attention on this refusal by never determining its actual position except by relation to that which it has just left. It is therefore an idea eminently comprehensive and full, as full and comprehensive as the idea of *All*, to which it is very closely akin.

How then can the idea of Nought be opposed to that of *All*? Is it not plain that this is to oppose the full to the full, and that the question, "Why does something exist?" is consequently without meaning, a pseudo-problem raised about a pseudo-idea? Yet we must say once more why this phantom of a problem haunts the mind with such obstinacy. In vain do we show that in the idea of an "annihilation of the real" there is only the image of all realities expelling one another endlessly, in a circle; in vain do we add that the idea of non-existence is only that of the expulsion of an imponderable existence, or a "merely possible" existence, by a more substantial existence which would then be the true reality; in vain do we find in the *sui generis* form of negation an element which is not intellectual—negation being the judgment of a judgment, an admonition given to someone else or to oneself, so that it is absurd to attribute to negation the power of creating ideas of a new kind, viz. ideas without content;—in spite of all, the conviction persists that before things, or at least under things, there is "Nothing." If we seek the reason of this fact, we shall find it precisely in the feeling, in the social and, so to speak, practical element, that gives its specific form to negation. The greatest philosophic difficulties arise, as we have said, from the fact that the forms of human action venture

outside of their proper sphere. We are made in order to act as much as, and more than, in order to think—or rather, when we follow the bent of our nature, it is in order to act that we think. It is therefore no wonder that the habits of action give their tone to those of thought, and that our mind always perceives things in the same order in which we are accustomed to picture them when we propose to act on them. Now, it is unquestionable, as we remarked above, that every human action has its starting-point in a dissatisfaction, and thereby in a feeling of absence. We should not act if we did not set before ourselves an end, and we seek a thing only because we feel the lack of it. Our action proceeds thus from "nothing" to "something," and its very essence is to embroider "something" on the canvas of "nothing." The truth is that the "nothing" concerned here is the absence not so much of a thing as of a utility. If I bring a visitor into a room that I have not yet furnished, I say to him that "there is nothing in it." Yet I know the room is full of air; but, as we do not sit on air, the room truly contains nothing that at this moment, for the visitor and for myself, counts for anything. In a general way, human work consists in creating utility; and, as long as the work is not done, there is "nothing"—nothing that we want. Our life is thus spent in filling voids, which our intellect conceives under the influence, by no means intellectual, of desire and of regret, under the pressure of vital necessities; and if we mean by void an absence of utility and not of things, we may say, in this quite relative sense, that we are constantly going from the void to the full: such is the direction which our action takes. Our speculation cannot help doing the same; and, naturally, it

passes from the relative sense to the absolute sense, since it is exercised on things themselves and not on the utility they have for us. Thus is implanted in us the idea that reality fills a void, and that Nothing, conceived as an absence of everything, pre-exists before all things in right, if not in fact. It is this illusion that we have tried to remove by showing that the idea of Nothing, if we try to see in it that of an annihilation of all things, is self-destructive and reduced to a mere word; and that if, on the contrary, it is truly an idea, then we find in it as much matter as in the idea of All.

This long analysis has been necessary to show that *a self-sufficient reality is not necessarily a reality foreign to duration*. If we pass (consciously or unconsciously) through the idea of the nought in order to reach that of being, the being to which we come is a logical or mathematical essence, therefore non-temporal. And, consequently, a static conception of the real is forced on us: everything appears given once for all, in eternity. But we must accustom ourselves to think being directly, without making a detour, without first appealing to the phantom of the nought which interposes itself between it and us. We must strive to see in order to see, and no longer to see in order to act. Then the Absolute is revealed very near us and, in a certain measure, in us. It is of psychological and not of mathematical nor logical essence. It lives with us. Like us, but in certain aspects infinitely more concentrated and more gathered up in itself, it *endures*.

But do we ever think true duration? Here again a direct taking possession is necessary. It is no use trying to

approach duration: we must install ourselves within it straight away. This is what the intellect generally refuses to do, accustomed as it is to think the moving by means of the unmovable.

The function of the intellect is to preside over actions. Now, in action, it is the result that interests us; the means matter little provided the end is attained. Thence it comes that we are altogether bent on the end to be realized, generally trusting ourselves to it in order that the idea may become an act; and thence it comes also that only the goal where our activity will rest is pictured explicitly to our mind: the movements constituting the action itself either elude our consciousness or reach it only confusedly. Let us consider a very simple act, like that of lifting the arm. Where should we be if we had to imagine beforehand all the elementary contractions and tensions this act involves, or even to perceive them, one by one, as they are accomplished? But the mind is carried immediately to the end, that is to say, to the schematic and simplified vision of the act supposed accomplished. Then, if no antagonistic idea neutralizes the effect of the first idea, the appropriate movements come of themselves to fill out the plan, drawn in some way by the void of its gaps. The intellect, then, only represents to the activity ends to attain, that is to say, points of rest. And, from one end attained to another end attained, from one rest to another rest, our activity is carried by a series of leaps, during which our consciousness is turned away as much as possible from the movement going on, to regard only the anticipated image of the movement accomplished.

Now, in order that it may represent as unmovable the



result of the act which is being accomplished, the intellect must perceive, as also unmovable, the surroundings in which this result is being framed. Our activity is fitted into the material world. If matter appeared to us as a perpetual flowing, we should assign no termination to any of our actions. We should feel each of them dissolve as fast as it was accomplished, and we should not anticipate an ever-fleeting future. In order that our activity may leap from an *act* to an *act*, it is necessary that matter should pass from a *state* to a *state*, for it is only into a state of the material world that action can fit a result, so as to be accomplished. But is it thus that matter presents itself?

*A priori* we may presume that our perception manages to apprehend matter with this bias. Sensory organs and motor organs are in fact co-ordinated with each other. Now, the first symbolize our faculty of perceiving, as the second our faculty of acting. The organism thus evidences, in a visible and tangible form, the perfect accord of perception and action. So if our activity always aims at a *result* into which it is momentarily fitted, our perception must retain of the material world, at every moment, only a *state* in which it is provisionally placed. This is the most natural hypothesis. And it is easy to see that experience confirms it.

From our first glance at the world, before we even make our *bodies* in it, we distinguish *qualities*. Color succeeds to color, sound to sound, resistance to resistance, etc. Each of these qualities, taken separately, is a state that seems to persist as such, immovable until another replaces it. Yet each of these qualities resolves itself, on analysis, into an enormous number of elemen-

tary movements. Whether we see in it vibrations or whether we represent it in any other way, one fact is certain, it is that every quality is change. In vain, moreover, shall we seek beneath the change the thing which changes: it is always provisionally, and in order to satisfy our imagination, that we attach the movement to a mobile. The mobile flies forever before the pursuit of science, which is concerned with mobility alone. In the smallest discernible fraction of a second, in the almost instantaneous perception of a sensible quality, there may be trillions of oscillations which repeat themselves. The permanence of a sensible quality consists in this repetition of movements, as the persistence of life consists in a series of palpitations. The primal function of perception is precisely to grasp a series of elementary changes under the form of a quality or of a simple state, by a work of condensation. The greater the power of acting bestowed upon an animal species, the more numerous, probably, are the elementary changes that its faculty of perceiving concentrates into one of its instants. And the progress must be continuous, in nature, from the beings that vibrate almost in unison with the oscillations of the ether, up to those that embrace trillions of these oscillations in the shortest of their simple perceptions. The first feel hardly anything but movements; the others perceive quality. The first are almost caught up in the running-gear of things; the others react, and the tension of their faculty of acting is probably proportional to the concentration of their faculty of perceiving. The progress goes on even in humanity itself. A man is so much the more a "man of action" as he can embrace in a glance a greater number of events: he who perceives successive events

one by one will allow himself to be led by them; he who grasps them as a whole will dominate them. In short, the qualities of matter are so many stable views that we take of its instability.

Now, in the continuity of sensible qualities we mark off the boundaries of bodies. Each of these bodies really changes at every moment. In the first place, it resolves itself into a group of qualities, and every quality, as we said, consists of a succession of elementary movements. But, even if we regard the quality as a stable state, the body is still unstable in that it changes qualities without ceasing. The body pre-eminently—that which we are most justified in isolating within the continuity of matter, because it constitutes a relatively closed system—is the living body; it is, moreover, for it that we cut out the others within the whole. Now, life is an evolution. We concentrate a period of this evolution in a stable view which we call a form, and, when the change has become considerable enough to overcome the fortunate inertia of our perception, we say that the body has changed its form. But in reality the body is changing form at every moment; or rather, there is no form, since form is immobile and the reality is movement. What is real is the continual *change of form*: *form is only a snapshot view of a transition*. Therefore, here again, our perception manages to solidify into discontinuous images the fluid continuity of the real. When the successive images do not differ from each other too much, we consider them all as the waxing and waning of a single *mean* image, or as the deformation of this image in different directions. And to this mean we really allude when we speak of the *essence* of a thing, or of the thing itself.

Finally things, once constituted, show on the surface, by their changes of situation, the profound changes that are being accomplished within the Whole. We say then that they *act* on one another. This action appears to us, no doubt, in the form of movement. But from the mobility of the movement we turn away as much as we can; what interests us is, as we said above, the unmovable plan of the movement rather than the movement itself. Is it a simple movement? We ask ourselves *where* it is going. It is by its direction, that is to say, by the position of its provisional end, that we represent it at every moment. Is it a complex movement? We would know above all *what* is going on, *what* the movement is doing—in other words, the *result* obtained or the presiding *intention*. Examine closely what is in your mind when you speak of an action in course of accomplishment. The idea of change is there, I am willing to grant, but it is hidden in the penumbra. In the full light is the motionless plan of the act supposed accomplished. It is by this, and by this only, that the complex act is distinguished and defined. We should be very much embarrassed if we had to imagine the movements inherent in the actions of eating, drinking, fighting, etc. It is enough for us to know, in a general and indefinite way, that all these acts are movements. Once that side of the matter has been settled, we simply seek to represent the *general plan* of each of these complex movements, that is to say the *motionless design* that underlies them. Here again knowledge bears on a state rather than on a change. It is therefore the same with this third case as with the others. Whether the movement be qualitative or evolutionary or extensive, the mind manages to take stable views of the instability.

And thence the mind derives, as we have just shown, three kinds of representations: (1) qualities, (2) forms of essences, (3) acts.

To these three ways of seeing correspond three categories of words: *adjectives*, *substantives* and *verbs*, which are the primordial elements of language. Adjectives and substantives therefore symbolize *states*. But the verb itself, if we keep to the clear part of the idea it calls up, hardly expresses anything else.

Now, if we try to characterize more precisely our natural attitude toward Becoming, this is what we find. Becoming is infinitely varied. That which goes from yellow to green is not like that which goes from green to blue: they are different *qualitative* movements. That which goes from flower to fruit is not like that which goes from larva to nymph and from nymph to perfect insect: they are different *evolutionary* movements. The action of eating or of drinking is not like the action of fighting: they are different *extensive* movements. And these three kinds of movement themselves—qualitative, evolutionary, extensive—differ profoundly. The trick of our perception, like that of our intelligence, like that of our language, consists in extracting from these profoundly different becomings the single representation of becoming *in general*, undefined becoming, a mere abstraction which by itself says nothing and of which, indeed, it is very rarely that we think. To this idea, always the same, and always obscure or unconscious, we then join, in each particular case, one or several clear images that represent *states* and which serve to distinguish all becomings from each other. It is this composition of a specified and definite

state with change general and undefined that we substitute for the specific change. An infinite multiplicity of becomings variously colored, so to speak, passes before our eyes: we manage so that we see only differences of color, that is to say, differences of state, beneath which there is supposed to flow, hidden from our view, a becoming always and everywhere the same, invariably colorless.

Suppose we wish to portray on a screen a living picture, such as the marching past of a regiment. There is one way in which it might first occur to us to do it. That would be to cut out jointed figures representing the soldiers, to give to each of them the movement of marching, a movement varying from individual to individual although common to the human species, and to throw the whole on the screen. We should need to spend on this little game an enormous amount of work, and even then we should obtain but a very poor result: how could it, at its best, reproduce the suppleness and variety of life? Now, there is another way of proceeding, more easy and at the same time more effective. It is to take a series of snapshots of the passing regiment and to throw these instantaneous views on the screen, so that they replace each other very rapidly. This is what the cinematograph does. With photographs, each of which represents the regiment in a fixed attitude, it reconstitutes the mobility of the regiment marching. It is true that if we had to do with photographs alone, however much we might look at them, we should never see them animated: with immobility set beside immobility, even endlessly, we could never make movement. In order that the pictures may be animated, there must be movement somewhere. The

movement does indeed exist here; it is in the apparatus. It is because the film of the cinematograph unrolls, bringing in turn the different photographs of the scene to continue each other, that each actor of the scene recovers his mobility; he strings all his successive attitudes on the invisible movement of the film. The process then consists in extracting from all the movements peculiar to all the figures an impersonal movement abstract and simple, *movement in general*, so to speak: we put this into the apparatus, and we reconstitute the individuality of each particular movement by combining this nameless movement with the personal attitudes. Such is the contrivance of the cinematograph. And such is also that of our knowledge. Instead of attaching ourselves to the inner becoming of things, we place ourselves outside them in order to recompose their becoming artificially. We take snapshots, as it were, of the passing reality, and, as these are characteristic of the reality, we have only to string them on a becoming, abstract, uniform and invisible, situated at the back of the apparatus of knowledge, in order to imitate what there is that is characteristic in this becoming itself. Perception, intellection, language so proceed in general. Whether we would think becoming, or express it, or even perceive it, we hardly do anything else than set going a kind of cinematograph inside us. We may therefore sum up what we have been saying in the conclusion that the *mechanism of our ordinary knowledge is of a cinematographical kind*.

Of the altogether practical character of this operation there is no possible doubt. Each of our acts aims at a certain insertion of our will into the reality. There is, between our body and other bodies, an arrangement like

that of the pieces of glass that compose a kaleidoscopic picture. Our activity goes from an arrangement to a re-arrangement, each time no doubt giving the kaleidoscope a new shake, but not interesting itself in the shake, and seeing only the new picture. Our knowledge of the operation of nature must be exactly symmetrical, therefore, with the interest we take in our own operation. In this sense we may say, if we are not abusing this kind of illustration, that *the cinematographical character of our knowledge of things is due to the kaleidoscopic character of our adaptation to them.*

The cinematographical method is therefore the only practical method, since it consists in making the general character of knowledge form itself on that of action, while expecting that the detail of each act should depend in its turn on that of knowledge. In order that action may always be enlightened, intelligence must always be present in it; but intelligence, in order thus to accompany the progress of activity and ensure its direction, must begin by adopting its rhythm. Action is discontinuous, like every pulsation of life; discontinuous, therefore, is knowledge. The mechanism of the faculty of knowing has been constructed on this plan. Essentially practical, can it be of use, such as it is, for speculation? Let us try with it to follow reality in its windings, and see what will happen.

I take of the continuity of a particular becoming a series of views, which I connect together by "becoming in general." But of course I cannot stop there. What is not determinable is not representable: of "becoming in general" I have only a verbal knowledge. As the letter  $x$  designates a certain unknown quantity, whatever it may



be, so my "becoming in general," always the same, symbolizes here a certain transition of which I have taken some snapshots; of the transition itself it teaches me nothing. Let me then concentrate myself wholly on the transition, and, between any two snapshots, endeavor to realize what is going on. As I apply the same method, I obtain the same result; a third view merely slips in between the two others. I may begin again as often as I will, I may set views alongside of views for ever, I shall obtain nothing else. The application of the cinematographical method therefore leads to a perpetual recommencement, during which the mind, never able to satisfy itself and never finding where to rest, persuades itself, no doubt, that it imitates by its instability the very movement of the real. But though, by straining itself to the point of giddiness, it may end by giving itself the illusion of mobility, its operation has not advanced it a step, since it remains as far as ever from its goal. In order to advance with the moving reality, you must replace yourself within it. Install yourself within change, and you will grasp at once both change itself and the successive states in which *it might* at any instant be immobilized. But with these successive states, perceived from without as real and no longer as potential immobilities, you will never reconstitute movement. Call them *qualities, forms, positions, or intentions*, as the case may be, multiply the number of them as you will, let the interval between two consecutive states be infinitely small: before the intervening movement you will always experience the disappointment of the child who tries by clapping his hands together to crush the smoke. The movement slips through the interval, because every at-

tempt to reconstitute change out of states implies the absurd proposition, that movement is made of immobilities.

Philosophy perceived this as soon as it opened its eyes. The arguments of Zeno of Elea, although formulated with a very different intention, have no other meaning.

Take the flying arrow. At every moment, says Zeno, it is motionless, for it cannot have time to move, that is, to occupy at least two successive positions, unless at least two moments are allowed it. At a given moment, therefore, it is at rest at a given point. Motionless in each point of its course, it is motionless during all the time that it is moving.

Yes, if we suppose that the arrow can ever *be* in a point of its course. Yes again, if the arrow, which is moving, ever coincides with a position, which is motionless. But the arrow never *is* in any point of its course. The most we can say is that it might be there, in this sense, that it passes there and might stop there. It is true that if it did stop there, it would be at rest there, and at this point it is no longer movement that we should have to do with. The truth is that if the arrow leaves the point A to fall down at the point B, its movement AB is as simple, as indecomposable, in so far as it is movement, as the tension of the bow that shoots it. As the shrapnel, bursting before it falls to the ground, covers the explosive zone with an indivisible danger, so the arrow which goes from A to B displays with a single stroke, although over a certain extent of duration, its indivisible mobility. Suppose an elastic stretched from A to B, could you divide its extension? The course of the arrow is this very extension; it is equally simple and equally undivided. It is a

single and unique bound. You fix a point C in the interval passed, and say that at a certain moment the arrow was in C. If it had been there, it would have been stopped there, and you would no longer have had a flight from A to B, but *two* flights, one from A to C and the other from C to B, with an interval of rest. A single movement is entirely, by the hypothesis, a movement between two stops; if there are intermediate stops, it is no longer a single movement. At bottom, the illusion arises from this, that the movement, *once effected*, has laid along its course a motionless trajectory on which we can count as many immobilities as we will. From this we conclude that the movement, *whilst being effected*, lays at each instant beneath it a position with which it coincides. We do not see that the trajectory is created in one stroke, although a certain time is required for it; and that though we can divide at will the trajectory once created, we cannot divide its creation, which is an act in progress and not a thing. To suppose that the moving body *is* at a point of its course is to cut the course in two by a snip of the scissors at this point, and to substitute two trajectories for the single trajectory which we were first considering. It is to distinguish two successive acts where, by the hypothesis, there is only one. In short, it is to attribute to the course itself of the arrow everything that can be said of the interval that the arrow has traversed, that is to say, to admit *a priori* the absurdity that movement coincides with immobility.

We shall not dwell here on the three other arguments of Zeno. We have examined them elsewhere. It is enough to point out that they all consist in applying the movement to the line traversed, and supposing that what is

true of the line is true of the movement. The line, for example, may be divided into as many parts as we wish, of any length that we wish, and it is always the same line. From this we conclude that we have the right to suppose the movement articulated as we wish, and that it is always the same movement. We thus obtain a series of absurdities that all express the same fundamental absurdity. But the possibility of applying the movement *to* the line traversed exists only for an observer who, keeping outside the movement and seeing at every instant the possibility of a stop, tries to reconstruct the real movement with these possible immobilities. The absurdity vanishes as soon as we adopt by thought the continuity of the real movement, a continuity of which every one of us is conscious whenever he lifts an arm or advances a step. We feel then indeed that the line passed over between two stops is described with a single indivisible stroke, and that we seek in vain to practice on the movement, which traces the line, divisions corresponding, each to each, with the divisions arbitrarily chosen of the line once it has been traced. The line traversed by the moving body lends itself to any kind of division, because it has no internal organization. But all movement is articulated inwardly. It is either an indivisible bound (which may occupy, nevertheless, a very long duration) or a series of indivisible bounds. Take the articulations of this movement into account, or give up speculating on its nature.

When Achilles pursues the tortoise, each of his steps must be treated as indivisible, and so must each step of the tortoise. After a certain number of steps, Achilles will have overtaken the tortoise. There is nothing more

simple. If you insist on dividing the two motions further, distinguish both on the one side and on the other, in the course of Achilles and in that of the tortoise, the *sub-multiples* of the steps of each of them; but respect the natural articulations of the two courses. As long as you respect them, no difficulty will arise, because you will follow the indications of experience. But Zeno's device is to reconstruct the movement of Achilles according to a law arbitrarily chosen. Achilles with a first step is supposed to arrive at the point where the tortoise was, with a second step at the point which it has moved to while he was making the first, and so on. In this case, Achilles would always have a new step to take. But obviously, to overtake the tortoise, he goes about it in quite another way. The movement considered by Zeno would only be the equivalent of the movement of Achilles if we could treat the movement as we treat the interval passed through, decomposable and recomposable at will. Once you subscribe to this first absurdity, all the others follow.<sup>1</sup>

<sup>1</sup> That is, we do not consider the sophism of Zeno refuted by the fact that the geometrical progression  $a \left( 1 + \frac{1}{n} + \frac{1}{n^2} + \frac{1}{n^3} + \dots \right)$ —in which  $a$  designates the initial distance between Achilles and the tortoise, and  $n$  the relation of their respective velocities—has a finite sum if  $n$  is greater than 1. On this point we may refer to the arguments of F. Evellin, which we regard as conclusive (see Evellin, *Infini et quantité*, Paris, 1880, pp. 63-97; cf. *Revue philosophique*, vol. xi., 1881, pp. 564-568). The truth is that mathematics, as we have tried to show in a former work, deals and can deal only with lengths. It has therefore had to seek devices, first, to transfer to the movement, which is not a length, the divisibility of the line passed over, and then to reconcile with experience the idea (contrary to experience and full of absurdities) of a movement that is a length, that is, of a movement *placed upon* its trajectory and arbitrarily decomposable like it.

Nothing would be easier, now, than to extend Zeno's argument to qualitative becoming and to evolutionary becoming. We should find the same contradictions in these. That the child can become a youth, ripen to maturity and decline to old age, we understand when we consider that vital evolution is here the reality itself. Infancy, adolescence, maturity, old age, are mere views of the mind, *possible stops* imagined by us, from without, along the continuity of a progress. On the contrary, let childhood, adolescence, maturity and old age be given as integral parts of the evolution, they become *real stops*, and we can no longer conceive how evolution is possible, for rests placed beside rests will never be equivalent to a movement. How, with what is made, can we reconstitute what is being made? How, for instance, from childhood once posited as a *thing*, shall we pass to adolescence, when, by the hypothesis, childhood only is given? If we look at it closely, we shall see that our habitual manner of speaking, which is fashioned after our habitual manner of thinking, leads us to actual logical deadlocks—deadlocks to which we allow ourselves to be led without anxiety, because we feel confusedly that we can always get out of them if we like: all that we have to do, in fact, is to give up the cinematographical habits of our intellect. When we say "The child becomes a man," let us take care not to fathom too deeply the literal meaning of the expression, or we shall find that, when we posit the subject "child," the attribute "man" does not yet apply to it, and that, when we express the attribute "man," it applies no more to the subject "child." The reality, which is the *transition* from childhood to manhood, has slipped between our fingers. We have only the imaginary

stops "child" and "man," and we are very near to saying that one of these stops *is* the other, just as the arrow of Zeno *is*, according to that philosopher, at all the points of the course. The truth is that if language here were molded on reality, we should not say "The child becomes the man," but "There is becoming from the child to the man." In the first proposition, "becomes" is a verb of indeterminate meaning, intended to mask the absurdity into which we fall when we attribute the state "man" to the subject "child." It behaves in much the same way as the movement, always the same, of the cinematographical film, a movement hidden in the apparatus and whose function it is to superpose the successive pictures on one another in order to imitate the movement of the real object. In the second proposition, "becoming" is a subject. It comes to the front. It is the reality itself; childhood and manhood are then only possible stops, mere views of the mind; we now have to do with the objective movement itself, and no longer with its cinematographical imitation. But the first manner of expression is alone conformable to our habits of language. We must, in order to adopt the second, escape from the cinematographical mechanism of thought.

We must make complete abstraction of this mechanism, if we wish to get rid at one stroke of the theoretical absurdities that the question of movement raises. All is obscure, all is contradictory when we try, with states, to build up a transition. The obscurity is cleared up, the contradiction vanishes, as soon as we place ourselves along the transition, in order to distinguish states in it by making cross cuts therein in thought. The reason is that there is *more* in the transition than the series of

states, that is to say, the possible cuts—*more* in the movement than the series of positions, that is to say, the possible stops. Only, the first way of looking at things is conformable to the processes of the human mind; the second requires, on the contrary, that we reverse the bent of our intellectual habits. No wonder, then, if philosophy at first recoiled before such an effort. The Greeks trusted to nature, trusted the natural propensity of the mind, trusted language above all, in so far as it naturally externalizes thought. Rather than lay blame on the attitude of thought and language toward the course of things, they preferred to pronounce the course of things itself to be wrong.

Such, indeed, was the sentence passed by the philosophers of the Eleatic school. And they passed it without any reservation whatever. As becoming shocks the habits of thought and fits ill into the molds of language, they declared it unreal. In spatial movement and in change in general they saw only pure illusion. This conclusion could be softened down without changing the premises, by saying that the reality changes, but that it *ought not* to change. Experience confronts us with becoming: that is *sensible* reality. But the *intelligible* reality, that which *ought* to be, is more real still, and that reality does not change. Beneath the qualitative becoming, beneath the evolutionary becoming, beneath the extensive becoming, the mind must seek that which defies change, the definable quality, the form or essence, the end. Such was the fundamental principle of the philosophy which developed throughout the classic age, the philosophy of Forms, or, to use a term more akin to the Greek, the philosophy of Ideas.



The word εἶδος, which we translate here by "Idea," has, in fact, this threefold meaning. It denotes (1) the quality, (2) the form or essence, (3) the end or *design* (in the sense of *intention*) of the act being performed, that is to say, at bottom, the *design* (in the sense of *drawing*) of the act supposed accomplished. *These three aspects are those of the adjective, substantive and verb, and correspond to the three essential categories of language.* After the explanations we have given above, we might, and perhaps we ought to, translate εἶδος by "view" or rather by "moment." For εἶδος is the stable view taken of the instability of things: the *quality*, which is a moment of becoming; the *form*, which is a moment of evolution; the *essence*, which is the mean form above and below which the other forms are arranged as alterations of the mean; finally, the intention or *mental design* which presides over the action being accomplished, and which is nothing else, we said, than the *material design*, traced out and contemplated beforehand, of the action accomplished. To reduce things to Ideas is therefore to resolve becoming into its principal moments, each of these being, moreover, by the hypothesis, screened from the laws of time and, as it were, plucked out of eternity. That is to say that we end in the philosophy of Ideas when we apply the cinematographical mechanism of the intellect to the analysis of the real.

But, when we put immutable Ideas at the base of the moving reality, a whole physics, a whole cosmology, a whole theology follows necessarily. We must insist on the point. Not that we mean to summarize in a few pages a philosophy so complex and so comprehensive as that of the Greeks. But, since we have described the cinema-

tographical mechanism of the intellect, it is important that we should show to what idea of reality the play of this mechanism leads. It is the very idea, we believe, that we find in the ancient philosophy. The main lines of the doctrine that was developed from Plato to Plotinus, passing through Aristotle (and even, in a certain measure, through the Stoics), have nothing accidental, nothing contingent, nothing that must be regarded as a philosopher's fancy. They indicate the vision that a systematic intellect obtains of the universal becoming when regarding it by means of snapshots, taken at intervals, of its flowing. So that, even today, we shall philosophize in the manner of the Greeks, we shall rediscover, without needing to know them, such and such of their general conclusions, in the exact proportion that we trust in the cinematographical instinct of our thought.

We said there is *more* in a movement than in the successive positions attributed to the moving object, *more* in a becoming than in the forms passed through in turn, *more* in the evolution of form than the forms assumed one after another. Philosophy can therefore derive terms of the second kind from those of the first, but not the first from the second: from the first terms speculation must take its start. But the intellect reverses the order of the two groups; and, on this point, ancient philosophy proceeds as the intellect does. It installs itself in the immutable, it posits only Ideas. Yet becoming exists: it is a fact. How, then, having posited immutability alone, shall we make change come forth from it? Not by the addition of anything, for, by the hypothesis, there exists nothing positive outside Ideas. It must therefore be by

a diminution. So at the base of ancient philosophy lies necessarily this postulate: that there is more in the motionless than in the moving, and that we pass from immutability to becoming by way of diminution or attenuation.

It is therefore something negative, or zero at most, that must be added to Ideas to obtain change. In that consists the Platonic "non-being," the Aristotelian "matter"—a metaphysical zero which, joined to the Idea, like the arithmetical zero to unity, multiplies it in space and time. By it the motionless and simple Idea is refracted into a movement spread out indefinitely. In right, there ought to be nothing but immutable Ideas, immutably fitted to each other. In fact, matter comes to add to them its void, and thereby lets loose the universal becoming. It is an elusive nothing, that creeps between the Ideas and creates endless agitation, eternal disquiet, like a suspicion insinuated between two loving hearts. Degrade the immutable Ideas: you obtain, by that alone, the perpetual flux of things. The Ideas or Forms are the whole of intelligible reality, that is to say, of truth, in that they represent, all together, the theoretical equilibrium of Being. As to sensible reality, it is a perpetual oscillation from one side to the other of this point of equilibrium.

Hence, throughout the whole philosophy of Ideas there is a certain conception of duration, as also of the relation of time to eternity. He who installs himself in becoming sees in duration the very life of things, the fundamental reality. The Forms, which the mind isolates and stores up in concepts, are then only snapshots of the changing reality. They are moments gathered

along the course of time; and, just because we have cut the thread that binds them to time, they no longer endure. They tend to withdraw into their own definition, that is to say, into the artificial reconstruction and symbolical expression which is their intellectual equivalent. They enter into eternity, if you will; but what is eternal in them is just what is unreal. On the contrary, if we treat becoming by the cinematographical method, the Forms are no longer snapshots taken of the change, they are its constitutive elements, they represent all that is positive in Becoming. Eternity no longer hovers over time, as an abstraction; it underlies time, as a reality. Such is exactly, on this point, the attitude of the philosophy of Forms or Ideas. It establishes between eternity and time the same relation as between a piece of gold and the small change—change so small that payment goes on forever without the debt being paid off. The debt could be paid at once with the piece of gold. It is this that Plato expresses in his magnificent language when he says that God, unable to make the world eternal, gave it Time, “a moving image of eternity.”<sup>1</sup>

Hence also arises a certain conception of extension, which is at the base of the philosophy of Ideas, although it has not been so explicitly brought out. Let us imagine a mind placed alongside becoming, and adopting its movement. Each successive state, each quality, each form, in short, will be seen by it as a mere cut made by thought in the universal becoming. It will be found that form is essentially extended, inseparable as it is from the extensity of the becoming which has materialized it in the course of its flow. Every form thus occupies space

<sup>1</sup> Plato, *Timaeus*, 37 D.

as it occupies time. But the philosophy of Ideas follows the inverse direction. It starts from the Form; it sees in the Form the very essence of reality. It does not take Form as a snapshot of becoming; it posits Forms in the eternal; of this motionless eternity, then, duration and becoming are supposed to be only the degradation. Form thus posited, independent of time, is then no longer what is found in a perception; it is a *concept*. And, as a reality of the conceptual order occupies no more of extension than it does of duration, the Forms must be stationed outside space as well as above time. Space and time have therefore necessarily, in ancient philosophy, the same origin and the same value. The same diminution of being is expressed both by extension in space and detention in time. Both of these are but the distance between what is and what ought to be. From the standpoint of ancient philosophy, space and time can be nothing but the field that an incomplete reality, or rather a reality that has gone astray from itself, needs in order to run in quest of itself. Only it must be admitted that the field is created as the hunting progresses, and that the hunting in some way deposits the field beneath it. Move an imaginary pendulum, a mere mathematical point, from its position of equilibrium: a perpetual oscillation is started, along which points are placed next to points, and moments succeed moments. The space and time which thus arise have no more "positivity" than the movement itself. They represent the remoteness of the position artificially given to the pendulum from its normal position, *what it lacks* in order to regain its natural stability. Bring it back to its normal position: space, time and motion shrink to a mathematical point. Just so, human reasonings are

drawn out into an endless chain, but are at once swallowed up in the truth seized by intuition, for their extension in space and time is only the distance, so to speak, between thought and truth.<sup>1</sup> So of extension and duration in relation to pure Forms or Ideas. The sensible forms are before us, ever about to recover their ideality, ever prevented by the matter they bear in them, that is to say, by their inner void, by the interval between what they are and what they ought to be. They are forever on the point of recovering themselves, forever occupied in losing themselves. An inflexible law condemns them, like the rock of Sisyphus, to fall back when they are almost touching the summit, and this law, which has projected them into space and time, is nothing other than the very constancy of their original insufficiency. The alternations of generation and decay, the evolutions ever beginning over and over again, the infinite repetition of the cycles of celestial spheres—this all represents merely a certain fundamental deficit, in which materiality consists. Fill up this deficit: at once you suppress space and time, that is to say, the endlessly renewed oscillations around a stable equilibrium always aimed at, never reached. Things re-enter into each other. What was extended in space is contracted into pure Form. And past, present and future shrink into a single moment, which is eternity.

This amounts to saying that physics is but logic spoiled. In this proposition the whole philosophy of Ideas is summarized. And in it also is the hidden prin-

<sup>1</sup> We have tried to bring out what is true and what is false in this idea, so far as spatiality is concerned (see Chapter III.). It seems to us radically false as regards *duration*.

ciple of the philosophy that is innate in our understanding. If immutability is more than becoming, form is more than change, and it is by a veritable fall that the logical system of Ideas, rationally subordinated and co-ordinated among themselves, is scattered into a physical series of objects and events accidentally placed one after another. The generative idea of a poem is developed in thousands of imaginations which are materialized in phrases that spread themselves out in words. And the more we descend from the motionless idea, wound on itself, to the words that unwind it, the more room is left for contingency and choice. Other metaphors, expressed by other words, might have arisen; an image is called up by an image, a word by a word. All these words run now one after another, seeking in vain, by themselves, to give back the simplicity of the generative idea. Our ear only hears the words: it therefore perceives only accidents. But our mind, by successive bounds, leaps from the words to the images, from the images to the original idea, and so gets back, from the perception of words—accidents called up by accidents—to the conception of the Idea that posits its own being. So the philosopher proceeds, confronted with the universe. Experience makes to pass before his eyes phenomena which run, they also, one behind another in an accidental order determined by circumstances of time and place. This physical order—a degeneration of the logical order—is nothing else but the fall of the logical into space and time. But the philosopher, ascending again from the percept to the concept, sees condensed into the logical all the positive reality that the physical possesses. His intellect, doing away with the materiality that lessens being, grasps being it-

self in the immutable system of Ideas. Thus Science is obtained, which appears to us, complete and ready-made, as soon as we put back our intellect into its true place, correcting the deviation that separated it from the intelligible. Science is not, then, a human construction. It is prior to our intellect, independent of it, veritably the generator of Things.

And indeed, if we hold the Forms to be simply snapshots taken by the mind of the continuity of becoming, they must be relative to the mind that thinks them, they can have no independent existence. At most we might say that each of these Ideas is an *ideal*. But it is in the opposite hypothesis that we are placing ourselves. Ideas must then exist by themselves. Ancient philosophy could not escape this conclusion. Plato formulated it, and in vain did Aristotle strive to avoid it. Since movement arises from the degradation of the immutable, there could be no movement, consequently no sensible world, if there were not, somewhere, immutability realized. So, having begun by refusing to Ideas an independent existence, and finding himself nevertheless unable to deprive them of it, Aristotle pressed them into each other, rolled them up into a ball, and set above the physical world a Form that was thus found to be the Form of Forms, the Idea of Ideas, or, to use his own words, the Thought of Thought. Such is the God of Aristotle—necessarily immutable and apart from what is happening in the world, since he is only the synthesis of all concepts in a single concept. It is true that no one of the manifold concepts could exist apart, such as it is in the divine unity: in vain should we look for the ideas of Plato within the God of Aristotle. But if only we imagine the God of Aristotle in



a sort of refraction of himself, or simply inclining toward the world, at once the Platonic Ideas are seen to pour themselves out of him, as if they were involved in the unity of his essence: so rays stream out from the sun, which nevertheless did not contain them. It is probably this *possibility of an outpouring* of Platonic Ideas from the Aristotelian God that is meant, in the philosophy of Aristotle, by the active intellect, the νοῦς that has been called ποιητικός—that is, by what is essential and yet unconscious in human intelligence. The νοῦς ποιητικός is Science entire, posited all at once, which the conscious, discursive intellect is condemned to reconstruct with difficulty, bit by bit. There is then within us, or rather behind us, a possible vision of God, as the Alexandrians said, a vision always virtual, never actually realized by the conscious intellect. In this intuition we should see God expand in Ideas. This it is that “does everything,”<sup>1</sup> playing in relation to the discursive intellect, which moves in time, the same rôle as the motionless Mover himself plays in relation to the movement of the heavens and the course of things.

There is, then, immanent in the philosophy of Ideas, a particular conception of causality, which it is important to bring into full light, because it is that which each of us will reach when, in order to ascend to the origin of things, he follows to the end the natural movement of the intellect. True, the ancient philosophers never formulated it explicitly. They confined themselves to drawing the consequences of it, and, in general, they have

<sup>1</sup> Aristotle, *De anima*, 430 a 14 καὶ ἔστιν ὁ μὲν τοιοῦτος νοῦς τῷ πάντα γίνεσθαι, ὁ δὲ τῷ πάντα ποιεῖν, ὡς ἕξις τις, οἷον τὸ φῶς. τρόπον γὰρ τίνα καὶ τὸ φῶς ποιεῖ τὰ δυνάμει ὄντα χρώματα ἐνεργεῖα χρώματα.

marked but points of view of it rather than presented it itself. Sometimes, indeed, they speak of an *attraction*, sometimes of an *impulsion* exercised by the prime mover on the whole of the world. Both views are found in Aristotle, who shows us in the movement of the universe an aspiration of things toward the divine perfection, and consequently an ascent toward God, while he describes it elsewhere as the effect of a contact of God with the first sphere and as descending, consequently, from God to things. The Alexandrians, we think, do no more than follow this double indication when they speak of *pro-cession* and *conversion*. Everything is derived from the first principle, and everything aspires to return to it. But these two conceptions of the divine causality can only be identified together if we bring them, both the one and the other, back to a third, which we hold to be fundamental, and which alone will enable us to understand, not only why, in what sense, things move in space and time, but also why there is space and time, why there is movement, why there are things.

This conception, which more and more shows through the reasonings of the Greek philosophers as we go from Plato to Plotinus, we may formulate thus: *The affirmation of a reality implies the simultaneous affirmation of all the degrees of reality intermediate between it and nothing*. The principle is evident in the case of number: we cannot affirm the number 10 without thereby affirming the existence of the numbers 9, 8, 7, . . ., etc.—in short, of the whole interval between 10 and zero. But here our mind passes naturally from the sphere of quantity to that of quality. It seems to us that, a certain perfection being given, the whole continuity of degradations

is given also between this perfection, on the one hand, and the nought, on the other hand, that we think we conceive. Let us then posit the God of Aristotle, thought of thought—that is, thought *making a circle*, transforming itself from subject to object and from object to subject by an instantaneous, or rather an eternal, circular process: as, on the other hand, the nought appears to posit itself, and as, the two extremities being given, the interval between them is equally given, it follows that all the descending degrees of being, from the divine perfection down to the “absolute nothing,” are realized automatically, so to speak, when we have posited God.

Let us then run through this interval from top to bottom. First of all, the slightest diminution of the first principle will be enough to precipitate Being into space and time; but duration and extension, which represent this first diminution, will be as near as possible to the divine inextension and eternity. We must therefore picture to ourselves this first degradation of the divine principle as a sphere turning on itself, imitating, by the perpetuity of its circular movement, the eternity of the circle of the divine thought; creating, moreover, its own place, and thereby place in general,<sup>1</sup> since it includes without being included and moves without stirring from the spot; creating also its own duration, and thereby duration in general, since its movement is the measure of all motion.<sup>2</sup> Then, by degrees, we shall see the per-

<sup>1</sup> *De caelo*, ii. 287 a 12 τῆς ἐσχάτης περιφορᾶς οὔτε κενόν ἐστὶν ἔξωθεν οὔτε τόπος. *Phys.* iv. 212 a 34 τὸ δὲ πᾶν ἔστι μὲν ὡς κινήσεται ἔστι δ'ὡς οὐ. ὡς μὲν γὰρ δλον, ἀμα τὸν τόπον οὐ μεταβάλλει. κύκλῳ δὲ κινήσεται, τῶν μορίων γὰρ οὗτος ὁ τόπος.

<sup>2</sup> *De caelo*, i. 279 a 12 οὐδὲ χρόνος ἐστὶν ἔξω τοῦ οὐρανοῦ. *Phys.* viii. 251 b 27 ὁ χρόνος πάθος τι κινήσεως.

fection decrease, more and more, down to our sublunary world, in which the cycle of birth, growth and decay imitates and mars the original circle for the last time. So understood, the causal relation between God and the world is seen as an attraction when regarded from below, as an impulsion or a contact when regarded from above, since the first heaven, with its circular movement, is an imitation of God and all imitation is the reception of a form. Therefore, we perceive God as efficient cause or as final cause, according to the point of view. And yet neither of these two relations is the ultimate causal relation. The true relation is that which is found between the two members of an equation, when the first member is a single term and the second a sum of an endless number of terms. It is, we may say, the relation of the gold piece to the small change, if we suppose the change to offer itself automatically as soon as the gold piece is presented. Only thus can we understand why Aristotle has demonstrated the necessity of a first motionless mover, not by founding it on the assertion that the movement of things must have had a beginning, but, on the contrary, by affirming that this movement could not have begun and can never come to an end. If movement exists, or, in other words, if the small change is being counted, the gold piece is to be found somewhere. And if the counting goes on forever, having never begun, the single term that is eminently equivalent to it must be eternal. A perpetuity of mobility is possible only if it is backed by an eternity of immutability, which it unwinds in a chain without beginning or end.

Such is the last word of the Greek philosophy. We have not attempted to reconstruct it *a priori*. It has mani-

fold origins. It is connected by many invisible threads to the soul of ancient Greece. Vain, therefore, the effort to deduce it from a simple principle.<sup>1</sup> But if everything that has come from poetry, religion, social life and a still rudimentary physics and biology be removed from it, if we take away all the light material that may have been used in the construction of the stately building, a solid framework remains, and this framework marks out the main lines of a metaphysic which is, we believe, the natural metaphysic of the human intellect. We come to a philosophy of this kind, indeed, whenever we follow to the end the cinematographical tendency of perception and thought. Our perception and thought begin by substituting for the continuity of evolutionary change a series of unchangeable forms which are, turn by turn, "caught on the wing," like the rings at a merry-go-round, which the children unhook with their little stick as they are passing. Now, how can the forms be passing, and on what "stick" are they strung? As the stable forms have been obtained by extracting from change everything that is definite, there is nothing left to characterize the instability on which the forms are laid, but a negative attribute, which must be indetermination itself. Such is the first proceeding of our thought: it dissociates each change into two elements—the one stable, definable for each particular case, to wit, the Form; the other indefinable and always the same, Change in general. And such, also, is the essential operation of language. Forms are all that it is capable of expressing. It is reduced to taking

<sup>1</sup> Especially have we left almost entirely on one side those admirable but somewhat fugitive intuitions that Plotinus was later to seize, to study and to fix.

as understood or is limited to *suggesting* a mobility which, just because it is always unexpressed, is thought to remain in all cases the same.—Then comes in a philosophy that holds the dissociation thus effected by thought and language to be legitimate. What can it do, except objectify the distinction with more force, push it to its extreme consequences, reduce it into a system? It will therefore construct the real, on the one hand, with definite Forms or immutable elements, and, on the other, with a principle of mobility which, being the negation of the form, will, by the hypothesis, escape all definition and be the purely indeterminate. The more it directs its attention to the forms delineated by thought and expressed by language, the more it will see them rise above the sensible and become subtilized into pure concepts, capable of entering one within the other, and even of being at last massed together into a single concept, the synthesis of all reality, the achievement of all perfection. The more, on the contrary, it descends toward the invisible source of the universal mobility, the more it will feel this mobility sink beneath it and at the same time become void, vanish into what it will call the “non-being.” Finally, it will have on the one hand the system of ideas, logically co-ordinated together or concentrated into one only, on the other a quasi-nought, the Platonic “non-being” or the Aristotelian “matter.”—But, having cut your cloth, you must sew it. With supra-sensible Ideas and an infra-sensible non-being, you now have to reconstruct the sensible world. You can do so only if you postulate a kind of metaphysical necessity in virtue of which the confronting of this All with this Zero is *equivalent* to the affirmation of all the degrees of reality that

measure the interval between them—just as an undivided number, when regarded as a difference between itself and zero, is revealed as a certain sum of units, and with its own affirmation affirms all the lower numbers. That is the natural postulate. It is that also that we perceive as the base of the Greek philosophy. In order then to explain the specific characters of each of these degrees of intermediate reality, nothing more is necessary than to measure the distance that separates it from the integral reality. Each lower degree consists in a diminution of the higher, and the *sensible* newness that we perceive in it is resolved, from the point of view of the *intelligible*, into a new quantity of negation which is superadded to it. The smallest possible quantity of negation, that which is found already in the highest forms of sensible reality, and consequently *a fortiori* in the lower forms, is that which is expressed by the most general attributes of sensible reality, extension and duration. By increasing degradations we will obtain attributes more and more special. Here the philosopher's fancy will have free scope, for it is by an arbitrary decree, or at least a debatable one, that a particular aspect of the sensible world will be equated with a particular diminution of being. We shall not necessarily end, as Aristotle did, in a world consisting of concentric spheres turning on themselves. But we shall be led to an analogous cosmology—I mean, to a construction whose pieces, though all different, will have none the less the same relations between them. And this cosmology will be ruled by the same principle. The physical will be defined by the logical. Beneath the changing phenomena will appear to us, by transference, a closed system of concepts subordinated to and co-ordi-

nated with each other. Science, understood as the system of concepts, will be more real than the sensible reality. It will be prior to human knowledge, which is only able to spell it letter by letter; prior also to things, which awkwardly try to imitate it. It would only have to be diverted an instant from itself in order to step out of its eternity and thereby coincide with all this knowledge and all these things. Its immutability is therefore, indeed, the cause of the universal becoming.

Such was the point of view of ancient philosophy in regard to change and duration. That modern philosophy has repeatedly, but especially in its beginnings, had the wish to depart from it, seems to us unquestionable. But an irresistible attraction brings the intellect back to its natural movement, and the metaphysic of the moderns to the general conclusions of the Greek metaphysic. We must try to make this point clear, in order to show by what invisible threads our mechanistic philosophy remains bound to the ancient philosophy of Ideas, and how also it responds to the requirements, above all practical, of our understanding.

Modern, like ancient, science proceeds according to the cinematographical method. It cannot do otherwise; all science is subject to this law. For it is of the essence of science to handle *signs*, which it substitutes for the objects themselves. These signs undoubtedly differ from those of language by their greater precision and their higher efficacy; they are none the less tied down to the general condition of the sign, which is to denote a fixed aspect of the reality under an arrested form. In order to think movement, a constantly renewed effort of the mind



is necessary. Signs are made to dispense us with this effort by substituting, for the moving continuity of things, an artificial reconstruction which is its equivalent in practice and has the advantage of being easily handled. But let us leave aside the means and consider only the end. What is the essential object of science? It is to enlarge our influence over things. Science may be speculative in its form, disinterested in its immediate ends: in other words we may give it as long a credit as it wants. But, however long the day of reckoning may be put off, some time or other the payment must be made. It is always then, in short, practical utility that science has in view. Even when it launches into theory, it is bound to adapt its behavior to the general form of practice. However high it may rise, it must be ready to fall back into the field of action, and at once to get on its feet. This would not be possible for it, if its rhythm differed absolutely from that of action itself. Now action, we have said, proceeds by leaps. To act is to re-adapt oneself. To know, that is to say, to foresee in order to act, is then to go from situation to situation, from arrangement to rearrangement. Science may consider rearrangements that come closer and closer to each other; it may thus increase the number of moments that it isolates, but it always isolates moments. As to what happens in the interval between the moments, science is no more concerned with that than are our common intelligence, our senses and our language: it does not bear on the interval, but only on the extremities. So the cinematographical method forces itself upon our science, as it did already on that of the ancients.

Wherein, then, is the difference between the two

sciences? We indicated it when we said that the ancients reduced the physical order to the vital order, that is to say, laws to genera, while the moderns try to resolve genera into laws. But we have to look at it in another aspect, which, moreover, is only a transposition, of the first. Wherein consists the difference of attitude of the two sciences toward change? We may formulate it by saying that *ancient science thinks it knows its object sufficiently when it has noted of it some privileged moments, whereas modern science considers the object at any moment whatever.*

The forms or ideas of Plato or of Aristotle correspond to privileged or salient moments in the history of things—those, in general, that have been fixed by language. They are supposed, like the childhood or the old age of a living being, to characterize a period of which they express the quintessence, all the rest of this period being filled by the passage, of no interest in itself, from one form to another form. Take, for instance, a falling body. It was thought that we got near enough to the fact when we characterized it as a whole: it was a movement *downward*; it was the tendency toward a *center*; it was the *natural* movement of a body which, separated from the earth to which it belonged, was now going to find its place again. They noted, then, the final term or culminating point (τέλος, ἀκμή) and set it up as the essential moment: this moment, that language has retained in order to express the whole of the fact, sufficed also for science to characterize it. In the physics of Aristotle, it is by the concepts “high” and “low,” spontaneous displacement and forced displacement, own place and strange place, that the movement of a body shot into

space or falling freely is defined. But Galileo thought there was no essential moment, no privileged instant. To study the falling body is to consider it at it matters not what moment in its course. The true science of gravity is that which will determine, for any moment of time whatever, the position of the body in space. For this, indeed, signs far more precise than those of language are required.

We may say, then, that our physics differs from that of the ancients chiefly in the indefinite breaking up of time. For the ancients, time comprised as many undivided periods as our natural perception and our language cut out in it successive facts, each presenting a kind of individuality. For that reason, each of these facts admits, in their view, of only a *total* definition or description. If, in describing it, we are led to distinguish phases in it, we have several facts instead of a single one, several undivided periods instead of a single period; but time is always supposed to be divided into determinate periods, and the mode of division to be forced on the mind by apparent crises of the real, comparable to that of puberty, by the apparent release of a new form.—For a Kepler, or a Galileo, on the contrary, time is not divided objectively in one way or another by the matter that fills it. It has no natural articulations. We can, we ought to, divide it as we please. All moments count. None of them has the right to set itself up as a moment that represents or dominates the others. And, consequently, we know a change only when we are able to determine what it is about at any one of its moments.

The difference is profound. In fact, in a certain aspect it is radical. But, from the point of view from which

we are regarding it, it is a difference of degree rather than of kind. The human mind has passed from the first kind of knowledge to the second through gradual perfecting, simply by seeking a higher precision. There is the same relation between these two sciences as between the noting of the phases of a movement by the eye and the much more complete recording of these phases by instantaneous photography. It is the same cinematographical mechanism in both cases, but it reaches a precision in the second that it cannot have in the first. Of the gallop of a horse our eye perceives chiefly a characteristic, essential or rather schematic attitude, a form that appears to radiate over a whole period and so fill up a time of gallop. It is this attitude that sculpture has fixed on the frieze of the Parthenon. But instantaneous photography isolates any moment; it puts them all in the same rank, and thus the gallop of a horse spreads out for it into as many successive attitudes as it wishes, instead of massing itself into a single attitude, which is supposed to flash out in a privileged moment and to illuminate a whole period.

From this original difference flow all the others. A science that considers, one after the other, undivided periods of duration, sees nothing but phases succeeding phases, forms replacing forms; it is content with a *qualitative* description of objects, which it likens to organized beings. But when we seek to know what happens within one of these periods, at any moment of time, we are aiming at something entirely different. The changes which are produced from one moment to another are no longer, by the hypothesis, changes of quality; they are *quantitative* variations, it may be of the phenomenon itself, it

may be of its elementary parts. We were right then to say that modern science is distinguishable from the ancient in that it applies to magnitudes and proposes first and foremost to measure them. The ancients did indeed try experiments, and on the other hand Kepler tried no experiment, in the proper sense of the word, in order to discover a law which is the very type of scientific knowledge as we understand it. What distinguishes modern science is not that it is experimental, but that it experiments and, more generally, works only with a view to measure.

For that reason it is right, again, to say that ancient science applied to *concepts*, while modern science seeks *laws*—constant relations between variable magnitudes. The concept of circularity was sufficient to Aristotle to define the movement of the heavenly bodies. But, even with the more accurate concept of elliptical form, Kepler did not think he had accounted for the movement of planets. He had to get a law, that is to say, a constant relation between the quantitative variations of two or several elements of the planetary movement.

Yet these are only consequences—differences that follow from the fundamental difference. It did happen to the ancients accidentally to experiment with a view to measuring, as also to discover a law expressing a constant relation between magnitudes. The principle of Archimedes is a true experimental law. It takes into account three variable magnitudes: the volume of a body, the density of the liquid in which the body is immersed, the vertical pressure that is being exerted. And it states indeed that one of these three terms is a function of the other two.

The essential, original difference must therefore be sought elsewhere. It is the same that we noticed first. The science of the ancients is static. Either it considers in block the change that it studies, or, if it divides the change into periods, it makes of each of these periods a block in its turn: which amounts to saying that it takes no account of time. But modern science has been built up around the discoveries of Galileo and of Kepler, which immediately furnished it with a model. Now, what do the laws of Kepler say? They lay down a relation between the areas described by the heliocentric radius-vector of a planet and the *time* employed in describing them, a relation between the longer axis of the orbit and the *time* taken up by the course. And what was the principle discovered by Galileo? A law which connected the space traversed by a falling body with the *time* occupied by the fall. Furthermore, in what did the first of the great transformations of geometry in modern times consist, if not in introducing—in a veiled form, it is true—time and movement even in the consideration of figures? For the ancients, geometry was a purely static science. Figures were given to it at once, completely finished, like the Platonic Ideas. But the essence of the Cartesian geometry (although Descartes did not give it this form) was to regard every plane curve as described by the movement of a point on a movable straight line which is displaced, parallel to itself, along the axis of the abscissae—the displacement of the movable straight line being supposed to be uniform and the abscissa thus becoming representative of the time. The curve is then defined if we can state the relation connecting the space traversed on the movable straight line to the time employed in

traversing it, that is, if we are able to indicate the position of the movable point, on the straight line which it traverses, at any moment whatever of its course. This relation is just what we call the equation of the curve. To substitute an equation for a figure consists, therefore, in seeing the actual position of the moving points in the tracing of the curve at any moment whatever, instead of regarding this tracing all at once, gathered up in the unique moment when the curve has reached its finished state.

Such, then, was the directing idea of the reform by which both the science of nature and mathematics, which serves as its instrument, were renewed. Modern science is the daughter of astronomy; it has come down from heaven to earth along the inclined plane of Galileo, for it is through Galileo that Newton and his successors are connected with Kepler. Now, how did the astronomical problem present itself to Kepler? The question was, knowing the respective positions of the planets at a given moment, how to calculate their positions at any other moment. So the same question presented itself, henceforth, for every material system. Each material point became a rudimentary planet, and the main question, the ideal problem whose solution would yield the key to all the others was, the positions of these elements at a particular moment being given, how to determine their relative positions at any moment. No doubt the problem cannot be put in these precise terms except in very simple cases, for a schematized reality; for we never know the respective positions of the real elements of matter, supposing there are real elements; and, even if we knew them at a given moment, the calculation of their posi-

tions at another moment would generally require a mathematical effort surpassing human powers. But it is enough for us to know that these elements might be known, that their present positions might be noted, and that a superhuman intellect might, by submitting these data to mathematical operations, determine the positions of the elements at any other moment of time. This conviction is at the bottom of the questions we put to ourselves on the subject of nature, and of the methods we employ to solve them. That is why every law in static form seems to us as a provisional instalment or as a particular view of a dynamic law which alone would give us whole and definitive knowledge.

Let us conclude, then, that our science is not only distinguished from ancient science in this, that it seeks laws, nor even in this, that its laws set forth relations between magnitudes: we must add that the magnitude to which we wish to be able to relate all others is time, and that *modern science must be defined pre-eminently by its aspiration to take time as an independent variable*. But with what time has it to do?

We have said before, and we cannot repeat too often, that the science of matter proceeds like ordinary knowledge. It perfects this knowledge, increases its precision and its scope, but it works in the same direction and puts the same mechanism into play. If, therefore, ordinary knowledge, by reason of the cinematographical mechanism to which it is subjected, forbears to follow becoming in so far as becoming is moving, the science of matter renounces it equally. No doubt, it distinguishes as great a number of moments as we wish in the interval of time it considers. However small the intervals may be at which



it stops, it authorizes us to divide them again if necessary. In contrast with ancient science, which stopped at certain so-called essential moments, it is occupied indifferently with any moment whatever. But it always considers moments, always virtual stopping-places, always, in short, immobilities. Which amounts to saying that real time, regarded as a flux, or, in other words, as the very mobility of being, escapes the hold of scientific knowledge. We have already tried to establish this point in a former work. We alluded to it again in the first chapter of this book. But it is necessary to revert to it once more, in order to clear up misunderstandings.

When positive science speaks of time, what it refers to is the movement of a certain mobile  $T$  on its trajectory. This movement has been chosen by it as representative of time, and it is, by definition, uniform. Let us call  $T_1, T_2, T_3, \dots$  etc., points which divide the trajectory of the mobile into equal parts from its origin  $T_0$ . We shall say that 1, 2, 3, . . . units of time have flowed past, when the mobile is at the points  $T_1, T_2, T_3, \dots$  of the line it traverses. Accordingly, to consider the state of the universe at the end of a certain time  $t$ , is to examine where it will be when  $T$  is at the point  $T_t$  of its course. But of the *flux* itself of time, still less of its effect on consciousness, there is here no question; for there enter into the calculation only the points  $T_1, T_2, T_3, \dots$  taken on the flux, never the flux itself. We may narrow the time considered as much as we will, that is, break up at will the interval between two consecutive divisions  $T_n$  and  $T_{n+1}$ ; but it is always with points, and with points only, that we are dealing. What we retain of the movement of the mobile  $T$  are positions taken on its trajectory. What

we retain of all the other points of the universe are their positions on their respective trajectories. To each *virtual stop* of the moving body T at the points of division  $T_1$ ,  $T_2$ ,  $T_3$ , . . . we make correspond a *virtual stop* of all the other mobiles at the points where they are passing. And when we say that a movement or any other change has occupied a time  $t$ , we mean by it that we have noted a number  $t$  of correspondences of this kind. We have therefore counted simultaneities; we have not concerned ourselves with the flux that goes from one to another. The proof of this is that I can, at discretion, vary the rapidity of the flux of the universe in regard to a consciousness that is independent of it and that would perceive the variation by the quite qualitative *feeling* that it would have of it: whatever the variation had been, since the movement of T would participate in this variation, I should have nothing to change in my equations nor in the numbers that figure in them.

Let us go further. Suppose that the rapidity of the flux becomes infinite. Imagine, as we said in the first pages of this book, that the trajectory of the mobile T is given at once, and that the whole history, past, present and future, of the material universe is spread out instantaneously in space. The same mathematical correspondences will subsist between the moments of the history of the world unfolded like a fan, so to speak, and the divisions  $T_1$ ,  $T_2$ ,  $T_3$ , . . . of the line which will be called, by definition, "the course of time." In the eyes of science nothing will have changed. But if, time thus spreading itself out in space and succession becoming juxtaposition, science has nothing to change in what it tells us, we must conclude that, in what it tells us, it takes account

neither of *succession* in what of it is specific nor of *time* in what there is in it that is fluent. It has no sign to express what strikes our consciousness in succession and duration. It no more applies to becoming, so far as that is moving, than the bridges thrown here and there across the stream follow the water that flows under their arches.

Yet succession exists; I am conscious of it; it is a fact. When a physical process is going on before my eyes, my perception and my inclination have nothing to do with accelerating or retarding it. What is important to the physicist is the *number* of units of duration the process fills; he does not concern himself about the units themselves and that is why the successive states of the world might be spread out all at once in space without his having to change anything in his science or to cease talking about time. But for us, conscious beings, it is the units that matter, for we do not count extremities of intervals, we feel and live the intervals themselves. Now, we are conscious of these intervals as of *definite* intervals. Let me come back again to the sugar in my glass of water:<sup>1</sup> why must I wait for it to melt? While the duration of the phenomenon is *relative* for the physicist, since it is reduced to a certain number of units of time and the units themselves are indifferent, this duration is an *absolute* for my consciousness, for it coincides with a certain degree of impatience which is rigorously determined. Whence comes this determination? What is it that obliges me to wait, and to wait for a certain length of psychical duration which is forced upon me, over which I have no power? If succession, in so far as distinct from mere juxtaposition, has no real efficacy, if time is not a

<sup>1</sup> See page 12.

kind of force, why does the universe unfold its successive states with a velocity which, in regard to my consciousness, is a veritable absolute? Why with this particular velocity rather than any other? Why not with an infinite velocity? Why, in other words, is not everything given at once, as on the film of the cinematograph? The more I consider this point, the more it seems to me that, if the future is bound to *succeed* the present instead of being given alongside of it, it is because the future is not altogether determined at the present moment, and that if the time taken up by this succession is something other than a number, if it has for the consciousness that is installed in it absolute value and reality, it is because there is unceasingly being created in it, not indeed in any such artificially isolated system as a glass of sugared water, but in the concrete whole of which every such system forms part, something unforeseeable and new. This duration may not be the fact of matter itself, but that of the life which reascends the course of matter; the two movements are none the less mutually dependent upon each other. *The duration of the universe must therefore be one with the latitude of creation which can find place in it.*

When a child plays at reconstructing a picture by putting together the separate pieces in a puzzle game, the more he practices, the more and more quickly he succeeds. The reconstruction was, moreover, instantaneous, the child found it ready-made, when he opened the box on leaving the shop. The operation, therefore, does not require a definite time, and indeed, theoretically, it does not require any time. That is because the result is given. It is because the picture is already created, and because

to obtain it requires only a work of recomposing and re-arranging—a work that can be supposed going faster and faster, and even infinitely fast, up to the point of being instantaneous. But, to the artist who creates a picture by drawing it from the depths of his soul, time is no longer an accessory; it is not an interval that may be lengthened or shortened without the content being altered. The duration of his work is part and parcel of his work. To contract or to dilate it would be to modify both the psychical evolution that fills it and the invention which is its goal. The time taken up by the invention is one with the invention itself. It is the progress of a thought which is changing in the degree and measure that it is taking form. It is a vital process, something like the ripening of an idea.

The painter is before his canvas, the colors are on the palette, the model is sitting—all this we see, and also we know the painter's style: do we foresee what will appear on the canvas? We possess the elements of the problem; we know in an abstract way, how it will be solved, for the portrait will surely resemble the model and will surely resemble also the artist; but the concrete solution brings with it that unforeseeable nothing which is everything in a work of art. And it is this nothing that takes time. Nought as matter, it creates itself as form. The sprouting and flowering of this form are stretched out on an unshrinkable duration, which is one with their essence. So of the works of nature. Their novelty arises from an internal impetus which is progress or succession, which confers on succession a peculiar virtue or which owes to succession the whole of its virtue—which, at any rate, makes succession, or *continuity of interpenetration in*

time, irreducible to a mere instantaneous juxtaposition in space. This is why the idea of reading in a present state of the material universe the future of living forms, and of unfolding now their history yet to come, involves a veritable absurdity. But this absurdity is difficult to bring out, because our memory is accustomed to place alongside of each other, in an ideal space, the terms it perceives in turn, because it always represents *past* succession in the form of juxtaposition. It is able to do so, indeed, just because the past belongs to that which is already invented, to the dead, and no longer to creation and to life. Then, as the succession to come will end by being a succession past, we persuade ourselves that the duration to come admits of the same treatment as past duration, that it is, even now, unrollable, that the future is there, rolled up, already painted on the canvas. An illusion, no doubt, but an illusion that is natural, ineradicable, and that will last as long as the human mind!

*Time is invention or it is nothing at all.* But of time-invention physics can take no account, restricted as it is to the cinematographical method. It is limited to counting simultaneities between the events that make up this time and the positions of the mobile T on its trajectory. It detaches these events from the whole, which at every moment puts on a new form and which communicates to them something of its novelty. It considers them in the abstract, such as they would be outside of the living whole, that is to say, in a time unrolled in space. It retains only the events or systems of events that can be thus isolated without being made to undergo too profound a deformation, because only these lend themselves to the application of its method. Our physics dates from

the day when it was known how to isolate such systems. To sum up, *while modern physics is distinguished from ancient physics by the fact that it considers any moment of time whatever, it rests altogether on a substitution of time-length for time-invention.*

It seems then that, parallel to this physics, a second kind of knowledge ought to have grown up, which could have retained what physics allowed to escape. On the flux itself of duration science neither would nor could lay hold, bound as it was to the cinematographical method. This second kind of knowledge would have set the cinematographical method aside. It would have called upon the mind to renounce its most cherished habits. It is within becoming that it would have transported us by an effort of sympathy. We should no longer be asking where a moving body will be, what shape a system will take, through what state a change will pass at a given moment: the moments of time, which are only arrests of our attention, would no longer exist; it is the flow of time, it is the very flux of the real that we should be trying to follow. The first kind of knowledge has the advantage of enabling us to foresee the future and of making us in some measure masters of events; in return, it retains of the moving reality only eventual immobilities, that is to say, views taken of it by our mind. It symbolizes the real and transposes it into the human rather than expresses it. The other knowledge, if it is possible, is practically useless, it will not extend our empire over nature, it will even go against certain natural aspirations of the intellect; but, if it succeeds, it is reality itself that it will hold in a firm and final embrace. Not only may we thus com-

plete the intellect and its knowledge of matter by accustoming it to install itself within the moving, but by developing also another faculty, complementary to the intellect, we may open a perspective on the other half of the real. For, as soon as we are confronted with true duration, we see that it means creation, and that if that which is being unmade endures, it can only be because it is inseparably bound to what is making itself. Thus will appear the necessity of a continual growth of the universe, I should say of a *life* of the real. And thus will be seen in a new light the life which we find on the surface of our planet, a life directed the same way as that of the universe, and inverse of materiality. To intellect, in short, there will be added intuition.

The more we reflect on it, the more we shall find that this conception of metaphysics is that which modern science suggests.

For the ancients, indeed, time is theoretically negligible, because the duration of a thing only manifests the degradation of its essence: it is with this motionless essence that science has to deal. Change being only the effort of a form toward its own realization, the realization is all that it concerns us to know. No doubt the realization is never complete: it is this that ancient philosophy expresses by saying that we do not perceive form without matter. But if we consider the changing object at a certain essential moment, at its apogee, we may say that there it just touches its intelligible form. This intelligible form, this ideal and, so to speak, limiting form, our science seizes upon. And possessing in this the gold-piece, it holds eminently the small money which we call becoming



or change. This change is less than being. The knowledge that would take it for object, supposing such knowledge were possible, would be less than science.

But, for a science that places all the moments of time in the same rank, that admits no essential moment, no culminating point, no apogee, change is no longer a diminution of essence, duration is not a dilution of eternity. The flux of time is the reality itself, and the things which we study are the things which flow. It is true that of this flowing reality we are limited to taking instantaneous views. But, just because of this, scientific knowledge must appeal to another knowledge to complete it. While the ancient conception of scientific knowledge ended in making time a degradation, and change the diminution of a form given from all eternity—on the contrary, by following the new conception to the end, we should come to see in time a progressive growth of the absolute, and in the evolution of things a continual invention of forms ever new.

It is true that it would be to break with the metaphysics of the ancients. They saw only one way of knowing definitely. Their science consisted in a scattered and fragmentary metaphysics, their metaphysics in a concentrated and systematic science. Their science and metaphysics were, at most, two species of one and the same genus. In our hypothesis, on the contrary, science and metaphysics are two opposed although complementary ways of knowing, the first retaining only moments, that is to say, that which does not endure, the second bearing on duration itself. Now, it was natural to hesitate between so novel a conception of metaphysics and the traditional conception. The temptation must have been

strong to repeat with the new science what had been tried on the old, to suppose our scientific knowledge of nature completed at once, to unify it entirely, and to give to this unification, as the Greeks had already done, the name of metaphysics. So, beside the new way that philosophy might have prepared, the old remained open, that indeed which physics trod. And, as physics retained of time only what could as well be spread out all at once in space, the metaphysics that chose the same direction had necessarily to proceed as if time created and annihilated nothing, as if duration had no efficacy. Bound, like the physics of the moderns and the metaphysics of the ancients, to the cinematographical method, it ended with the conclusion, implicitly admitted at the start and immanent in the method itself: *All is given*.

That metaphysics hesitated at first between the two paths seems to us unquestionable. The indecision is visible in Cartesianism. On the one hand, Descartes affirms universal mechanism: from this point of view movement would be relative,<sup>1</sup> and, as time has just as much reality as movement, it would follow that past, present and future are given from all eternity. But, on the other hand (and that is why the philosopher has not gone to these extreme consequences), Descartes believes in the free will of man. He superposes on the determinism of physical phenomena the indeterminism of human actions, and, consequently, on time-length a time in which there is invention, creation, true succession. This duration he supports on a God who is unceasingly renewing the creative act, and who, being thus tangent to time and becoming, sustains them, communicates to them necessarily some-

<sup>1</sup> Descartes, *Principes*, ii. § 29.

thing of his absolute reality. When he places himself at this second point of view, Descartes speaks of movement, even spatial, as of an absolute.<sup>1</sup>

He therefore entered both roads one after the other, having resolved to follow neither of them to the end. The first would have led him to the denial of free will in man and of real will in God. It was the suppression of all efficient duration, the likening of the universe to a thing *given*, which a superhuman intelligence would embrace at once in a moment or in eternity. In following the second, on the contrary, he would have been led to all the consequences which the intuition of true duration implies. Creation would have appeared not simply as *continued*, but also as *continuous*. The universe, regarded as a whole, would really evolve. The future would no longer be determinable by the present; at most we might say that, once realized, it can be found again in its antecedents, as the sounds of a new language can be expressed with the letters of an old alphabet if we agree to enlarge the value of the letters and to attribute to them, retroactively, sounds which no combination of the old sounds could have produced beforehand. Finally, the mechanistic explanation might have remained universal in this, that it can indeed be extended to as many systems as we choose to cut out in the continuity of the universe; but mechanism would then have become a *method* rather than a *doctrine*. It would have expressed the fact that science must proceed after the cinematographical manner, that the function of science is to scan the rhythm of the flow of things and not to fit itself into that flow.--

<sup>1</sup> Descartes, *Principes*, ii. §§ 36 ff.

Such were the two opposite conceptions of metaphysics which were offered to philosophy.

It chose the first. The reason of this choice is undoubtedly the mind's tendency to follow the cinematographical method, a method so natural to our intellect, and so well adjusted also to the requirements of our science, that we must feel doubly sure of its speculative impotence to renounce it in metaphysics. But ancient philosophy also influenced the choice. Artists forever admirable, the Greeks created a type of suprasensible truth, as of sensible beauty, whose attraction is hard to resist. As soon as we incline to make metaphysics a systematization of science, we glide in the direction of Plato and of Aristotle. And, once in the zone of attraction in which the Greek philosophers moved, we are drawn along in their orbit.

Such was the case with Leibniz, as also with Spinoza. We are not blind to the treasures of originality their doctrines contain. Spinoza and Leibniz have poured into them the whole content of their souls, rich with the inventions of their genius and the acquisitions of modern thought. And there are in each of them, especially in Spinoza, flashes of intuition that break through the system. But if we leave out of the two doctrines what breathes life into them, if we retain the skeleton only, we have before us the very picture of Platonism and Aristotelianism seen through Cartesian mechanism. They present to us a systematization of the new physics, constructed on the model of the ancient metaphysics.

What, indeed, could the unification of physics be? The inspiring idea of that science was to isolate, within the universe, systems of material points such that, the posi-

tion of each of these points being known at a given moment, we could then calculate it for any moment whatever. As, moreover, the systems thus defined were the only ones on which the new science had hold, and as it could not be known beforehand whether a system satisfied or did not satisfy the desired condition, it was useful to proceed always and everywhere *as if* the condition was realized. There was in this a methodological rule, a very natural rule—so natural, indeed, that it was not even necessary to formulate it. For simple common sense tells us that when we are possessed of an effective instrument of research, and are ignorant of the limits of its applicability, we should act as if its applicability were unlimited; there will always be time to abate it. But the temptation must have been great for the philosopher to hypothesize this hope, or rather this impetus, of the new science, and to convert a general rule of method into a fundamental law of things. So he transported himself at once to the limit; he supposed physics to have become complete and to embrace the whole of the sensible world. The universe became a system of points, the position of which was rigorously determined at each instant by relation to the preceding instant and theoretically calculable for any moment whatever. The result, in short, was universal mechanism. But it was not enough to formulate this mechanism; what was required was to found it, to give the reason for it and prove its necessity. And the essential affirmation of mechanism being that of a reciprocal mathematical dependence of all the points of the universe, as also of all the moments of the universe, the reason of mechanism had to be discovered in the unity of a principle into which could be contracted all that is jux-

taped in space and successive in time. Hence, the whole of the real was supposed to be given at once. The reciprocal determination of the juxtaposed appearances in space was explained by the indivisibility of true being, and the inflexible determinism of successive phenomena in time simply expressed that the whole of being is given in the eternal.

The new philosophy was going, then, to be a recommencement, or rather a transposition, of the old. The ancient philosophy had taken each of the *concepts* into which a becoming is concentrated or which mark its apogee: it supposed them all known, and gathered them up into a single concept, form of forms, idea of ideas, like the God of Aristotle. The new philosophy was going to take each of the *laws* which condition a becoming in relation to others and which are as the permanent substrata of phenomena: it would suppose them all known, and would gather them up into a unity which also would express them eminently, but which, like the God of Aristotle and for the same reasons, must remain immutably shut up in itself.

True, this return to the ancient philosophy was not without great difficulties. When a Plato, an Aristotle, or a Plotinus melt all the concepts of their science into a single one, in so doing they embrace the whole of the real, for concepts are supposed to represent the things themselves, and to possess at least as much positive content. But a law, in general, expresses only a relation, and physical laws in particular express only *quantitative* relations between concrete things. So that if a modern philosopher works with the laws of the new science as the Greek philosopher did with the concepts of the ancient science,

if he makes all the conclusions of a physics supposed omniscient converge on a single point, he neglects what is concrete in the phenomena—the qualities perceived, the perceptions themselves. His synthesis comprises, it seems, only a fraction of reality. In fact, the first result of the new science was to cut the real into two halves, quantity and quality, the former being credited to the account of *bodies* and the latter to the account of *souls*. The ancients had raised no such barriers either between quality and quantity or between soul and body. For them, the mathematical concepts were concepts like the others, related to the others and fitting quite naturally into the hierarchy of the Ideas. Neither was the body then defined by geometrical extension, nor the soul by consciousness. If the  $\varphi\upsilon\chi\acute{\eta}$  of Aristotle, the entelechy of a living body, is less spiritual than our “soul,” it is because his  $\sigma\tilde{\omega}\mu\alpha$ , already impregnated with the Idea, is less corporeal than our “body.” The scission was not yet irremediable between the two terms. It has become so, and thence a metaphysic that aims at an abstract unity must resign itself either to comprehend in its synthesis only one half of the real, or to take advantage of the absolute heterogeneity of the two halves in order to consider one as a translation of the other. Different phrases will express different things if they belong to the same language, that is to say, if there is a certain relationship of sound between them. But if they belong to two different languages, they might, just because of their radical diversity of sound, express the same thing. So of quality and quantity, of soul and body. It is for having cut all connection between the two terms that philosophers have been led to establish between them a rigorous parallel-

ism, of which the ancients had not dreamed, to regard them as translations and not as inversions of each other; in short, to posit a fundamental identity as a substratum to their duality. The synthesis to which they rose thus became capable of embracing everything. A divine mechanism made the phenomena of thought to correspond to those of extension, each to each, qualities to quantities, souls to bodies.

It is this parallelism that we find both in Leibniz and in Spinoza—in different forms, it is true, because of the unequal importance which they attach to extension. With Spinoza, the two terms Thought and Extension are placed, in principle at least, in the same rank. They are, therefore, two translations of one and the same original, or, as Spinoza says, two attributes of one and the same substance, which we must call God. And these two translations, as also an infinity of others into languages which we know not, are called up and even forced into existence by the original, just as the essence of the circle is translated automatically, so to speak, both by a figure and by an equation. For Leibniz, on the contrary, extension is indeed still a translation, but it is thought that is the original, and thought might dispense with translation, the translation being made only for us. In positing God, we necessarily posit also all the possible views of God, that is to say, the monads. But we can always imagine that a view has been taken from a point of view, and it is natural for an imperfect mind like ours to class views, qualitatively different, according to the order and position of points of view, qualitatively identical, from which the views might have been taken. In reality the points of view do not exist, for there are only views, each given in



an indivisible block and representing in its own way the whole of reality, which is God. But we need to express the plurality of the views, that are *unlike* each other, by the multiplicity of the points of view that are *exterior* to each other; and we also need to symbolize the more or less close relationship between the views by the relative situation of the points of view to one another, their nearness or their distance, that is to say, by a magnitude. That is what Leibniz means when he says that space is the order of coexistents, that the perception of extension is a confused perception (that is to say, a perception relative to an imperfect mind), and that nothing exists but monads, expressing thereby that the real Whole has no parts, but is repeated to infinity, each time integrally (though diversely) within itself, and that all these repetitions are complementary to each other. In just the same way, the visible relief of an object is equivalent to the whole set of stereoscopic views taken of it from all points, so that, instead of seeing in the relief a juxtaposition of solid parts, we might quite as well look upon it as made of the *reciprocal complementarity* of these whole views, each given in block, each indivisible, each different from all the others and yet representative of the same thing. The Whole, that is to say, God, is this very relief for Leibniz, and the monads are these complementary plane views; for that reason he defines God as "the substance that has no point of view," or, again, as "the universal harmony," that is to say, the reciprocal complementarity of monads. In short, Leibniz differs from Spinoza in this, that he looks upon the universal mechanism as an aspect which reality takes for us, whereas,

Spinoza makes of it an aspect which reality takes for itself.

It is true that, after having concentrated in God the whole of the real, it became difficult for them to pass from God to things, from eternity to time. The difficulty was even much greater for these philosophers than an Aristotle or a Plotinus. The God of Aristotle, indeed, had been obtained by the compression and reciprocal compenetration of the Ideas that represent, in their finished state or in their culminating point, the changing things of the world. He was, therefore, transcendent to the world, and the duration of things was juxtaposed to His eternity, of which it was only a weakening. But in the principle to which we are led by the consideration of universal mechanism, and which must serve as its substratum, it is not concepts or *things*, but laws or *relations* that are condensed. Now, a relation does not exist separately. A law connects changing terms and is immanent in what it governs. The principle in which all these relations are ultimately summed up, and which is the basis of the unity of nature, cannot, therefore, be transcendent to sensible reality; it is immanent in it, and we must suppose that it is at once both in and out of time, gathered up in the unity of its substance and yet condemned to wind it off in an endless chain. Rather than formulate so appalling a contradiction, the philosophers were necessarily led to sacrifice the weaker of the two terms, and to regard the temporal aspect of things as a mere illusion. Leibniz says so in explicit terms, for he makes of time, as of space, a confused perception. While the multiplicity of his monads expresses only the diversity of

views taken of the whole, the history of an isolated monad seems to be hardly anything else than the manifold views that it can take of its own substance: so that time would consist in all the points of view that each monad can assume toward itself, as space consists in all the points of view that all monads can assume toward God. But the thought of Spinoza is much less clear, and this philosopher seems to have sought to establish, between eternity and that which has duration, the same difference as Aristotle made between essence and accidents: a most difficult undertaking, for the  $\upsilon\lambda\eta$  of Aristotle was no longer there to measure the distance and explain the passage from the essential to the accidental, Descartes having eliminated it forever. However that may be, the deeper we go into the Spinozistic conception of the "inadequate," as related to the "adequate," the more we feel ourselves moving in the direction of Aristotelianism—just as the Leibnizian monads, in proportion as they mark themselves out the more clearly, tend to approximate to the Intelligibles of Plotinus.<sup>1</sup> The natural trend of these two philosophies brings them back to the conclusions of the ancient philosophy.

To sum up, the resemblances of this new metaphysic to that of the ancients arise from the fact that both suppose ready-made—the former above the sensible, the latter within the sensible—a science one and complete, with which any reality that the sensible may contain is believed to coincide. *For both, reality as well as truth are*

<sup>1</sup> In a course of lectures on Plotinus, given at the Collège de France in 1897-1898, we tried to bring out these resemblances. They are numerous and impressive. The analogy is continued even in the formulae employed on each side.

*integrally given in eternity*. Both are opposed to the idea of a reality that creates itself gradually, that is, at bottom, to an absolute duration.

Now, it might easily be shown that the conclusions of this metaphysic, springing from science, have rebounded upon science itself, as it were, by ricochet. They penetrate the whole of our so-called empiricism. Physics and chemistry study only inert matter; biology, when it treats the living being physically and chemically, considers only the inert side of the living: hence the mechanistic explanations, in spite of their development, include only a small part of the real. To suppose *a priori* that the whole of the real is resolvable into elements of this kind, or at least that mechanism can give a complete translation of what happens in the world, is to pronounce for a certain metaphysic—the very metaphysic of which Spinoza and Leibniz have laid down the principles and drawn the consequences. Certainly, the psycho-physiologist who affirms the exact equivalence of the cerebral and the psychical state, who imagines the possibility, for some superhuman intellect, of reading in the brain what is going on in consciousness, believes himself very far from the metaphysicians of the seventeenth century, and very near to experience. Yet experience pure and simple tells us nothing of the kind. It shows us the interdependence of the mental and the physical, the necessity of a certain cerebral substratum for the psychical state—nothing more. From the fact that two things are mutually dependent, it does not follow that they are equivalent. Because a certain screw is necessary to a certain machine, because the machine works when the screw is

there and stops when the screw is taken away, we do not say that the screw is the equivalent of the machine. For correspondence to be equivalence, it would be necessary that to any part of the machine a definite part of the screw should correspond—as in a literal translation in which each chapter renders a chapter, each sentence a sentence, each word a word. Now, the relation of the brain to consciousness seems to be entirely different. Not only does the hypothesis of an equivalence between the psychical state and the cerebral state imply a downright absurdity, as we have tried to prove in a former essay,<sup>1</sup> but the facts, examined without prejudice, certainly seem to indicate that the relation of the psychical to the physical is just that of the machine to the screw. To speak of an equivalence between the two is simply to curtail, and make almost unintelligible, the Spinozistic or Leibnizian metaphysic. It is to accept this philosophy, such as it is, on the side of Extension, but to mutilate it on the side of Thought. With Spinoza, with Leibniz, we suppose the unifying synthesis of the phenomena of matter achieved, and everything in matter explained mechanically. But, for the conscious facts, we no longer push the synthesis to the end. We stop half-way. We suppose consciousness to be coextensive with a certain part of nature and not with all of it. We are thus led, sometimes to an “epiphenomenalism” that associates consciousness with certain particular vibrations and puts it here and there in the world in a sporadic state, and sometimes to a “monism” that scatters consciousness into as

<sup>1</sup>“Le Paralogisme psycho-physiologique” (*Revue de métaphysique et de morale*, Nov. 1904, pp. 895-908). Cf. *Matière et mémoire*, Paris, 1896, chap. i.

many tiny grains as there are atoms; but, in either case, it is to an incomplete Spinozism or to an incomplete Leibnizianism that we come back. Between this conception of nature and Cartesianism we find, moreover, intermediate historical stages. The medical philosophers of the eighteenth century, with their cramped Cartesianism, have had a great part in the genesis of the "epiphenomenalism" and "monism" of the present day.

These doctrines are thus found to fall short of the Kantian criticism. Certainly, the philosophy of Kant is also imbued with the belief in a science single and complete, embracing the whole of the real. Indeed, looked at from one aspect, it is only a continuation of the metaphysics of the moderns and a transposition of the ancient metaphysics. Spinoza and Leibniz had, following Aristotle, hypostatized in God the unity of knowledge. The Kantian criticism, on one side at least, consists in asking whether the whole of this hypothesis is necessary to modern science as it was to ancient science, or if part of the hypothesis is not sufficient. For the ancients, science applied to *concepts*, that is to say, to kinds of *things*. In compressing all concepts into one, they therefore necessarily arrived at a *being*, which we may call Thought, but which was rather thought-object than thought-subject. When Aristotle defined God the νοησεως νοησις, it is probably on νοησεως, and not on νοησις that he put the emphasis. God was the synthesis of all concepts, the idea of ideas. But modern science turns on laws, that is, on relations. Now, a relation is a bond established by a mind between two or more terms. A relation is nothing outside of the intellect that relates. The universe, therefore, can

only be a system of laws if phenomena have passed beforehand through the filter of an intellect. Of course, this intellect might be that of a being infinitely superior to man, who would found the materiality of things at the same time that he bound them together: such was the hypothesis of Leibniz and of Spinoza. But it is not necessary to go so far, and, for the effect we have here to obtain, the human intellect is enough: such is precisely the Kantian solution. Between the dogmatism of a Spinoza or a Leibniz and the criticism of Kant there is just the same distance as between "it may be maintained that—" and "it suffices that—." Kant stops this dogmatism on the incline that was making it slip too far toward the Greek metaphysics; he reduces to the strict minimum the hypothesis which is necessary in order to suppose the physics of Galileo indefinitely extensible. True, when he speaks of the human intellect, he means neither yours nor mine: the unity of nature comes indeed from the human understanding that unifies, but the unifying function that operates here is impersonal. It imparts itself to our individual consciousnesses, but it transcends them. It is much less than a substantial God; it is, however, a little more than the isolated work of a man or even than the collective work of humanity. It does not exactly lie within man; rather, man lies within it, as in an atmosphere of intellectuality which his consciousness breathes. It is, if we will, a *formal* God, something that in Kant is not yet divine, but which tends to become so. It became so, indeed, with Fichte. With Kant, however, its principal rôle was to give to the whole of our science a relative and *human* character, although of a humanity already somewhat deified. From this point of view, the

criticism of Kant consisted chiefly in limiting the dogmatism of his predecessors, accepting their conception of science and reducing to a minimum the metaphysic it implied.

But it is otherwise with the Kantian distinction between the matter of knowledge and its form. By regarding intelligence as pre-eminently a faculty of establishing relations, Kant attributed an extra-intellectual origin to the terms between which the relations are established. He affirmed, against his immediate predecessors that knowledge is not entirely resolvable into terms of intelligence. He brought back into philosophy—while modifying it and carrying it on to another plane—that essential element of the philosophy of Descartes which had been abandoned by the Cartesians.

Thereby he prepared the way for a new philosophy which might have established itself in the extra-intellectual matter of knowledge by a higher effort of intuition. Coinciding with this matter, adopting the same rhythm and the same movement, might not consciousness, by two efforts of opposite direction, raising itself and lowering itself by turns, become able to grasp from within, and no longer perceive only from without, the two forms of reality, body and mind? Would not this twofold effort make us, as far as that is possible, re-live the absolute? Moreover, as, in the course of this operation, we should see intellect spring up of itself, cut itself out in the whole of mind, intellectual knowledge would then appear as it is, limited, but not relative.

Such was the direction that Kantianism might have pointed out to a revived Cartesianism. But in this direction Kant himself did not go.



He *would* not, because, while assigning to knowledge an extra-intellectual matter, he believed this matter to be either coextensive with intellect or less extensive than intellect. Therefore he could not dream of cutting out intellect in it, nor, consequently, of tracing the genesis of the understanding and its categories. The molds of the understanding and the understanding itself had to be accepted as they are, already made. Between the matter presented to our intellect and this intellect itself there was no relationship. The agreement between the two was due to the fact that intellect imposed its form on matter. So that not only was it necessary to posit the intellectual form of knowledge as a kind of absolute and give up the quest of its genesis, but the very matter of this knowledge seemed too ground down by the intellect for us to be able to hope to get it back in its original purity. It was not the "thing-in-itself," it was only the refraction of it through our atmosphere.

If now we inquire why Kant did not believe that the matter of our knowledge extends beyond its form, this is what we find. The criticism of our knowledge of nature that was instituted by Kant consisted in ascertaining what our mind must be and what Nature must be *if* the claims of our science are justified; but of these claims themselves Kant has not made the criticism. I mean that he took for granted the idea of a science that is one, capable of binding with the same force all the parts of what is given, and of co-ordinating them into a system presenting on all sides an equal solidity. He did not consider, in his *Critique of Pure Reason*, that science became less and less objective, more and more symbolical, to the extent that it went from the physical to the vital, from the

vital to the psychical. Experience does not move, to his view, in two different and perhaps opposite ways, the one conformable to the direction of the intellect, the other contrary to it. There is, for him, only *one* experience, and the intellect covers its whole ground. This is what Kant expresses by saying that all our intuitions are sensuous, or, in other words, infra-intellectual. And this would have to be admitted, indeed, if our science presented in all its parts an equal objectivity. But suppose, on the contrary, that science is less and less objective, more and more symbolical, as it goes from the physical to the psychical, passing through the vital: then, as it is indeed necessary to perceive a thing somehow in order to symbolize it, there would be an intuition of the psychical, and more generally of the vital, which the intellect would transpose and translate, no doubt, but which would none the less transcend the intellect. There would be, in other words, a supra-intellectual intuition. If this intuition exists, a taking possession of the spirit by itself is possible, and no longer only a knowledge that is external and phenomenal. What is more, if we have an intuition of this kind (I mean an ultra-intellectual intuition) then sensuous intuition is likely to be in continuity with it through certain intermediaries, as the infra-red is continuous with the ultra-violet. Sensuous intuition itself, therefore, is promoted. It will no longer attain only the phantom of an unattainable thing-in-itself. It is (provided we bring to it certain indispensable corrections) into the absolute itself that it will introduce us. So long as it was regarded as the only material of our science, it reflected back on all science something of the relativity which strikes a scientific knowledge of spirit; and thus

the perception of bodies, which is the beginning of the science of bodies, seemed itself to be relative. Relative, therefore, seemed to be sensuous intuition. But this is not the case if distinctions are made between the different sciences, and if the scientific knowledge of the spiritual (and also, consequently, of the vital) be regarded as the more or less artificial extension of a certain manner of knowing which, applied to bodies, is not at all symbolical. Let us go further: if there are thus two intuitions of different order (the second being obtained by a reversal of the direction of the first), and if it is toward the second that the intellect naturally inclines, there is no essential difference between the intellect and this intuition itself. The barriers between the matter of sensible knowledge and its form are lowered, as also between the "pure forms" of sensibility and the categories of the understanding. The matter and form of intellectual knowledge (restricted to its own object) are seen to be engendering each other by a reciprocal adaptation, intellect modeling itself on corporeity, and corporeity on intellect.

But this duality of intuition Kant neither would nor could admit. It would have been necessary, in order to admit it, to regard duration as the very stuff of reality, and consequently to distinguish between the substantial duration of things and time spread out in space. It would have been necessary to regard space itself, and the geometry which is immanent in space, as an ideal limit in the direction of which material things develop, but which they do not actually attain. Nothing could be more contrary to the letter, and perhaps also to the spirit, of the *Critique of Pure Reason*. No doubt, knowledge is presented to us in it as an ever-open roll, experience as a

push of facts that is forever going on. But, according to Kant, these facts are spread out on one plane as fast as they arise; they are external to each other and external to the mind. Of a knowledge from within, that could grasp them in their springing forth instead of taking them already sprung, that would dig beneath space and spatialized time, there is never any question. Yet it is indeed beneath this plane that our consciousness places us; there flows true duration.

In this respect, also, Kant is very near his predecessors. Between the non-temporal, and the time that is spread out in distinct moments, he admits no mean. And as there is indeed no intuition that carries us into the non-temporal, all intuition is thus found to be sensuous, by definition. But between physical existence, which is spread out in space, and non-temporal existence, which can only be a conceptual and logical existence like that of which metaphysical dogmatism speaks, is there not room for consciousness and for life? There is, unquestionably. We perceive it when we place ourselves in duration in order to go from that duration to moments, instead of starting from moments in order to bind them again and to construct duration.

Yet it was to a non-temporal intuition that the immediate successors of Kant turned, in order to escape from the Kantian relativism. Certainly, the ideas of becoming, of progress, of evolution, seem to occupy a large place in their philosophy. But does duration really play a part in it? Real duration is that in which each form flows out of previous forms, while adding to them something new, and is explained by them as much as it explains them; but to deduce this form directly from one

complete Being which it is supposed to manifest, is to return to Spinozism. It is, like Leibniz and Spinoza, to deny to duration all efficient action. The post-Kantian philosophy, severe as it may have been on the mechanistic theories, accepts from mechanism the idea of a science that is one and the same for all kinds of reality. And it is nearer to mechanism than it imagines; for though, in the consideration of matter, of life and of thought, it replaces the successive degrees of complexity, that mechanism supposed by degrees of the realization of an Idea or by degrees of the objectification of a Will, it still speaks of degrees, and these degrees are those of a scale which Being traverses in a single direction. In short, it makes out the same articulations in nature that mechanism does. Of mechanism it retains the whole design; it merely gives it a different coloring. But it is the design itself, or at least one half of the design, that needs to be remade.

If we are to do that, we must give up the method of *construction*, which was that of Kant's successors. We must appeal to experience—an experience purified, or, in other words, released, where necessary, from the molds that our intellect has formed in the degree and proportion of the progress of our action on things. An experience of this kind is not a non-temporal experience. It only seeks, beyond the spatialized time in which we believe we see continual rearrangements between the parts, that concrete duration in which a radical recasting of the whole is always going on. It follows the real in all its sinuosities. It does not lead us, like the method of construction, to higher and higher generalities—piled-up stories of a magnificent building. But then it leaves no

play between the explanations it suggests and the objects it has to explain. It is the detail of the real, and no longer only the whole in a lump, that it claims to illumine.

That the thought of the nineteenth century called for a philosophy of this kind, rescued from the arbitrary, capable of coming down to the detail of particular facts, is unquestionable. Unquestionably, also, it felt that this philosophy ought to establish itself in what we call concrete duration. The advent of the moral sciences, the progress of psychology, the growing importance of embryology among the biological sciences—all this was bound to suggest the idea of a reality which *endures* inwardly, which is duration itself. So, when a philosopher arose who announced a doctrine of evolution, in which the progress of matter toward perceptibility would be traced together with the advance of the mind toward rationality, in which the complication of correspondences between the external and the internal would be followed step by step, in which change would become the very substance of things—to him all eyes were turned. The powerful attraction that Spencerian evolutionism has exercised on contemporary thought is due to that very cause. However far Spencer may seem to be from Kant, however ignorant, indeed, he may have been of Kantianism, he felt, nevertheless, at his first contact with the biological sciences, the direction in which philosophy could continue to advance without laying itself open to the Kantian criticism.

But he had no sooner started to follow the path than he turned off short. He had promised to retrace a genesis, and, lo! he was doing something entirely different. His

doctrine bore indeed the name of evolutionism; it claimed to remount and redescend the course of the universal becoming; but, in fact, it dealt neither with becoming nor with evolution.

We need not enter here into a profound examination of this philosophy. Let us say merely that *the usual device of the Spencerian method consists in reconstructing evolution with fragments of the evolved*. If I paste a picture on a card and then cut up the card into bits, I can reproduce the picture by rightly grouping again the small pieces. And a child who working thus with the pieces of a puzzle-picture, and putting together unformed fragments of the picture finally obtains a pretty colored design, no doubt imagines that he has *produced* design and color. Yet the act of drawing and painting has nothing to do with that of putting together the fragments of a picture already drawn and already painted. So, by combining together the most simple results of evolution, you may imitate well or ill the most complex effects; but of neither the simple nor the complex will you have retraced the genesis, and the addition of evolved to evolved will bear no resemblance whatever to the movement of evolution.

Such, however, is Spencer's illusion. He takes reality in its present form; he breaks it to pieces, he scatters it in fragments which he throws to the winds; then he "integrates" these fragments and "dissipates their movement." Having *imitated* the Whole by a work of mosaic, he imagines he has retraced the design of it, and made the genesis.

Is it matter that is in question? The diffused elements which he integrates into visible and tangible bodies have

all the air of being the very particles of the simple bodies, which he first supposes disseminated throughout space. They are, at any rate, "material points," and consequently unvarying points, veritable little solids: as if solidity, being what is nearest and handiest to us, could be found at the very origin of materiality! The more physics progresses, the more it shows the impossibility of representing the properties of ether or of electricity—the probable base of all bodies—on the model of the properties of the matter which we perceive. But philosophy goes back further even than the ether, a mere schematic figure of the relations between phenomena apprehended by our senses. It knows indeed that what is visible and tangible in things represents our possible action on them. It is not by dividing the evolved that we shall reach the principle of that which evolves. It is not by recomposing the evolved with itself that we shall reproduce the evolution of which it is the term.

Is it the question of mind? By compounding the reflex with the reflex, Spencer thinks he generates instinct and rational volition one after the other. He fails to see that the specialized reflex, being a terminal point of evolution just as much as perfect will, cannot be supposed at the start. That the first of the two terms should have reached its final form before the other is probable enough; but both the one and the other are *deposits* of the evolution movement, and the evolution movement itself can no more be expressed as a function solely of the first than solely of the second. We must begin by mixing the reflex and the voluntary. We must then go in quest of the fluid reality which has been precipitated in this twofold form. and which probably shares in both without being either.



At the lowest degree of the animal scale, in living beings that are but an undifferentiated protoplasmic mass, the reaction to stimulus does not yet call into play one definite mechanism, as in the reflex; it has not yet choice among several definite mechanisms, as in the voluntary act; it is, then, neither voluntary nor reflex, though it heralds both. We experience in ourselves something of this true original activity when we perform semi-voluntary and semi-automatic movements to escape a pressing danger. And yet this is but a very imperfect imitation of the primitive character, for we are concerned here with a mixture of two activities already formed, already localized in a brain and in a spinal cord, whereas the original activity was a simple thing, which became diversified through the very construction of mechanisms like those of the spinal cord and brain. But to all this Spencer shuts his eyes, because it is of the essence of his method to re-compose the consolidated with the consolidated, instead of going back to the gradual process of consolidation, which is evolution, itself.

Is it, finally, the question of the correspondence between mind and matter? Spencer is right in defining the intellect by this correspondence. He is right in regarding it as the end of an evolution. But when he comes to retrace this evolution, again he integrates the evolved with the evolved—failing to see that he is thus taking useless trouble, and that in positing the slightest fragment of the actually evolved he posits the whole—so that it is vain for him, then, to pretend to make the genesis of it.

For, according to him, the phenomena that succeed each other in nature project into the human mind images

which represent them. To the relations between phenomena, therefore, correspond symmetrically relations between the ideas. And the most general laws of nature, in which the relations between phenomena are condensed, are thus found to have engendered the directing principles of thought, into which the relations between ideas have been integrated. Nature, therefore, is reflected in mind. The intimate structure of our thought corresponds, piece by piece, to the very skeleton of things—I admit it willingly; but, in order that the human mind may be able to represent relations between phenomena, there must first be phenomena, that is to say, distinct facts, cut out in the continuity of becoming. And once we posit this particular mode of cutting up such as we perceive it today, we posit also the intellect such as it is today, for it is by relation to it, and to it alone, that reality is cut up in this manner. Is it probable that mammals and insects notice the same aspects of nature, trace in it the same divisions, articulate the whole in the same way? And yet the insect, so far as intelligent, has already something of our intellect. Each being cuts up the material world according to the lines that its action must follow: it is these lines of *possible action* that, by intercrossing, mark out the net of experience of which each mesh is a fact. No doubt, a town is composed exclusively of houses, and the streets of the town are only the intervals between the houses: so, we may say that nature contains only facts, and that, the facts once posited, the relations are simply the lines running between the facts. But, in a town, it is the gradual portioning of the ground into lots that has determined at once the place of the houses, their general shape, and the direction of the

streets: to this portioning we must go back if we wish to understand the particular mode of subdivision that causes each house to be where it is, each street to run as it does. Now, the cardinal error of Spencer is to take experience already allotted as given, whereas the true problem is to know how the allotment was worked. I agree that the laws of thought are only the integration of relations between facts. But, when I posit the facts with the shape they have for me today, I suppose my faculties of perception and intellection such as they are in me today; for it is they that portion the real into lots, they that cut the facts out in the whole of reality. Therefore, instead of saying that the relations between facts have generated the laws of thought, I can as well claim that it is the form of thought that has determined the shape of the facts perceived, and consequently their relations among themselves: the two ways of expressing oneself are equivalent; they say at bottom the same thing. With the second, it is true, we give up speaking of evolution. But, with the first, we only speak of it, we do not think of it any the more. For a true evolutionism would propose to discover by what *modus vivendi*, gradually obtained, the intellect has adopted its plan of structure, and matter its mode of subdivision. This structure and this subdivision work into each other; they are mutually complementary; they must have progressed one with the other. And, whether we posit the present structure of mind or the present subdivision of matter, in either case we remain in the evolved: we are told nothing of what evolves, nothing of evolution.

And yet it is this evolution that we must discover. Already, in the field of physics itself, the scientists who are

pushing the study of their science furthest incline to believe that we cannot reason about the parts as we reason about the whole; that the same principles are not applicable to the origin and to the end of a progress; that neither creation nor annihilation, for instance, is inadmissible when we are concerned with the constituent corpuscles of the atom. Thereby they tend to place themselves in the concrete duration, in which alone there is true generation and not only a composition of parts. It is true that the creation and annihilation of which they speak concern the movement or the energy, and not the imponderable medium through which the energy and the movement are supposed to circulate. But what can remain of matter when you take away everything that determines it, that is to say, just energy and movement themselves? The philosopher must go further than the scientist. Making a clean sweep of everything that is only an imaginative symbol, he will see the material world melt back into a simple flux, a continuity of flowing, a becoming. And he will thus be prepared to discover real duration there where it is still more useful to find it, in the realm of life and of consciousness. For, so far as inert matter is concerned, we may neglect the flowing without committing a serious error: matter, we have said, is weighted with geometry; and matter, the reality which *descends*, endures only by its connection with that which *ascends*. But life and consciousness are this very ascension. When once we have grasped them in their essence by adopting their movement, we understand how the rest of reality is derived from them. Evolution appears and, within this evolution, the progressive determination of materiality and intellectuality by the grad-

ual consolidation of the one and of the other. But, then, it is within the evolutionary movement that we place ourselves, in order to follow it to its present results, instead of recomposing these results artificially with fragments of themselves. Such seems to us to be the true function of philosophy. So understood, philosophy is not only the turning of the mind homeward, the coincidence of human consciousness with the living principle whence it emanates, a contact with the creative effort: it is the study of becoming in general, it is true evolutionism and consequently the true continuation of science—provided that we understand by this word a set of truths either experienced or demonstrated, and not a certain new scholasticism that has grown up during the latter half of the nineteenth century around the physics of Galileo, as the old scholasticism grew up around Aristotle.