Machines to Crystallize Time: Bergson

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1. Bergson and Duration-Time

1.1. My concern with the perception of time in post-Fordism has led me to the work of Henri Bergson, because it offers us a description of natural perception as a relation between flows of images, between different rhythms and 'durations'. This relation between flows is functionally guaranteed by the body, consciousness and memory, which operate as genuine interfaces, introducing a time of indeterminacy, elaboration and choice into the streaming of flows. I want to argue that video and information technologies function according to the same principle: they cut into the streaming of flows, producing an interval that allows for the specifically machinic organization of the relation between signifying and asignifying flows. The functional relation is guaranteed here by a technological assemblage.

In Bergson, the relation between flows is founded on both the 'capacity to act' and affective force. Thus Bergson allows us to rid ourselves of the various problematics concerned with the disappearance of the real and the visible, since he assures us that the real and the visible have always been a function of our 'capacity to act'. He allows us to pose the only reasonable question that can be addressed to these new technologies: *to what degree of power* [puissance], *to what capacity to act, do they correspond?*

Finally, Bergson shows us the multiplicity and heterogeneity of the elements and assemblages that constitute subjectivity and the 'higher activities' of the mind [*l'esprit*]; the solidarity and conflict between the movements of matter, of the body and of consciousness on the basis of time. By offering a different thinking of the genealogy of the faculties and the configuration of forces, he allows us to construct a critique of the concepts of intellectual labour and subjectivity.

In this article, I wish to consider the relation between Bergson and video. Video is in effect the first technology that corresponds to a generalized

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decoding of the flows of images, a decoding whose genesis is traced in Bergson's *Matter and Memory*.

1.2. Bergson forges a set of conceptual tools that let us grasp the specificity of the production of images in the capitalist age: to wit, the fact that images are automatically produced by technologies and thereby withdrawn from human activity. Not only does the production of images become automatic and therefore independent from man, it also introduces movement and duration as the chief components of its own ontology. Capitalism and its technologies introduce movement and time into images and vice-versa.[1] This theme is also present throughout the work of Walter Benjamin. In Bergson, however, the image/movement/time relation allows us to overcome the ambiguity latent in the Benjaminian concept of 'technical reproducibility', which wavers between the (industrial) 'mass reproduction' of the uniqueness of the artwork and exploration of the regimes of temporality proper to capitalism.

All of Bergson's work constitutes a sustained reflection on time and its force:

> I noticed, one fine day, that in all theory time serves no purpose, it does nothing. Yet, I said to myself, time is something. Therefore it acts. What can it do? Simple good sense responds: time is what prevents that everything be given at once. It delays, or rather it is delay. It must therefore be a kind of elaboration. Is it not then the vehicle of creation and choice? Does the existence of time not prove that there is indeterminacy in things? Isn't time itself this indeterminacy? (Bergson, 1991: 1333)

This stance completely reverses those theoretical positions (Virilio's, for instance) according to which it is the ('real') time of electronic technologies that prevents all delay, all intervals, all waiting, all indeterminacy. By increasing the possibility of retaining and conserving time, the technologies of time should serve to develop our power and our capacity to act. The time evoked by these theories is tantamount to a spatialization of time, conceived as the fourth dimension of space and not as duration, as non-chronological time. I shall use Bergson's work to the extent that it provides a definition of time as a 'continuous creation of unpredictable novelties'.

2. Habit and Memory

2.1. If Nam Jun Paik's statement that video 'imitates not nature but time' is true, then the technologies that I am concerned with should imitate the different contraction-syntheses of time. The operation of contraction-synthesis allows the conservation, accumulation and production of time under two different forms: habit and memory.

We should begin by distinguishing, in Deleuzean terms, a *material synthesis* (which contracts successive, independent and actual instants or elements) and a *spiritual synthesis* (which contracts levels of the past that

are all coexisting, virtual). The first operates on discontinuous material tremors ('light or heat', says Bergson) by constituting discontinuous durations and producing perception-images. The second operates on time (the virtual) by constituting continuous durations and producing memory-images.

Material and spiritual synthesis can thus be called kinds of memory. However, the first is strictly speaking a 'habit' rather than a memory. It conserves the past in the sensory-motor mechanisms of the body, which 'plays the past rather than representing it'. Only the second can truly be called memory, as it conserves the past in 'independent' remembrances [*souvenirs*] that intervene 'intelligently' rather than 'automatically' in the constitution of the image and the realization of an action. The material synthesis is therefore a form of 'automatic' or 'passive recognition', whereas the spiritual synthesis is a form of 'active' or 'intelligent recognition'.

Now for Bergson, intelligent or active recognition is 'consciousness',[2] and consciousness above all means memory. All consciousness is *conservation* and *accumulation* of the past in the present, retention of the before in the after, integration of 'the dead into the living'. We will emphasize two aspects of this capacity to conserve and accumulate time. First, memory is the creation of a *gap*, a *temporal interval* between the movements that are received and those that are carried out by each body. Second, within this gap there arises and develops *the force that acts and exploits this delay*, this moment of indeterminacy between action and reaction. *This force is simultaneously will and sensation*, *spontaneity and receptivity*, *memory and habit*.

Our reading of Bergson is unique in this regard, to the extent that it concentrates on the relation between force and time. In Bergson, consciousness-memory is a *capacity to act* and a *capacity to feel*, two inseparable yet distinct elements of the same force: 'Immanent to inner life, feeling rather than thinking it, but feeling it as a movement, a continuous encroachment on a future that incessantly withdraws' (Bergson, 1991: 926).

Bergsonian duration is force, and it acts like one because it produces the capacity to 'feel', to be affected. The first function of perception is precisely to grasp a series of elementary changes in the form of a quality or a simple state through a work of 'condensation' or 'synthesis'. 'In the smallest fraction of a second perceptible in the almost instantaneous perception of a sensible quality, trillions of oscillations may be repeated: the permanence of a sensible quality consists in this repetition of movements' (Bergson, 1991: 749).

The 'capacity to act' is directly linked to the capacity for synthesis, which, it should be emphasized, is not exclusively an anthropomorphic force:

> The greater the force to act, the more numerous, undoubtedly, are the elementary changes that the faculty of perception can concentrate in one of its instants. In nature this progress must be continuous, from the beings that vibrate almost in unison with ethereal oscillations to those that immobilise

> trillions of these oscillations in the briefest of their simple perceptions. (Bergson, 1991: 749)

But every 'memory' is also an anticipation of the future, an *action*. If, on one hand, memory is able to conserve, to accumulate, on the other it works as a force capable of affecting, of producing images and of acting. The conservation and accumulation of the past takes place in function not of 'what is' but of 'what will be'. The 'force to act' is always an 'encroachment on the future'. To retain what is no longer and to anticipate what is not yet: these are the functions of consciousness. In Bergson's work the 'before' and the 'after', the past and the present, should be interpreted not simply as successive determinations of time, but also as conditions of power, of affective force in the form of activity and passivity.

Thus, memory does indeed produce energy, whose nature must be sought in an 'extra-spatial' process, since we are dealing with affective energy: potent non-organic energy, as Deleuze defined it.

Thus, material and spiritual syntheses are the metamorphoses of this originary force that is immediately qualified by duration, both qua *receptivity* (to conserve the past in the present) and qua *spontaneity* (to tend towards the future, to act and to create). For Bergson, active and passive power is duration.

By retaining and accumulating duration, machines to crystallize time may help to develop or to neutralize the 'force to feel' and the 'force to act'; they may contribute to our 'becoming active' or to our being held in passivity.

2.2. Let us now return to the concept of material synthesis. Bergson distinguishes natural perception from pure perception. Natural perception is not privileged and should under no circumstances be the point of departure for apprehending the world. In effect, according to Bergson, our 'psychological representation' begins as something impersonal and will always maintain this basic exteriority. According to Bergson, everything becomes clearer if we begin from 'exteriority' and proceed towards the interior, whereas problems proliferate if we seek to go from the centre (the body and the subject) towards the periphery (exteriority).

It is therefore necessary to abolish 'consciousness' and to 'pass beyond the turn in our experience', which stretches a 'homogeneous space and time' over that which exists. Abolishing consciousness means ceasing to organize perception according to the necessity of our action.

> The material universe remains as it was, but since you have abstracted from the particular rhythm of duration that was the condition of my action on things, these things return to themselves and are articulated in as many moments as science is able to distinguish within them, and sensible qualities, without disappearing, are extended and dilated within an incomparably more divided duration. Matter is thus resolved into countless vibrations, all woven into an unbroken continuity, each united to all the others, running in all directions like so many shivers. (Bergson, 1991: 233–4)

The passage 'beyond the turn in our experience' establishes us in pure perception: the identity of matter, image and movement. The world is nothing but a vortex of images. There is nothing save for flows of images that encounter one another, collide, reflect, compose and decompose one another. In this dimension of forces, intensities, becomings ('condense the atom into a centre of force, dissolve it in vortices evolving in a continuous fluid'), the world is (a flow of) light. The world as image should be understood exactly in the sense of a streaming of flows of light, as an infinite variation of its 'pure tremors'.

The coexistence of all images, without centre, direction or orientation, should allow us to understand that here the image does not bear the form we habitually attribute to it. What is at stake is the image in itself, an image that no eye perceives. In fact, we are dealing with images and perceptions of things themselves.[3] The image, in pure perception, is nothing other than a centre of action that receives and transmits movements, in which action and reaction are merged. All the images act on and react to each other. And this action/reaction is accomplished not by a part specialized in this function (the eye, for example), but by all the elementary parts of the image at once. *The image is defined as tremor, pure vibration, shiver*. We are obviously dealing with a metaphor, since for us pure perception exists only *de jure*, and as Bergson suggests, this vision of matter is too 'tiring' for our imagination, and remains hidden from our understanding. We perceive only contractions of pure perception, never pure perception as such.

But what must be emphasized is not only that matter is identical to the image, to the perpetual variation of images, but that *it is also identical to time*.[4] Pure perception is thus defined by a series of equivalences: image = movement = light = matter = time. From this series of equivalences there will emerge remarkable points (bodies) which, through the intervals that define them, constitute sensation via material and spiritual syntheses.

Material synthesis operates on this matter which is a continuum of time-images, thereby producing perception:

> Perception seizes the infinitely repeated vibrations that are constituted by light or heat, for example, and contracts them into relatively invariable sensations: these are the trillions of exterior oscillations that the vision of colour condenses in our eyes, in a fraction of a second. (Bergson, 1991: 1334–5)

Memory (spiritual synthesis) is the capacity of 'binding' these independent instants together, to fit them into one another and to constitute them qua duration, qua rhythm. By means of this operation, consciousness both makes contact with matter and distinguishes itself from it. If this duration is abolished, the result will be an infinitely more divided, diluted duration. The image of pure perception is an infinitely dilated duration.

According to Bergson, the subject, the object and their form of perception and representation are compositions (contractions) of flows of images

(defined as pure tremors scanning an eternally recommencing present) that overflow them on all sides. Subject, object and perception do not produce images. On the contrary, they are contained in the flows of images.

Bergson's work directly interpellates our 'society of the image', because on the basis of time-matter and image-matter, it proposes a model of the constitution of subjectivity and of the world. Image-matter is not proposed here as a signifying or representing element, but as the true genetic element of the world. This implies a veritable torsion with respect to all analyses of the redoubling of the real and representation, the sensible and the intelligible. The novelty of this ontology resides in the fact that it never reduces perception to a redoubling of the real, since perception is not in us, but in things. Being and appearing coincide, but appearing is an appearing in itself that has no need for a perceiving subject.

I cannot help thinking that the matter treated by video machines has something of pure perception about it. As we shall see, a conception of perception as contraction of the 'infinitely repeated tremors constituted by light or heat' corresponds precisely to what video technology does.

2.3. Perception is born from pure perception and image-matter. In the perpetual and acentred variation of all images that constitutes pure perception, remarkable points are formed which, in reflecting the images, *select* a part of them, thereby determining *gaps*, *intervals* in the continuum of time-matter. These remarkable points are special images: they are bodies. As images, bodies do nothing but receive movements, select them and transform them into action, for the gap through which bodies are constituted introduces a time, an indeterminacy, a possibility of choice between action and reaction. The receptivity and spontaneity produced in this interval are no longer, as in pure perception, identical to one another. Man's body is distinguished from other bodies only by the more complex and elaborate form of its active reaction to an undergone action.

> In the ensemble of the material world, therefore, my body is an image that acts as other images do, receiving and returning movement, with the single difference, perhaps, that my body seems to choose, in a certain measure, the manner of returning what it receives. (Bergson, 1993: 14)

In pure perception, therefore, perception does not pass from one body to another, but – having been first disseminated across the ensemble of bodies – it limits itself little by little, adopting the body as centre. This action/reaction is accomplished – as the centre is rendered progressively more complex – by a specific, specialized part of the body: the eye and the brain, for example.

Leaping across millions of years, Bergson passes from the gap of the first infinitesimal body that constitutes itself in the primordial soup – a body whose pure perception can be considered a form of reconstitution – to the most advanced and complex expression of the gap or interval, namely the brain.

As a part of the body, the brain functions only as an interface, but an interface in which the interval between the movement received and the movement executed is maximal. Actions no longer follow immediately from the action undergone; rather, it is possible for them to be based on a selection (receptivity) of the latter, and to carry out a delayed action (spontaneity of new actions) on the basis of this delay, of the time gained by the development of the central nervous system. The more complex the latter, the greater the capacity to act.

In a highly significant manner, Bergson defines the brain, using the technological metaphors of his time, as a 'central telephone exchange'. Its role is to establish communication or to make communication wait. For Bergson, in other words, the brain works as an instrument of *analysis* with regard to the movement received and of *selection* with regard to the movement executed. The brain, then, does nothing else but *continue* or *transform* the streaming of flows of light. It is contained within universal variation, it does not create images, it does not add perception to things. Quite the contrary, its function is to *draw* and *retain* from image-matter what serves its own needs, what is necessary to its action. Our images, therefore, are not something *we add to the object*, but rather a *selection (a withdrawal) from matter*. Image and perception constitute a cut [*découpage*] into the continuous flow, an arrest of movement. In brief, the brain is *not* a creative centre of conscious perception and representation.

Images, therefore, are not produced by the brain. If the world is a flow of images, if perception is in things, then the 'cerebral state' is in the images and in perception, not the reverse. 'It is neither cause, nor effect, nor, in any sense, the duplicate: it simply continues perception, perception being our virtual action and the cerebral state our commanded action' (Bergson, 1993: 262).

The brain is just an interface, in the sense that it translates one speed into another, one movement into another; an interface that translates the infinite flow in accordance with the needs of our action. It is a 'commutator' (Bergson, 1991: 848) between different degrees of the real.

The video-camera is a 'body' plunged into the time-image, a body that creates its own interval, registering and crystallizing the perpetually varying flows of pure perception, and constructing an 'action' more or less delayed in relation to the actions undergone.

2.4. Coherent with his own plan of organization/constitution of the world, Bergson must determine the constitution of sensation starting with the pure perception that takes place in the gap determined by the body: 'The affection must, at a determinate moment, arise from the image' (Bergson, 1991: 203).

Bergson reverses the priority of sensation over perception. In effect, by reducing perception to a weakened sensation, psychology turns the material Universe into an association of our 'subjective states', since perception is then nothing more than an exteriorization of the internal states of

individual consciousness. Bergson proceeds differently. The body, itself image, is first of all a centre of 'perception and movement', a centre of perception of all other images and of action–reaction to the stimuli of all other images. According to Bergson, within the interval that constitutes the body, between perception and reaction, a third moment is interpolated which constitutes the affective state. As we have already indicated, these operations of perception and movement–reaction are produced by all the parts of the body-image. The amoeba provides a good example of this situation: 'Each part of the protoplasmic mass is therefore equally capable of receiving the stimulus and of reacting against it; perception and movement are merged here in a single property which is contractility' (Bergson, 1991: 203).

However, in as much as organisms evolve, parts of bodies, within the division of labour specific to them, give up the 'action' of response to the stimulus and conserve in the 'so-called sensitive fibres' a 'species of motor-tendency on a sensitive nerve'. The sensitive element is this 'relative immobility' of a very long succession of elementary vibrations on a nervous plate [*plaque*] which, instead of reacting immediately, absorbs them, allowing the introduction of a sensation between perception and reaction; allowing, in other words, the introduction of an indeterminacy, a delay, a possibility of choice. Sensation and affective force are the transformation of extensive movement into the intensive movement carried out by the body. 'The mobile has lost its movement of extension, and movement has become movement of expression. This ensemble of reflective immobile unity and of intense expressive movements constitutes affect' (Deleuze, 1983: 126).

The Bergsonian explanation of the passage from a perception that occupies extension to an affection deemed unextended is developed as follows: perception measures our possible action on things and, inversely, the possible action of things on us. Such action (for example, a threat) is defined as the virtual action of things on us. But the more the distance between the perceived object and our body decreases, the more virtual action tends to be transformed into real action:

> Pass now to the limit, suppose that the distance becomes nil, that the object of perception coincides with our body, which is to say, finally, that our body is the object to be perceived. Then it is no longer a virtual action but a real action that this very special perception will express: affection consists precisely in this. (Deleuze, 1983: 205)

The capacity to receive and to transmit movements and to *absorb these same movements by producing sensations* belongs to all living things. The difference is only a difference in bodies' capacity to act: 'the greater a body's power to act, the vaster the field embraced by perception' (Deleuze, 1983: 153). The temporality of bodies consists in a combined system of sensations and of movements. This present is, in its essence, a sensory-motor present.

It is crucial to this argument that affection arises from the time-image, because only in this way can it be explained how affective force

(Nietzschean 'pathos') and the indeterminacy of the power [*pouvoir*] to act are constituted.

2.5. Why, for us, does pure perception exist *de jure* rather than *de facto*? Because we can only understand pure perception as a limit case. In reality, perception is always already memory. We only perceive the past, says Bergson. One must therefore introduce memory and its capacity to interpolate the past into a sensory-motor mechanism that functions solely in the present, because *our body is not a mathematical point, but always a duration*.[5] Duration is not an ineffable subjective experience, but a precise and determinate function of our capacity to perceive and imagine: 'The duration lived by our consciousness is a duration with a determinate rhythm, very different from the time the physicist speaks of, which is capable of storing in a given interval as many phenomena as one wishes' (Bergson, 1991: 340). To interpolate time means to accumulate it, conserve it and introduce it into the present, in order to create an indeterminacy, a delay. It is this accumulation–conservation of time that allows us to act.

From the start, Bergson distinguishes two types of memory. A first memory is fixed in the body: 'a habit rather than a memory', says Bergson, or an 'automatic' or 'passive' recognition. Within this memory the past is conserved in the motor mechanisms of our organism. Strictly speaking, this memory is without image; it simply transforms movements received into movements executed. The second memory is a 'true memory' in which the past 'survives' in independent remembrances. We are dealing here with an attentive or intellectual recognition. We must remark immediately that, unlike the first, this memory is not installed in the body, but 'exists' in time.

If images, as we've just seen, are not produced by the brain, they are not stocked by it either. Memory, unlike the brain – which functions as an interface between movements – operates as the interface between the virtual and the actual. *Memory no longer continues movement, it continues duration*. Memory begins as automatic recognition, which is to say through movements, excitations of time-matter. But whereas in habit, movements prolong our perception for the finalities of action (and so distance us from the object perceived), in attentive perception, they lead us back to the object so as to emphasize its contours. Memory, unlike the body's sensory-motor movement, *produces increasingly precise true images of the perceived object*.

How does attentive recognition work? Once the perceived object has determined a gap, we fill it by seeking similar images and experiences in our memory. The perceived object (the actual image) sets off a process in which we seek the virtual image, and the two images 'run after one other', determining our new perception. The new perception is built in this continuous back-and-forth between perception and memory. Exterior perception merely stirs up movements that do nothing but trace the broad outlines of the image. Our memory then projects on to the perception received 'the old images that resemble it, whose outlines our movements have already traced.

Thus memory creates present perception anew, or rather it doubles that perception in sending back to it either its own image or memory-images of the same kind' (Bergson, 1993: 111).

It should be emphasized strongly that the process of recognition can never be reduced to *the association of a perception with a remembrance: rather, it is a question of a 'divination' or even of a 'hallucination'*.[6] 'Associationism' reduces perception, image and idea to stable, completed things, which it would suffice to associate with one another. Bergson, by contrast, speaks of movements, forces and powers that produce images and ideas as they enter into reciprocal contact.

Attentive recognition operates through 'exterior projection of an image actively created, identical or similar to the object, which comes to model itself on the object's contours' (Bergson, 1993: 112). The work of attentive recognition recreates not only the perceived object but also the increasingly vast systems to which the latter can attach itself.

To bring this discussion to a close, it should be noted that the difference between automatic and attentive recognition is determined by conditions that either extricate memory from or make it prisoner to the accomplishment of finalized action. Attentive perception is only possible if memory ceases to be totally caught up in sensory-motor activity and its finalities. This liberation can only have effect thanks to the intervention of 'mechanics' (the brain, language, technologies), which replace memory and intellectual labour in the exercise of motor-habit. On this basis, freed from finalized and predetermined work, memory, confronted with 'possibilities of choice', can recover itself as 'virtuality'. Automatic recognition is prisoner to sensory-motor habits, whereas attentive recognition confronts an indeterminacy and a choice. As we shall see, machines to crystallize time, with their automatic production of images and durations, increasingly extricate attentive perception from habits contracted by 'natural perception' and allow memory to recover itself as duration, as time in the making and therefore as force.

2.6. Bergson introduces a radical break in the apprehension of perception:

> It is important to understand that attentive perception *cannot be reconstructed as a series of phases* (the object stimulating the sensations, sensations causing ideas to arise) *concatenated according to a horizontal and consecutive sequence*, as is the case in all optical models. We claim, on the contrary, that reflected perception is *a circuit*, in which all the elements, including the perceived object itself, are held in a state of mutual tension as in an electrical circuit, so that no movement starting from the object can stop on its way through the depths of the spirit: it must always return to the object itself. (Bergson, 1993: 114)

Perception is not an *impression* (of light on a support), a *recording*, but a construction in which we partake through an active work of synthesis. Bergson explicitly invites us not to understand memory as a drawer or a

register in which we could look for images corresponding to the stimulus experienced, nor again as a recording like that of a 'phonogram' (Bergson, 1991: 498), but, on the contrary, as a work of 'synthesis' performed jointly with the body. The work of synthesis, or intellectual labour, produces its own virtual objects, and all intellectual efforts (recollection, comprehension, creation) can be set off either by a 'real' or by a 'virtual' object.

Bergson's theory of the production of images *is not an optical but a temporal theory*. The production of images can only be explained by the different forms of the contraction–dilation of time (i.e. the different syntheses of intellectual labour). Optical phenomena are reducible to sensory-motor movements that could never account on their own for visual and more generally intellectual activities. These two paradigms (optical and temporal) entail two radically different conceptions of 'intellectual labour'. In the first, the activity is mechanical, creating no disturbance and requiring no systematic transformation. In the second, 'on the contrary, an act of attention implies such solidarity between mind and object – such a tight circuit – which creates from scratch new circuits enveloping the first [i.e. the one created by immediate perception], with nothing in common between them but the object perceived' (Bergson, 1993: 114).

This point must be stressed, as most theories of new technologies are built on the model of vision, where, by contrast, the optical construction of the image plays a fundamental role in relation to 'intellectual activity'. *Bergson opposes an ontology of the expression of light to the paradigm of the impression of light on a support*. Light is present in both cases, but according to absolutely different modalities, referring to distinct philosophical traditions. The paradigm of the impression of light refers, in the final instance, to the demiurge, who, looking at the 'model', engraves a copy on a wax tablet. In order to explain the production of the image, the temporal paradigm refers to the process of the synthesis of time. 'Syntheses' belong to the philosophical tradition that begins with the Neo-Platonists and passes through Kant to arrive at Bergson.

I follow Bergson in thinking that the technologies of vision force us to denaturalize our mode of apprehension. Bergson already suggested, at the turn of the last century, that vision is initially determined by the living being's power to act, and that consequently the mechanical and automatic aspects of the production of images must be subordinated to power, to relations of forces, to time. That is why the optical model is criticized, since it always stops at the sensory-motor mechanisms and never attains power.

> The role of the rods and cones is simply to receive the tremors that will then be fashioned into completed or nascent movements. No perception can result from this [because] perception originates from the same cause that set off the chain of nervous elements with the organs that sustain it and with life in general: it measures and expresses the living being's power to act, the indeterminacy of the movement or action that will follow the tremor received. (Bergson, 1993: 66)

The error of the optical model with regard to the apprehension of vision is to extract the eye and the retinal image from a continuous and cohesive process that includes 'the object, the brain, the nerves and the retina itself', which, I reiterate, are all images for Bergson, 'and to make these things the origin or the cause of vision. [. . .] By what right should this image [the retinal image] be isolated and made to encapsulate all perception?' (Bergson, 1993: 241).

We do not see through rods and cones. We see through memory and intellectual effort, which are forms of accumulation and conservation of time. Vision is made, developed and enriched within 'temporal syntheses'.

2.7. Let us return, however, to our reconstruction of the Bergsonian point of view. Whereas in automatic recognition we always remain on the same plane, that of the present, memory allows us to traverse various planes of the past. We pass continually from the past (the virtual) to the present (the actual) and vice-versa, since the present is nothing but the most contracted moment of our past. This work of memory, which Bergson defines as 'intellectual labour', consists in the contraction and extension of time, of the time of memory. When we perceive, we contract our past to bring it into contact with our perception; when we remember, we dilate it in order to place ourselves at its different levels. It is in terms of this attentive memory that we can understand the two functions of memory: contraction-memory and remembrance-memory [*mémoire souvenir*]. Remembrance-memory conserves every detail of our life by transforming it into a remembrance; contraction-memory makes perception and the image possible by contracting and dilating the stratum of remembrance that doubles our life.

We must dwell at greater length on the mental activity defined by Bergson as intellectual labour (or labour of spiritual synthesis), since it presents a twofold interest. It provides an intensive description of both *attention* and *intellectual effort*. Ultimately, it will allow us to advance the following hypothesis: the power of technologies lies in the fact that they reproduce this activity of the contraction–dilation of time and therefore reproduce intellectual labour.

3. Ontological Memory: Pure or Virtual

3.1. Attentive memory is thus composed of two different forms (contraction-memory and remembrance-memory), but it *presupposes the existence of a non-psychological memory, an ontological memory*. This is what Bergson calls 'pure memory' or 'virtual memory', in order to distinguish it from psychological memory. Psychological memory needs an ontological memory that doubles it, without which the recollection, conservation, passage and upsurge of time would be impossible.

Bergson defines pure or virtual memory as *the coexistence of the actual and the virtual, the present and the past*. But the simultaneity of present and past in pure memory appears under two noticeably different guises. Time is the object of a double foundation in ontological memory: on the one hand,

it is founded on the *primacy of the past* (the present is conserved in the past), while on the other, on the *primacy of the present* (the past is the remembrance of the present). This double foundation of time allows us to account for the paradoxes of the Bergsonian theory of temporality: the *past is conserved in itself* and *time splits itself* [*se dédouble*] at *each instant into a pure present and a pure past*.

These dimensions of pure memory are of particular interest to us because, although the technologies of time can only imitate these forms of ontological memory in a very limited manner, they can work on their temporalities. On the one hand, television and digital networks *constitute a memory* (the present is conserved in the past), while on the other, through *their functioning in 'real time'*, they *work on the splitting of time*, intervening in a time which is in the making.

The first form of coexistence of the past with the present (of the virtual with the actual), under the primacy of the past, explains how the past is conserved in itself. In effect, the conservation of time presupposes *a pure past*, a *past that has never been present*. To be able to affirm that something is past, I require *a past that is not a former present*, because, in the opposite case, the former present is no more, precisely because it is past.

To be able to say that the present is past, I require a pure form of the past, an 'always already there'. It is in this sense that the past and the present are contemporaneous. 'Our most distant past adheres to our present and forms with it a single uninterrupted process of change' (Bergson, 1991: 1387–8). The primacy of the past over other times signifies that the past counts for all other times, since, in this case, the 'present is the most contracted form of the past'.

However, the present and the past, the virtual and the actual, coexist under another form which accounts for the passage of time, causing it to rise up and renew itself continually as the splitting of time. The coexistence of all levels of the past with the present (which is the past's most contracted form) is complemented by the coexistence of the present with the 'remembrance of the present'. Here it is the past (as memory of the present) that is nothing but the double of the present. The circuit that makes the present 'adhere' to the most distant past must now be replaced with another circuit in which the present is doubled by its own remembrance. We are still *in the presence of a 'pure past'*, but one which, in this instance, does not represent an 'always already there', but the memory of the present – its double. Here, it is the present that counts for all times, the past being nothing but the double of the present, a present that tends towards the future, a *time that creates rather than conserves*.

Bergson explains recollection in terms of its splitting at every instant into a pure past and a pure present. The fundamental statement that accounts for this paradox is the following: the formation of remembrance is not posterior to but contemporaneous with perception. Indeed, if the past and present are conceived only in terms of 'before' and 'after', how can the past remember the present? In order for the present to be recollected,

present and past must be given together, simultaneously; the past must be concomitant to the present, and no temporal interval can separate the two. Unless the past is contemporaneous with what happens, how can it conserve its remembrance?

Yet pure memory is also what allows time to *emerge* and to *pass*. To conceive the past as a former present, as 'that which comes after', implies a spatial, instantaneous definition of the present, incapable of attaining the present's true nature, which is to 'make itself'. Here it is the present that supposes an ontological memory, a coexistence of past and present, in order to pass:

> Because the present instant, always on the march, that fleeting limit between an immediate past that is no longer there and the immediate future that is not yet, would be reduced to a simple abstraction were it not precisely the mobile mirror that unceasingly reflects perception and memory [*souvenir*]. (Bergson, 1991: 917)

That time implies a succession is something that Bergson affirms unhesitatingly. What he refuses, however, is the notion that this succession should be constituted by the juxtaposition of a before and an after.[7]

The relation between actual image and virtual image (psychological memory) is thus doubled by a pure (ontological) memory, which constitutes the fundamental operation of time: its perpetual splitting, its capacity to distinguish itself within itself, to differentiate itself within itself, to be the internal cause of its own differentiation. 'Our current existence, to the extent that it occurs in time, is doubled by a virtual existence, a mirror image, since our life is not an abstract mathematical point but rather a duration' (Bergson, 1991: 925).

The importance of the concept of the splitting of time demands that we abide with it a little longer. In order properly to understand the relation between the actual and the virtual it is necessary to distinguish the memory-image in the process of actualizing itself from the 'pure memory' [*souvenir*]. There is a difference in kind between the two. The pure memory is the memory *that corresponds to no prior experience, being only the 'double' of our present*.

As we have noted, in order to explain recollection and the passage of time, we must presuppose a past 'that no interval separates from the present' (Bergson, 1991: 922). This pure memory is of no use for action (which is why we are unaware of its existence), but it is indispensable to the ontological foundation of memory and time:

> What is more useless to action than the memory of the present? All other memories [. . .] bring at least some information with them, even if they are devoid of actual interest. But the memory of the present alone has nothing to teach us, being nothing but the double of our perception. We hold the real object: what use do we have for the virtual image? (Bergson, 1991: 925)

It is this pure memory that Bergson also calls 'virtual', and which he opposes to the 'psychological' memory.

Thus each moment of our life presents two aspects: actual and virtual, perception on one side and memory [*souvenir*] on the other. It splits at the same time as it arises. Or rather, it consists in this very scission. The actual image and the virtual image are contemporaneous, they are constituted simultaneously, but they are different in kind. The *circuit of the actual object and the virtual image* has as its limit and foundation the circuit between *the actual and the virtual* (between the present and the memory of the present), in which the memory no longer leads to the object that elicited it, but to the present of which it is the double. Bergson employs the image of the actor (which Nietzsche had used to define the final degree of the will to power) to account metaphorically for the creative power of time:

> He who becomes conscious of the continual splitting of his present into perception and memory [. . .] will compare himself to the actor who plays his role automatically, hearing and seeing himself acting. Or rather, he deepens his experience the more he is divided into two characters, one of which performs for the other. (Bergson, 1991: 919–20)

It is not difficult to grasp the importance of this conclusion for our argument. The splitting of time allows us to determine an 'absolute' difference and thereby to escape the dualities of the sensible and the intelligible, of essence and phenomenon, which can no longer ground 'difference'. This continual splitting of time is the difference that speaks itself, the alterity which is said immediately of the object, which is immediately adjacent to it. The 'concrete and real' time that Bergson opposes to 'abstract' time – conceived as fourth dimension of space – is pure change, the heterogeneity that produces itself; the non-chronological time of pure memory that reveals the determination of 'difference'.

3.2. To bring this accelerated reconstruction of Bergson's thought to a close, let us return to the relation between time and force, between time and capacity to act, since it is upon this force, upon this capacity to act, that the technologies of time intervene.

The actual/virtual circuit that produces absolute difference can also be called 'power'. As we have already stressed, in ontological memory, before and after, present and past, are not exclusively successive determinations of the course of time, but the conditions of power, of affective force, of anorganic energy. Bergsonian duration, together with the virtual/actual relation that grounds it, is 'originary affective force' itself (the Nietzschean 'pathos'). The new element Bergson brings to the definition of affective force is that *its heterogeneity is the heterogeneity of time*.

Under the primacy of the past, the virtual/actual relation determines the capacity to integrate, to contract before into after, that which is no longer

into that which is, the 'dead into the living'. This conserving memory is constitutive of all 'capacity to feel'. But under the primacy of the present, the virtual/actual relation determines a duration which, rather than conserving, tends towards actualization. This duration is *élan*, impetus, tendency, force. 'Here the present is perceived in the future on which it encroaches, rather than being seized in itself' (Bergson, 1991: 927). Force is qualified by the temporal dimension as *receptivity* and *spontaneity*. By interpreting the bifurcation of time as the splitting of power into affecting and affected, Deleuze, like Bergson, defines subjectivity by this temporal dimension. Time as 'intimate sense' – at once action and passion – is 'the affection of the self by the self'. Force in all its expressions – *passion, action and auto-affection* – is characterized by duration.

On the basis of Bergson's investigations, Deleuze reconstructs three syntheses of time which, as three different ways of living time, also constitute three forms of subjectivity. The definition of Deleuze's three syntheses is crucial, since it makes evident the limits of the concepts of perception and affect customarily used to account for the 'effect' of technologies. What's more, it systematizes the ontology of time and its force of organization and constitution of the world.

According to Deleuze, the capacity to perceive presupposes a passive synthesis of time, or an originary sensation that constitutes time. Deleuze presents a different distribution of the 'passivity' and 'activity' of force in the constitution of the world and subjectivity, invoking Bergson directly. Perceptive syntheses presuppose organic syntheses, without which there would be nothing but stimuli that bodies could not retain and which would vanish as soon as they affected these bodies: 'We are contracted water, earth, light and air, not only before recognising or representing them, but before sensing them. In its perceptive and receptive elements, but also in its viscera, every organism is contraction, retention, waiting [*attente*]' (Deleuze, 1972: 99).

The perception of an environment effectively presupposes the prior 'contraction' of these elements, even if this remains implicit or is concealed by representation and by the urgency of action. *This primary vital sensibility is already a duration and therefore a force*. Every living being is already duration, time. In the cell, for example, the future appears through need and the past in cellular heredity. The active syntheses of memory can only be built upon these passive syntheses of time. The simplest operation of the mind, which for Bergson consists in the capacity to bind (to contract) vibrations and oscillations, is a capacity shared by all living things. It is in this sense that we may speak of proto-subjectivities.

Bergson had already shown that our perception seizes only the surface movements in sensation and matter, oblivious to the immense multiplicity of its movements, 'within its chrysalis, as it were. It spreads out, immobile, as surface, but lives and vibrates in depth' (Bergson, 1993: 229). Movement is everywhere, and in the depths, while we only locate it at the surface, 'and in this way we constitute bodies of stable qualities' (Bergson, 1993: 234–5).

According to Bergson, if we suppose an 'inert matter', we will never be able to explain how life and consciousness could insert themselves within it and make it act.

> The ancients imagined a World Soul that assured the continuity of the material universe's existence. Stripping this conception of its mythic elements, I would say that the inorganic world is a series of infinitely rapid repetitions or quasi-repetitions grouped into visible and predictable changes. [. . .] Thus, the living being essentially endures [*dure*]; it endures because it incessantly elaborates the new, and because there is no elaboration without searching, and no search without groping. Time is this hesitation itself or it is nothing at all. (Bergson, 1991: 1332)

Developing the Bergsonian concept of habit, Deleuze affirms that this form of duration concerns not only the habits we *have* (psychologically), but also the habits we *are*: 'We have seen, on the contrary, that receptivity, as the capacity to experience affections, was nothing but a consequence, and that the passive self was constituted more profoundly by a synthesis that is itself passive' (Deleuze, 1972: 118). Thus we are composed of a thousand passive, organic habits. The proto-subjectivity of the living is characterized by duration. This initial synthesis is called passive synthesis, habit or present. The passive synthesis constitutes time as present, as a passing present. Following Bergson, however, another time must be presupposed in order for the present to pass. This is the ontological time that Deleuze, like Bergson, calls Memory: 'Habit is the originary synthesis of time, which constitutes the life of the present that passes; memory is the fundamental synthesis of time, which constitutes the being of the past (that which causes time to pass)' (Deleuze, 1972: 109).

But the first two syntheses (synthesis of the present or 'customary cycle' and synthesis of the past or 'memorial cycle') require a third synthesis of time: *a time of the future*. Deleuze names this third synthesis of time the 'empty form of time', or, in his last works, the 'crystal of time'. The sources of this concept of the crystal of time lie in the Bergsonian actual/virtual circuit and in Guattari's work on 'Proustian refrains'. What particularly interests us here are the consequences that Deleuze draws from the concept in terms of subjectivity and affective force. Deleuze not only emphasizes the possibility of grounding difference in relation to time (the time crystal being a perpetual self-distinction, a distinction in the making that gathers the distinct terms back into itself, in order incessantly to relaunch them), he also affirms that strictly speaking, *non-chronological time is the only subjectivity*:

> Subjectivity is never our own, it is time [. . .] The actual is always *objective*, but the virtual is the *subjective*: at first it was the affect, that which we experience in time; then time itself, pure virtuality that splits into affecting and affected, 'affection of the self by the self' as the definition of time. (Deleuze, 1985: 111)

The affect is time under two different modes. The first corresponds to the contraction of the matter-image on (and by) our body, as Bergson demonstrated. The second is the affection produced by the splitting of time. In conclusion, Deleuze draws from Bergson another definition of power qua actual/virtual circuit.

The outcome of these conceptual investigations is very important for our reflection on the technologies of time. Perception, time and affect are not products of subjectivity: quite the contrary, it is subjectivity which is internal to perception, time and affect; it is a fold of these impersonal forces. We attach a particular importance to this new ontology because we can easily recognize here the condition of our subjectivity in its everyday relation to the media and technologies of time. It is we who are interior to time, not the reverse.

4. Video as Material and Spiritual Synthesis

4.1. After this quick reconstruction of some Bergsonian concepts, it is perhaps necessary to indicate where this conception of time could lead. I suggest the hypothesis that, in their functioning and their products, the technologies of time imitate the various syntheses (conservation, passage and splitting-arising [*dédoublement-surgissement*]) of time, and that through these functions of contraction–relaxation they work on the conditions of production of affective force. As in Bergson, the 'matter' contracted by these technologies consists of the various temporal stratifications of memory. I use the term 'imitation' to indicate that electronic and digital technologies operate like the *material and spiritual syntheses* in Bergson: *they crystallize time*. Video and digital technologies can thus be grasped as technologies that imitate perception, memory and intellectual work.

First, they trace a plane of consistency comprising variations and perpetual disturbances that give us access to *something* of Bergsonian pure perception. They work, then, both on a single plane (the present), like the body, and on several planes (the past), like the mind. Technologies simulate corporeal perception in that they operate on the single plane of the present, like a mechanism that receives and returns movements. Video and digital recording operate, in the first instance, like the Bergsonian brain: like a commutator introducing a gap and a transformation into the streaming of flows. Like bodies and material syntheses, they present the characteristic of returning received movements in a particular way, contracting and dilating time-matter by transforming an asignifying flow into a signifying flow. By means of relaxation and contraction, they crystallize the pure vibrations, tremors and shivers of matter into images. What's more, in this operation they are in no way limited by the physiology of our bodies. Consequently they can dilate and contract 'beyond the turn in our experience'.

Second, the machines to crystallize time simulate the 'labour of the mind' and the spiritual syntheses (memory and intellectual effort) by moving across an infinity of levels of time. Contraction and relaxation no longer

concern 'time-matter' or 'image-matter', but the past. If, with its image-treatment techniques, video technology reproduces the work of image production proper to memory (albeit, as Bill Viola suggests, 'crudely'), the techniques of simulation seem to be modelled on Bergson's description of intellectual labour. Finally, across all these syntheses, electronic and digital technologies work – by functioning in 'real time' – on the arising of time, its conservation in memory and its unwinding (time in the making).

Video, but also photography, cinema and digital technologies are 'machines to contract, to condense' time.

Let us return to these definitions in more specific terms. Strictly speaking, video technology is not – as it has all too often been described – a technique for the recording of light on a support. The concept of *modulation* allows us a more exact grasp of its uniqueness. Through devices of contraction and dilation, the video camera modulates the flows of electromagnetic waves. Video images are contractions and dilations, 'vibrations and tremors' of light, rather than 'tracings', reproductions of reality. The video camera's take is a crystallization of time-matter, made possible by conventional technological mechanisms of codification. It is possible to operate a camera without recording, and to work the flows directly. It is not at all a question of the impression of light on a support, but of crystallization and its modulation.

The recording (which fixes this 'modulation' on a support) allows the conservation of an image which, being the contraction–dilation of a flow of vibrations and tremors, can be worked on infinitely. The recording does not fix an image, but the vibrations and tremors that constitute it. In video 'montage' we work on light as such, rather than on images or shots. With montage technologies we move within an 'artificial memory' (even if, I repeat, it is still rudimentary). This is the sense in which this aspect of the video machine refers back to 'intellectual labour', as the capacity infinitely to construct and reconstruct an image. The technologies of simulation and production of synthesis-images imitate in the most 'faithful' way 'the circuit' of intellectual labour (or 'work of synthesis') and its *power* of creation and production of time. The relation between actual image and virtual image, with its capacity to construct and to reconstruct images, its infinite proliferation, has been 'objectified' within very precise limits, in a technological *dispositif*. It is no longer a matter of constructing an image based on the stimuli of brute perception, but of simulating the capacity to produce 'mental' images. What is obviously not reproducible is virtual memory, the actual/virtual circuit qua foundation of the capacity of recollection. In light of Bergson's conception, the definition of these technologies as technologies for crystallizing time takes on its full meaning.

But time and its power is only the time of technological machines, because it is first and foremost the time of the social machine of contemporary capitalism. According to the two forms of the conservation and arising

of time, machines are grafted and constituted on the 'pure memory' of the social time of capitalism (according to its two forms: the conservation and the arising of time). The actualization of virtuality suggests the need to place ourselves within this mechanism, where time arises and is created, in order to master it. The relation between virtual and actual cannot be controlled except by assemblages that function inside this relation. Mechanical and thermodynamic machines cannot attain this poietic core of the production of time. The 'live' of television and the 'real time' of digital networks accompany and produce the arising-splitting of time. The crucial importance of this third synthesis of social time lies in the fact that it distributes the past and the future.

From this point on, the entire effort of machines (such as television, but also relatively new *dispositifs* such as the internet) will tend to control, exploit and channel the power of this temporality. When it is understood that machines of communication work primarily on this level and not solely on the level of the signifier, a step towards defining a politics of the virtual will have been taken. Machines to crystallize time are at the heart of the processes of the production of subjectivity, because time – which as we have seen is subjectivity itself – is the power to affect and to be affected. Equally, where memory and intellectual labour are concerned, the actual/virtual circuit constitutes the 'motor' of subjectivity.

4.2. Before resuming our investigation of Bergson, I would like to emphasize an aspect which we have already alluded to. In the framework we have just reconstructed, perception depends on the power to act;[8] not the reverse. Perception is a function of action and *the limits of perception are the limits of our action*. This methodology allows us to de-psychologize and de-naturalize the problem of perception. In Bergson, perception is never traced back to the psychology of 'man'. This allows him to escape from the still largely dominant methodology of analysing perception from within the man–nature paradigm: *the perceiving subject and the perceived thing* (there are numerous variants, but they always fall within this schema). In this paradigm, the world is 'pre-defined' and it is only inside this 'given' world that perception can take place. Bergson, on the contrary, invites us to grasp the forces which pose simultaneously and in a single movement *the perceived and the perceiving*. The world is not pre-defined, already given, but rather constituted by the capacity to act. *Perception is nothing but the capacity to augment our power, our capacity to act*[9] (since the effort to augment the power to act is inseparable from the effort to raise perception and sensation to a maximum).

5. Mechanics that Triumph over Mechanisms

5.1. We have affirmed that the machines to crystallize time are the first technologies to remove the hand of man from the production of images, making this automatic. We have also affirmed that the industrial reproduction of time represents the precondition of this break in human history, given

that images, from every point of view, are time. The development of photography, cinema, video and the digital is, from this point of view, the development of a *motor* which, instead of producing and accumulating kinetic and potential energy, accumulates and produces duration and time and hence a 'new kind of energy': affective energy. We know how important the invention of motors was for the first industrial revolution. We can imagine the potential importance of the realization of this wholly particular motor which, by becoming independent of will and affective force, either 'liberates' or 'annuls' them.

5.2. According to Bergson, the history of humanity and the evolution of nature could be described as the production of a panoply '*of mechanics that triumph over mechanism*'[10] and as an 'automatism' that opens up 'the possibility of a choice'.[11] In order to deploy itself, the invention-force that mobilizes time requires a mechanics that frees consciousness from the accomplishing of teleological action in which it risks being 'drowned'. Bergson proposes reading the development of technological *dispositifs* in relation to the capacity that they develop to 'absorb' or 'distract' the *attention* of consciousness in the accomplishment of instrumental action.

Bergson is not speaking here of individual psychological attention, but of the force that feels and acts by producing the images and the different states of consciousness. Attention is the force and 'intellectual effort' is the 'conatus' of our 'intimate sense', which together actualize the mutually interpenetrating virtual images as distinct, juxtaposed images.

'To absorb' attention into the carrying out of instrumental action means removing the gap between what is done and what could be done; it means cancelling the interval, the hesitation and the choice that define consciousness.[12] By contrast, to increase the possibility of attention's 'distraction' from sensory-motor activity means increasing the capacity for creation. The function of all 'mechanics' (the concept, language, technology) is to loosen the mechanisms that make us prisoners to teleological action. These 'mechanics' can either work towards the *liberation or the neutralization* of consciousness and of the possibility of choice.

While Bergson often opposes 'consciousness' and 'intellect' [*intelligence*] as two antagonistic modes of perception (the first perceives through continuity and becoming, the second through separate instants and discontinuous states), he is also compelled to consider the way *duration is introduced into our capacity for action by intellect itself*. This also obliges Bergson to thematize the opposition of these two terms differently. 'Consciousness' and the 'real' only exist for us in the tension and oscillation between virtual and actual, not in their separation. The virtual, as 'enormous multiplicity of interpenetrating virtualities', can never be known or felt or made into the source of our action without its passage to the act; conversely, without its virtualities the actual would appear as an eternally fixed world with no possibility of action or change.[13] Society, language, concepts and technological *dispositifs*, then, are so many mechanics that

simultaneously *'fix' becoming and allow access to duration*; simultaneously neutralizing the actual/virtual circuit in an eternal present and opening the way to a 'continuous creation of unpredictable novelties'. This relation can usefully be reconstructed in the case of language. For Bergson, language is a 'fetishism' (to adopt Nietzsche's vocabulary) that makes us live in a world of illusions, since it fixes becoming, making it static. But language is also a 'mechanics' that 'has contributed much to the freeing of intellect', and so has also contributed greatly to bringing us closer to 'consciousness'. 'Without language, intellect would presumably have been riveted to the material objects which it would have been in its interest to consider. It would have lived in a state of somnambulism, external to itself, hypnotised by its own work' (Bergson, 1991: 630).

Language frees intellect from the accomplishing of finalized action, and simultaneously provides consciousness with 'an immaterial body in which to incarnate itself'. In this way, language partakes in two modes of perception and expression: intellect and consciousness.[14] This freeing of intellect from the sensory-motor habits contracted in action is realized through the *mobility* of words. It is because the *word is mobile* that it allows movement from one thing to another, that it is essentially free and susceptible to displacement, so that 'sooner or later intellect had to take it up, and, although the word rested on nothing, it had to apply it to an object that was not a thing, and which, hitherto hidden, awaited the aid of the word to step from the shadows into the light' (Bergson, 1991: 631). A word can go from one perceived thing to another, but also to the memory of the latter and to the representation of the act of its representation, i.e. to the idea. According to Bergson, it is in this way that, through language, the world of its own operations – and not merely a world seen from outside – is opened up to the intellect. Intellect 'profits from the fact that the word is itself a thing in order to penetrate, borne by the word, into the interior of its own work' (Bergson, 1991: 630), thereby approaching consciousness and duration.

Now, electronic and digital technologies are 'mechanics' capable of deepening our penetration into duration's interior, a penetration begun by language and intellect. Unlike words, their mobility concerns images and the elements that compose images (durations and rhythms) and, at an even deeper level, syntheses of time.

5.3. Like cinema before them, electronic and digital technologies are 'mechanics' of the *automatic production of the image*. Taking up an intuition of Gilbert Simondon's, rather than defining them as simple externalizations of the individual's senses (like the lens with respect to the eye), they can be understood as 'motors' endowed with a 'relative autonomy' from man. Unlike mechanical and thermodynamic motors, which convey kinetic and potential energy 'from outside' (Simondon, 1989: 271), these motors *accumulate and produce duration and time and thus affective energy*. If memory can be defined as a 'living motor' that accumulates and produces

time, video and the computer can be defined as technological motors that function according to the same principle.

With these motors of affective energy, the image, withdrawn from the hand of man, acquires a mobility and a 'relative autonomy' that cannot fail to extricate memory and imagination from the inert schemas that characterize image production, thereby increasing their capacity for creation. By penetrating into the inner workings of perception, memory and imagination, electronic and digital technology, and the forms of knowledge [*savoirs*] they imply, take us to the limits of the cognition [*connaissance*] and action organized by intellect, imposing a change of paradigm that prepares a different relation between consciousness and intelligence, body and mind.

The more intellect advances in its work of analysis, the more it sees the number of heterogeneous elements constituting the world increase. In the same way, it is led to discover the real 'continuum' that constitutes life. Intellect does this according to its own method, defining juxtaposed elements, each external to the others. Yet paradoxically, through this work intellect tends to surpass itself and to approach real continuity. This is particularly evident in the so-called cognitive sciences. The impasse of research in artificial intelligence shows how:

> [I]ntellectual frameworks can no longer be applied here with precision, while suggesting at least a vague feeling of what should be put in the place of such intellectual frameworks. Thus it can lead the intellect to recognise that life falls neither under the category of the multiple nor under that of the one, that neither mechanical nor final causality provide an adequate translation of the vital process. (Bergson, 1991: 646)[15]

Despite their powerful analysis of the living world's heterogeneity and multiplicity, and their first moves to include time[16] and continuity in their methodology, the intellect and its instruments (science and logic) remain unable to attain the true transformation and radical creation that truly constitute life, thought and becoming.[17]

How can we escape this impasse, in which intellect and science push their analysis of physical operations ever further, without ever managing to seize what is most specific to the living? At the very point where intelligence and science tend to surpass themselves, digital technologies (most notably research in artificial intelligence), enjoin us to heed the wish expressed by Bergson: not simply to oppose aesthetics and intuition to intellect and science, but to conceive 'an investigation oriented in the same direction as art, whose object would be life in general' (Bergson, 1991: 645). Instead of being starkly juxtaposed, these two approaches should be 'pressed together to extract the quintessence of their object' (p. 646), since each 'leads to the other, they form a circle, the centre of which can only be the empirical study of evolution' (p. 647). The circle thus outlined requires a change of paradigm, a perspectival shift. It is not a matter of putting the two methods on the same plane, but of constructing an assemblage

dominated by the time of creation. It is in this sense that we could speak of a materialism of the event.

In the same way, it is not a matter of opposing 'fabrication'[18] to 'creation', since it is through fabrication that creation was rendered possible, although there is a difference in kind between the two. In fabricating the *dispositifs* for the realization of finalized action, the intellect goes beyond the targeted object, allowing it to free a disinterested form of work. In other words, the intellect extracts something other than the simple realization of the aim it had initially set itself:

> If we draw an immediate advantage from the fabricated object, as an intelligent animal might, and even if this advantage is all that the inventor had sought, it amounts to little compared to the new ideas and feelings that invention may cause to arise on all sides, as if its essential effect were to lift us above ourselves, and thereby to widen our horizon. (Bergson, 1991: 650)

Fabrication, which operates according to a plan and a finality, creates the conditions allowing consciousness to 'distract itself' and to avoid being absorbed completely in carrying out finalized action, releasing it from the need to concentrate exclusively on material bodies whose 'flow would first transport it then engulf it'. The intellect begins by fabricating instruments; this fabrication is possible only thanks to certain means not cut to the exact size of their object, means that surpass that object, allowing the intellect a supplementary, 'disinterested' work. As in the relation between 'consciousness' and 'intellect', we cannot say that fabrication is the 'cause' of creation, merely that it is the process that sets it in motion. Under these conditions, we can finally see in fabrication the 'invention' at the origin of industry, whose true nature our intellect fails to perceive. We will then be able to grasp invention as a creative act partaking in the production of being, in 'its bursting forth, that is, in what it has of the indivisible; in its genius, that is, in its creative properties' (Bergson, 1991: 634).

At last, we will be able to see in fabrication not only work, but 'the force of invention'. In capitalism the possibility of choice is liberated to a degree beyond comparison with the 'ahistorical' fabrication described by Bergson. This is the distinguishing quality of capitalism itself: creation is no longer related back to a finality, to a 'use value', but to itself. In capitalism, to use Bergson's words, creation grasps itself and shows itself materially to be 'a growth from within', the uninterrupted prolonging of the past in a present that encroaches on the future.

When Bergson seeks an example to describe the surpassing of fabrication by creation, he is compelled to refer to (capitalist) industry, in terms of the machines that organize it. Thus he describes the first steam machine, conceived by Newcomen, which required the presence of a child whose sole task was to work the taps. From the moment 'a child' invents an automatic way of turning the taps on and off, we can observe phenomena endowed with a radically different significance. If we watch the machines, we notice a

'slight difference of complication'. But if we watch the children employed in the factory, 'we see that while one is absorbed in surveillance of the machine, the other is free to amuse himself as he pleases. The difference is radical: the attention of the first remains captive, while that of the second is set free' (Bergson, 1991: 652).

If this 'force of invention' is nonetheless radically distinct from fabrication, it is because it had to pass through matter and the satisfaction of 'needs' (necessity) in order increasingly to narrow down the opposition between intellect and consciousness, body and mind, intelligible and sensible. By clutching the terms of this opposition together as closely as possible, Bergson is able to discover their 'common source'.

The deterritorialization of matter[19] (a 'flow rather than a thing'), electronic and digital technologies, as well as the continuum they trace between the 'motors' that produce duration and affective force, 'prepare the way for a reconciliation of the inert with the living. The moment will then have arrived to attempt a genesis of intellect at the same time as a genesis of the body' (Bergson, 1991: 653, 1993: 202).

It can thus be said that our task is not – as Bergson believed in accordance with a strange theory of 'mechanical mysticism' – the definition of a new spirit or mind for a body that within capitalism has developed beyond all measure, but to conceive the process of reciprocal constitution of 'intellectuality' and 'materiality' on the basis of this 'common source' (the force of time). Only on this condition can we understand how these technologies intervene in a completely different way from mechanical and thermodynamic technologies in the co-creation of the real, in a world in the making.

5.4. The relation between the order of the *vital* or the *willed* and the order of the *inert* and *automatic* is clearly developed in the case of the constitution of the body. According to Bergson, the increasing complexity of the organism lies essentially in the need to complicate the nervous system. As we know, a more complex cerebral and nervous system entails a greater interval between action and reaction. What does this complication consist in? *In a simultaneous development of automatic and voluntary activity*. There is no opposition between the two orders of development, because the automatic provides the will with the 'appropriate instrument'. An organism is a series of 'motor mechanisms' that the will uses to construct itself or that it chooses to set in motion:

> An animal's will is more effective and more intense if it has the choice between a greater number of these mechanisms, if the crossroads where all the motor paths meet is more complicated, or, in other words, if its brain has attained a greater form of development. (Bergson, 1991: 709)

It is through the montage of mechanisms that the nervous system assures 'increasing precision, variety, effectiveness and independence' for the act. The body and the mechanisms are thus a function of the capacity

to act. It is action and will that construct the body and the organism, not the reverse. The development of electronic and digital technologies is effectively an 'automation' of perception, memory and imagination. But this automation, we repeat once more, is established to make action more precise and effective. So it is not surprising that the organism itself also undergoes metamorphoses that go beyond the human condition, as each 'will to power' constructs its own body: 'The organism behaves more and more like a machine for acting that reconstructs itself entirely for each new action, as if it were made of rubber and at every instant could change the form of all its parts' (Bergson, 1991: 709).

Bergson distinguishes between 'living' bodies, closed and isolated by nature, and 'brute bodies', cut out by our perception in accordance with the interest of the action, itself guided by 'virtual bodies' that aspire to constitute themselves. Brute bodies and living bodies 'thus determine one another here through a semi-artificial action, entirely relative to our action upon things' (Bergson, 1991: 688).[20] Contrary to what cyber-culture might lead us to believe, this 'semi-artificial action' is not specific to digital technologies; it is proper to any process of creation. The technologies of time merely serve to increase the force of this semi-artificial action.

Notes

This is a translation from the French of the first chapter of Lazzarato's book *Videophilosophie* (forthcoming); translated by Matthew Hyland and revised by Alberto Toscano. A different version of this text has been published in Italian as Chapter 1 of Lazzarato (1996). We have consulted the Italian version for the translation of some passages. All quotations are translated directly from the original French.

1. According to Malevich, the introduction of images and movement into the world is expressed in modern art by a 'pulverization' of the object and the subject, and by the emergence of the 'energial' forces that constitute it. Malevich's artistic trajectory intersects in a certain way with Bergson's philosophical trajectory. As he writes:

> Futurism has elucidated the situation of the one who represents the world that has been set in motion. Man forms a centre around which movement is produced. He establishes that such a phenomenon is by no means produced exclusively within a single range of convergence, in the form of a corner, but rather in front and behind, to the sides, above, below. Man stands as an axis around which a million mechanisms move. Since seeing the world does not mean seeing with one's eyes, and one can see through cognition and one's whole being; since Futurism is interested solely in the omni-movement of the force of the organisms swarming through the city, moving on towards global dynamism, translating the general state of rotation; it follows that a new and real representation of the contemporary state of our comprehension of the world is fixed in our psychism, or rather our brain reflects its real states within our psychic monad, as in a mirror.

The movement of the city is simultaneously a movement of images: movement-image. 'It is difficult for the petit bourgeois to find himself in this global movement

of the city, in which, moreover, all images serve only to the extent that their form is indispensable as mutual action, in contrast with the effort of dynamic expression' (Malevich, 1974). In 'pulverizing' objects, however, 'dynamization' also dethrones the movement-image, so that the artist's work must target the 'force of excitation' that grounds it:

> Expressing itself in movement, the entire direction of art was also launched along the contemporary line of movement's development. When, on this line, it attained a new and stronger tension, the forms themselves, as signs in movement, became other. It is clear that futurism, as a more potent revelatory force, has given rise to another image of movement, the assembled force of tension. And if in a subsequent movement the energy-signs develop further, the dynamometers of art will rise. (Malevich, 1974: 107–9)

With Malevich, the dynamometer is even capable of seizing the 'pure action' of sensation, excitation, the 'energial forces', non-figurative conditions of our representation.

2.

> For want of a better word, we have used the term 'consciousness', but we are not referring to the diminished consciousness that functions in each of us. Our personal consciousness is that of a particular living being, placed at a certain point in space. [. . .] In order for our consciousness to coincide with something in accordance with its own principle, it would have to detach itself from the *ready made* and attach itself to the *in the making*. (Bergson, 1991: 696)

In its continual streaming, (individual) consciousness introduces us to the interior of a reality, on the model of which we must represent others to ourselves. Only through individual consciousness can we perceive something like 'ontological consciousness'. In any case, consciousness must not be reduced to an anthropomorphism: 'In the entirety of the animal kingdom, consciousness appears to be proportional to the creature's power of choosing' (Bergson, 1991: 647). In fact, Bergson speaks of 'supra-consciousness' (to distinguish it from individual consciousness), of 'life', '*élan*', the 'virtual' and 'pure will'. In different ways, all of these terms refer back to a becoming which is 'a growth from the inside, the prolongation of the past in a present that encroaches on the future' (Bergson, 1991: 1272–3).

3. 'To perceive all the influences of all the points of all bodies would be to descend to the state of the material object' (Bergson, 1991: 48).

4. The solidification by 'cooling' of the 'pre-biological soup' (pure perception), in which is given the identity of matter, light, the image and time, generates matter as we 'know' it. Yet even in this case matter is duration, but a duration that is an *infinite repetition or an eternally recommencing present*. Matter is a scansion of independent, infinitely repeated instants. Matter, Bergson says, citing Leibniz, is 'instantaneous mind':

> If matter does not remember the past, this is because it repeats the past incessantly, because, subject to necessity, it unfolds a series of moments each

> of which is equivalent to the one preceding it and from which it can be deduced. Therefore its past is truly given in its present. (Bergson, 1991: 256–61).

5. The body is only a conductor (i.e. without duration) in the instantaneous. What we said earlier in terms of the ideal situation of pure perception must therefore be 'corrected' as follows: 'The body as limit, movement between past and future, as a mobile point which our past would necessarily push into the future' (Bergson, 1991: 224).

6.

> In short, the present reading is a work of divination, but not of abstract divination. It is an exteriorisation of memories, of perceptions simply recollected and consequently unreal, which profit from the partial realisation they encounter hither and thither, so as to realise themselves fully. Thus our knowledge of an object in a waking state implies an operation analogous to that of a dream. We perceive only the outline of the thing. [. . .] It is this species of hallucination, inserted into a real context, that we experience when we *see* the thing. (Bergson, 1991: 889)

7. 'There would be no present for consciousness were the present to be reduced to the mathematical instant. This instant is only the purely theoretical limit separating the past from the future; at most it can be conceived, but never perceived' (Bergson, 1991: 818).

8. For Bergson, a living being is a centre of action. It represents the introduction of a certain sum of contingency (a certain quantity of possible action) into the world. This centre should not be understood as a thing, but as a continuity of outpourings [*jaillissements*].

9. 'Visible perception is nothing else: the visible contours of bodies are the outline of our possible [*éventuelle*] action on them' (Bergson, 1991: 577).

10. 'It is a question of creating with matter, which is necessity itself, an instrument of freedom, of fabricating a mechanics that triumphs over mechanism, and to use nature's determinism to slip through its net' (Bergson, 1991: 719).

11. 'This consciousness which is *demand of creation* is only manifest to itself where creation is possible. It sleeps while life is condemned to automatism and awakens when the possibility of a choice returns' (Bergson, 1991: 716).

12. 'Consciousness is the light immanent to the zone of possible action or of virtual activity surrounding the action effectively accomplished by the living being. It signifies hesitation or choice' (Bergson, 1991: 617).

13. In this context, electronic technology is a mechanics produced by human understanding that brings us a little closer to the real 'continuum' of matter, allowing us to penetrate a little more intimately into perception's relation to the fabrication of images through time.

14. 'Certainly, it is not language that gave consciousness the capacity for reflection, for a reflecting consciousness is an intellect that had a surplus force to spend beyond practically useful effort. Yet virtuality must still pass to the act' (Bergson, 1991: 630). Not only linguists, but also researchers on digital technologies fail to recognize this double function of language: 'By means of images and words, the mental machine projects into consciousness that which has been or could be. Digital

simulation certainly uses language, but it is a language already formalised, already filtered by the logic of calculation' (Couchot, 1988: 91). To make images and words (of language) the conditions of memory and imagination is at once to neutralize concrete time ('that which makes it so that things are made') and a way of entertaining a truncated vision of the process of creation (of images). That is why I privilege the phrase 'machine to crystallize time' over the more ambiguous 'language machine' when it comes to defining digital technologies.

15. It must be emphasized, however, that the conditions making it possible to surpass the opposition between intellect and life were created by intellect itself: 'Without intellect, life would have remained, in an indistinct form, riveted to the special object that interested it practically, and exteriorised by it in the movement of locomotion' (Bergson, 1991: 646).

16. In reality, science has had difficulty integrating the Bergsonian critique of the 'abstract time' that intervenes in its speculations and experiments. 'In fact, the systems that science operates on are in an instantaneous present that incessantly renews itself, never in the real, concrete duration where the past forms one body with the present' (Bergson, 1991: 512). For a critique along these lines see the work of Prigogine and Stengers. In the social sciences, the critique of structuralism opens, with many contradictions, to the introduction of the event.

17. 'But, supposing this view were to prevail, as it deepened it could only end up in another mode of analysing the living being, and consequently in a new discontinuity, albeit perhaps less far removed from the continuity of real life' (Bergson, 1991: 633).

18. 'To fabricate consists in giving matter form, making it supple and folding it, turning it into an instrument in order to gain mastery over it' (Bergson, 1991: 650).

19. To grasp this new dimension requires surpassing and redefining the opposition between matter and mind:

> We have repudiated the materialism that claims to derive inextension from extension, but neither do we accept the idealism according to which the extended is simply a construction of inextension. We argue against materialism that perception infinitely surpasses the cerebral state, but we have sought to establish against idealism that matter overflows our representation of it on all sides. (Bergson, 1993: 202)

The limits of materialism and of idealism make the 'material' and 'moral' states into a 'duplicate' according to the priority given to matter or the spirit. Bergson, by contrast, situates himself at the confluence of these two degrees of the real, precisely where one passes into the other.

20. In Bergson there can also be found another distinction between an 'immense body' and a 'very small' or 'minimal' body:

> With his body, however, man is far from occupying only the minimal space usually granted him . . . For if our body is the matter to which our consciousness is applied, it includes all that we perceive, reaching to the stars. But this immense body is changed at every instant, and sometimes radically, by the slightest displacement of a part of it which occupies the centre and holds a minimum space. This interior and central body, relatively invariable, is

> always present . . . it is always active: it is through it and it alone that we are able to move other parts of the large body. And as it is action that matters, as it is understood that we are where we act, we customarily enclose the consciousness in the minimal body, to deny the immense body. If the surface of our small, organised body is the site of our actual movements, our very large inorganic body is the site of our potential, theoretically possible actions (Bergson, 1991: 1194–5).

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