AMERICAN UNIVERSITY OF BEIRUT

THE SHIFT IN HUMAN EVOLUTION: BERGSON ON TECHNOLOGY, LANGUAGE AND SPACE

by
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AN ABSTRACT OF THE THESIS OF

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Bergson's work is generally oriented towards time, intuition and metaphysics. But, to elaborate on these topics, Bergson cannot avoid clarifying the concepts of space, intelligence and technology as the more familiar topics on which he can build. For the purpose of the thesis, if we turn our attention away from time, intuition and metaphysics in Bergson's writings and reorient it towards space, intelligence and technology, we can construct the way in which Bergson actually sees those seemingly familiar topics. From here the question becomes about clarifying the relationship between space, intelligence, technology and language within a Bergsonian framework. This work is carried out while recognizing that Bergson claims that intelligence, as part of all living matter, can go from extreme vagueness to extreme clarity. It will thus be necessary to look at how this spectrum of intelligence might affect space and through it language and technology within this framework. It will also be necessary to prefigure what this relationship might imply in the case of an intelligence more advanced than that of humans. To this end, the thesis will first explicate Bergson's understanding of organic matter and the intricate mechanisms through which it acts upon the universe and from there elaborate on the use of technology and language as tools to manipulate space, ultimately explaining how technology, language and even space, as we perceive it, are offspring of intelligence, as they shift and change according to its vagueness and clarity.

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CHAPTER I

INTRODUCTION

In this thesis, we will try to reconstruct Bergson's work to highlight technology and language exploring their contribution to human evolution. In fact, technology with its tools and equipment covers quite a large historical scope. The oldest evidence of human tool-use is fossilized animal bones with marks engraved on them made by stone tools found in Ethiopia dating back to 3 million years (*Natural History Museum,* 2010). We link the rise of the intelligent human to the date of fabricated tools. In addition to this, it seems to be easier and more soothing to common sense to conclude that fabricated tools are an integral part of our humanity. In contrast, we must also point out what seems to be another sophisticated human fabrication, and a very essential one that many claim to be what differentiates us from other living beings: language. One of the ways in which language can be viewed is that it is a human-made medium developed and honed over the ages for the purpose of communication, as a basic form of exchange of information. At first glance, our mind seems to be a private zone that generates private thoughts and private representations. However, we cannot but realize that within this apparently private representation of the universe there are other minds (minds that are similar to ours) and we can even trace others that seem to have existed before us. If we have to allow for the possibility of communication between minds, as seems to be the case, we have to give up on the complete privacy of our thoughts and representation, i.e., of the isolated privacy of the mind. This leads to two observations that seem to be correct but contradictory: how can a mind be private and public at the same time? The contradiction must be only apparent. We notice that space seems to be a common

ground where diverse informational exchanges are possible between the environment or other minds and our mind. This thesis will thus investigate the question articulated as such: in a Bergsonian framework, what are the relations between communication and a mind that is turned towards action? How does intelligence engage with language, technology and space in order to reach to its ultimate goal which is becoming master of matter? And finally what is the status that intelligence marks in humanity's evolutionary progress?

In order to delve deeper into these rather complex questions, this thesis will work within a clear Bergsonian framework in which we can seek for relevant answers. In his book *Matter and Memory: Essay on the relation of body and spirit*, written in 1896, Henri Bergson (1859–1941) proposes a schema where the contradiction between mind and body can be dissolved. Within this schema, we will try to compose a Bergsonian theory of technology as well as a theory of language which are both linked to our ability to manipulate space. Here, we can expand on the place technology and language occupy in the complex relationship between body and mind, as means of communication and exchange on a common ground. We will lay down our interpretation of Bergson's rather complicated account and pave the way towards understanding the functions of both technology and language in space and how they relate to intelligence. With this, we will be able to investigate the place of intelligence in human evolution.

The thesis does not attempt to assess the value of technology or language[1]. And in like manner, it does not criticize Bergson's philosophy but rather reconstructs it by shifting the emphasis in Bergson's philosophy from intuition to intelligence to showcase

[1] For this reason, the doctorate thesis of Kamal el Hajj « *La valeur du language chez Henri Bergson* » has not been taken into consideration in this thesis.

the functioning of intellection such that intuition can now be understood as its photographic negative. Therefore, the thesis will discard potential objections outside the Bergsonian system. It will start by giving a broad explanation of the environment in which intelligence develops by describing Bergson's understanding of the functioning of the universe followed by the body-mind relationship whose primary *raison d'être* is its action on the universe. Within the system that generates action, which we will hence call the actualization machine, we will first locate technology's place and then we will describe the role taken up by language and explicate its intrinsic details slowly developing the evolution of intelligence in the human species. The text we will mainly refer to is "*Matière et Mémoire: essai sur la relation du corps à l'esprit"* as published in French in 1896. It will be referred to by paraphrasing. However, main quotes will be mentioned in the footnotes as occurring in the French edition followed by their English translations provided by Nancy Margaret Paul and W. Scott Palmer and revised by Henri Bergson as published in 1929. The thesis will also refer to other important writings from Bergson. These include *Time and Free Will: An Essay on the Immediate Data of Consciousness (Essai sur les données immédiates de la conscience),*Bergson's doctoral thesis published in 1889 in French and translated into English in 1910; *Creative Evolution (L'évolution créatrice)* published in French in 1907 and in English translation in 1911 and his later work on intuition as a guide to metaphysics *The Creative Mind (La Pensée et le Mouvant)*, a compilation of articles and conferences from 1903 to 1923 published in French in 1934 and translated into English in 1946.

In the body of the thesis, we tackle many topics including Bergson's approach to the nature of matter; the faculty of generalizing and abstracting information; the faculty of forming space and the nature of space; the faculty of acquiring habits, mainly

that of language, and the nature of habits; the organs; the inventive faculty and other topics that interlock to form Bergson's holistic work, looked at from a different perspective. Knowing that Bergson's philosophy pushes towards intuition rather than the intellect, the main task of the thesis is to rearticulate Bergson's philosophy around his approach to the intellect and highlighting its importance in his philosophy, which is a view mostly neglected in Bergsonian studies. This account is therefore followed by an appendix dedicated to Bergson's theory of matter which is integral to the understanding of the thesis. In addition, the thesis proposes a glossary to help the reader keep track of words holding specific definitions for Bergson.

In our investigation and reconstruction of Bergson's philosophy, we note that the beginning of intelligence is marked by the complexity of the nervous system which is provided by natural evolution and from there intelligence can develop itself or evolves by interacting with matter. Its interaction with matter is marked by the evolution of technology, language and space. Focusing on these three topics, the thesis unfolds the evolution of the intellect and pushes towards a conclusion which considers where this evolution is leading the human species, i.e., asking if Bergson states that we should aim at perfecting the human species, he means that we are heading towards a new species.

CHAPTER II

THE ACTUALIZATION MACHINE

In *Matter and Memory*, Bergson's project is to bring forth the two aspects of body (matter) and mind (spirit) that are usually set in the problem of duality which portrays the difficulty of blending together two entities of radically different nature and tries to resolve the problem by showing that these two entities, although seemingly different in nature, can and do successfully function together as verified by common sense[1]. In fact, as we will see in Bergson's work, body and mind are so wired and connected together that our conscious examination of these wirings cannot discern the transitions between matter and memory. The difficulty rises from the fact that both body and mind are directed towards the very same goal: action. Bergson asks: why do we have the capacity to contemplate? And he answers: we have it so we can make the best possible action and only that (MM, 142). This, I believe, is what Bergson truly brings forth with his account on matter, whereas most everyone else focuses on understanding and reason as means for a higher form of contemplation and only that. In contrast, Bergson strives to move away from treating life as something special, out of the ordinary or as something magical, mysterious, and accidental inviting awe and amazement. Instead, he takes this very ordinary condition of matter and shows us how it works. If any awe and amazement should be invested here, then their rightful recipients

[1] By the norms of common sense, a person would maintain that objects exist independent of their own consciousness which perceives it. Therefore claiming that substance is idea would come as a surprise. And if told that objects are entirely different from what is perceived, there would still be surprise. This is why, what is needed is an account that places matter not so near to our consciousness and not so far from it either. From the perspective of common sense, matter is an aggregate of 'images' and by images we mean something more than representation of the idealists and something less than thing of the realists. (MM, 6)

are the depths of the intricate mechanism of living matter, responsible for free and positive action in the universe.

Bergson's method of argument is to put forth the problem, explain how it has been approached, why and where this approach is confusing, absurd or lacking and then, to proposes his own solution. For his solutions, he relies on extensive psychological and scientific research data which he states, elaborates and references throughout his book, thus describing what happens in actuality and how his proposed approach fits in with the descriptions provided by psychologists and scientists and solves many, if not all, of the enigmas that troubled these researchers as well as the philosophers. His account of the psychological and scientific research material seems sound and reliable and therefore we will not investigate them further. In fact, we will spare ourselves from going into Bergson's lengthy arguments and instead we will strive to show in its intricacy the entirety of the schema he proposes so that we can work within this schema. To prepare a proper mind set, it is useful to note that in general, because of the extremely complex wiring between body and mind, Bergson adopts several approaches. First, he needs to cut the system into several parts based on the role played by each part, this means isolating the part from the whole in order to show that part's function in its pure form. It is also useful to note that each isolated part's pure function can be activated in two ways: spontaneously or voluntarily. But, we must constantly keep in mind that we can never find these parts in isolation in real life since all is always a harmonious mixture (MM, 38). Therefore these suggested pure forms are simply a tool for explication. MM is mostly a series of descriptions of the mind-body system, which we will call the machine of actualization. Each description that Bergson provides stems from a point in the machine, hence each describ the whole of the machine from that

perspective. It seems that Bergson's strategy is to take as many points of view as necessary to give a proper analysis of the machine such that the reader can now reconstruct the machine with all its parts. Since all this is reminiscent of a construction site, we will provide the construction drawings as a holistic plans and details. The plans will provide the foothold starting from the deeper layers up to the more superficial ones, and thus will be guides upon which details are indicated and referenced. The first plan will be Bergons's theory of matter[1] which is his understanding of the reality of the universe, whence we can move on to the durations of individual living matter and how it perceives the universe, and from there we can set the actualization machine of individual living matter. The series of details about each part of the machine, based on the different points of view provided by Bergson, will be elaborated and illustrated to facilitate the construction of the machine.

Thus this exhibition of Bergson's account of the dual existence of body and spirit will start by exhibiting (1) Bergson's understanding of the universe as homogenous and continuous states which continuously change much like flows; the flow contains a specific law of repetition – the law of nature – that is brought to light through scientific research that uses referential symbols. We will then move to (2) the personal duration of living matter which extracts itself from the rhythm of the flow's duration and contracts Time[2] into an apparent fixed state whereby positive action upon the flow of Time becomes possible, and action or positive change is the ultimate goal of any living matter. Once this is illustrated, we will have the big picture or our map and guide on which (3) we will zoom in to render the details of the living matter's

[1] Refer to the appendix for further reading about Bergson's theory of matter

[2] We will see that time exists in three different ways where Time is the law underlying the change of the universal flow, in other words Time is the universal duration.

relationship with or action upon the flow of Time, and this will be the details of the machine of actualization. From here, we will be able to integrate language and tools into our plans and investigate the function of each in contrast to the other.

A. The flow of Time

What's the universe really like? We tend to think of the universe as a field of particles separated by greater or smaller voids in space, as measurable and quantifiable much like what science teaches us. But Bergson's approach is slightly different. According to him some of the notions we attribute to the universe do not really explain its materiality at all because they stem from the practical way we perceive the universe (MM, 118). However, he adds, as philosophers, we can use the method of integration[1] of differentials much like in mathematics, i.e., we can treat our perceptions as the derivative and its anti-derivative would then be the reality of matter. This is also clear in the way he differentiates between facts and reality, saying that facts are our adaptation of the real into practical interests and exigencies of social life[2] (MM, 108). Bergson moves forth with this method and offers us his suggestion of what the theory of matter might be. In this theory, Bergson reaches to a very distinct form of the universe which he describes as a universal flow of continuous becoming.

[1] "*la tâche du philosophe, telle que nous l'entendons, ressemble beaucoup à celle du mathematician qui détermine une fonction en partant de la différentielle. La démarche extrême de la recherche philosophique est un véritable travail d'intégration."* (MM, 110). That is: the task of the philosopher, as we understand it, closely resembles that of the mathematician who determines a function by starting from the differential. The final effort of philosophical research is a true work of integration. (MM, tr. 242).

[2] "*puisqu'une théorie de la matière se propose justement de retrouver la réalité sous ces images usuelles, toutes relatives à nos besoins, c'est de ces images qu'elle doit s'abstraire d'abord."* (MM, 119).That is: since a theory of matter is an attempt to find the reality hidden beneath these customary images which-are entirely relative to our needs, from these images it must first of all set itself free. (MM, tr. 264)

In MM, Bergson expands his first chapter explaining that matter is divided into two types which co-exist: ordinary matter and living matter. Ordinary matter responds to its environment by fully engaging in it and wholly submitting to the cycles of change inherent to the environment while living matter filters and reflects its environment and although it submits to the inherent changes of the environment it doesn't submit to everything, it can thus affect it and change it due to its selective nature. In his theory of matter, Bergson describes three types of time: the real time (Time) (MM, 40), the factual time (Duration) (MM, 40) and the customary time (Scientific time) (MM, 123). The real time which is that of ordinary matter is similar in nature to the factual time except that it is common to the whole universe while factual time is relative to a given living matter and is hence called this specific living matter's duration. The customary time is a postulated homogenous time that is an abstraction of duration and is used for practical purposes by us, intelligent living matter (MM, 125). Because of its practicality, science can use its symbols to study the real time. Similar to this, Bergson divides space into three types: qualities, extensity and space. Qualities are inherent to real time and are rather homogenous as opposed to real time itself which is rather heterogeneous because its function is change. These qualities are then contracted in the duration of a specific living matter and become sensible qualities that have an extensity. Above this extensity, our imagination casts an indefinitely dividable and calculable homogenous net, which we call space (MM, 125). This net helps in defining distinct objects that are stable and sacrifices the internal movement for the sake of its goals. It then locates movement as something outside of the object rendered stable.

Since we are seeking the reality of matter to set our construction site for the actualization machine, then we should look more closely at real time and space, i.e., the

constantly moving qualities which we will be calling the flow of the universe. Bergson starts his description of the theory of matter by what we consciously perceive around us, where we can find phenomena of mobility and stability. We know that the movement we perceive is real and absolute as it does not need to be relative or dividable to be an actual movement as perceived by us, i.e., it will still be a real movement and a real change even if we do not perceive it. This starts from the fact that we usually cannot tell what part of the phenomenon is moving and what part of it is stationary. Thus, we divide by allocating movement to a force exterior to an object which we consider stable. However, from this fact we can deduce that "movement is in fact indivisible in itself. It occupies certain duration and is part of a continuity linked to what was before it and what is after it. Movement links together these successive moments in time by a thread of varying qualities that are somewhat in the likeness of the continuity of our consciousness"[1] (MM, 120). With this we can also understand that movement behaves similarly to our consciousness; in so far as it is links together the moments in time. The major role that Bergson seems to attribute to consciousness is that it contains the laws according to which moments succeed each other and therefore consciousness is responsible for time which is relative to the given consciousness. In the case of the universe, this role is taken up by movement[2]: movement links the moments that are

[1] "*ces mouvements, envisagés en eux-mêmes, sont des indivisibles qui occupent de la durée, supposent un avant et un après, et relient les moments successifs du temps par un fil de qualité variable qui ne doit pas être sans quelque analogie avec la continuité de notre propre conscience*" (MM, 120). "These movements, regarded in themselves, are indivisibles which occupy duration, involve a before and an after, and link together the successive moments of time by a thread of variable quality which cannot be without some likeness to the continuity of our own consciousness". (MM, tr. 268) This means that if the flow of matter had a consciousness similar to ours then this consciousness would simply be movement. That entrails one thing: Time is Movement and Bergson places Movement in the innards of sensible qualities as their vibrations. Hence, the universe is properly described as a continuous flow of becoming.

[2] "*Une seule hypothèse reste donc possible, c'est que le mouvement concret, capable, comme la conscience, de prolonger son passé dans son présent, capable, en se répétant, d'engendrer les qualities sensibles, soit déjà quelque chose de la conscience, déjà quelque chose de la sensation."* (MM, 145) That is: "Only one

proper to the time of the universe, "like a consciousness where all is balanced, compensated and neutralized" (MM, 130). This eventually means that anything we attribute to consciousness, for example sensations, is also what we can attribute to movement but in this case these would be what we refer to as sensible qualities (MM, 121). And in fact, Bergson places movement inside sensible qualities and describes them as vibrations lodged inside a chrysalis of which only the surface is revealed to our perception (MM, 121). He describes this saying: "Matter resolves itself in innumerable vibrations, all linked in an uninterrupted continuity, all consolidated between them and running in all directions similar to shivers"[1] (MM, 123). Bergson commits to facts such that there certainly are multiple objects that are clearly distinct from each other and that each object depends on characteristic properties and obeys certain determined laws (MM, 124). Still, an object in reality cannot be completely cut off from its environment: during perception, we pass gradually, although insensibly, from the continuous environment to the distinct object, i.e., from the solidarity that links all objects to the individual object. By this we can already suspect that objects don't really have the precise limits we attribute to them (MM, 124). Bergson thus proposes to us a homogenous continuity of sensible qualities wherein we find vibrations which are the source of all change. Movements are then less homogenous and these qualities are less heterogeneous as opposed to how they appear in our perception[2] (MM, 122). To say

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hypothesis, then, remains possible; namely, that concrete movement, capable, like consciousness, of prolonging its past into its present, capable, by repeating itself, of engendering sensible qualities, already possesses something akin to consciousness, something akin to sensation." (MM, tr. 329).

[1] "*La matière se résout ainsi en ébranlements sans nombre, tous liés dans une continuité ininterrompue, tous solidaires entre eux, et qui courent en tous sens comme autant de frissons*" (MM, 123). Matter thus resolves itself into numberless vibrations, all linked together in uninterrupted continuity, all bound up with each other, and travelling in every direction like shivers through an immense body. (MM, tr. 276)

[2] We usually attribute heterogeneity to sensible qualities since we can count at least 5 ways of sensing them. On the other hand, movements seem to be homogeneous since they are simply a passing from rest

more about sensible qualities which are the manifestation of the constant change of the universe, Bergson says that we are conscious that we perceive an undivided unity instead of an object appearing indefinitely divisible (MM, 130). This consciousness offers us the indivisibility of our immediate perception such that we can attribute to perception part of the extension of matter, i.e., what we perceive is matter. Perception and matter meet whenever our attention is focused, where attention is the function of the guiding body. It is then that sensation recovers extensity, and the concrete extensity takes back its continuity and natural indivisibility (MM, 130). This means that the reality of extensity is sensible qualities which are homogenous while movement which is its change is heterogeneous.

The fundamental law of matter is to respond to an action by an immediate reaction within the flow of the universe of which it is an intrinsic part. The action and reaction within the flow are movements that define the present which always starts over: this is a necessary law (MM, 124). Each part of the flow is simply a path on which pass, in all directions, these modifications that propagate in the immensity of the universe (MM, 21). Matter does not remember the past because it repeats it unceasingly (MM, 131). And as subject to this necessity, it unfolds a series of moments, each of which is equivalent to the previous one and may be deduced from it; thus, its past is truly given in its present. It cannot create anything new even thought it constantly changes (MM, 132). Only a being which evolves more or less freely, creates something new at every moment. The reality of matter for Bergson is a constant flow of becoming that is

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to rest. The claim that in reality movement is heterogeneous comes from the fact that movements are the internal vibrations of the sensible qualities which reach our senses. This means that the vibrations are the source of heterogeneity of sensible qualities while they themselves are rather homogenous. Sensible qualities and their vibrations are contracted multiplicities that are squeezed in together in a single moment of duration when we perceive them.

governed by movement that brings about change which is lodged inside the quality and where quality is a manifestation of this change.

This sounds like a controversial way of looking at matter and hence at time, and admittedly it is rather difficult to conceive. Still, this is an essential part of Bergson's work which is closely related to his notion of duration, our factual time. However, because of this portrait of matter that lacks pictorial description, the contemporaries of Bergson did not commit to this kind of a theory of matter. Bergson complains about this theory being dismissed even by his supporters because at the time (Čapek, xi), their views did not breach the limits of pictorial reality which Bergson would rather call facts and not reality. Milič Čapek, who was a philosopher highly influenced by Bergson and whose work was mostly done on modern physics, writes in 1971 in his book *Bergson and Modern Physics*:

> [D]espite the increasing difficulties in constructing a satisfactory mechanical model of the aether, nobody doubted its analogies with an elastic medium in which transverse vibrations take place. Certainly nobody anticipated that the aether would eventually lose - under the impact of Michelson's experiment - even the most basic kinematic properties. The view that matter and its spatio-temporal framework eventually would be stripped of their classical, mechanistic features, which yielded so easily to pictorial models, was at that time looming on a very distant horizon, indeed - and only in a few and heretically daring minds.
> Bergson was one of these, and he was fully aware of why his theory of matter was either ignored or misunderstood: "This particular point [i.e., his philosophy of physics] has been hardly noticed for one very simple reason: since my views about this question were formulated at the time when it was regarded as self-evident that the ultimate material elements should be conceived in the image of the [macroscopic] whole, they confused the readers and were most frequently set aside as an unintelligible part of my work. It was probably assumed that this was an accessory part. Nobody, with a possible exception of the profound mathematician and philosopher Whitehead, noticed... that this was for me something essential which was closely related to my theory of duration and which lay in the direction in which physics would move sooner or later." [.] Writing these words in 1938 he was [.] aware how

> far physics had moved since the years 1912-1913 [.] It has moved still farther since 1938. (Čapek, xi)

The flow of matter is then simply a constant flow of continuously changing qualities and has its own rhythm of becoming. However, next to this rhythm, there are other individual rhythms proper to the entities Bergson calls living matter. These entities perceive facts when they perceive reality and that is because perceiving reality as facts is more useful for their existence than perceiving just the reality of matter as it is. Having their own rhythms means that each living matter has its own individual consciousness and thus its own time which Bergson calls duration.

B. The duration of living matter

We have explained how matter is a homogenous constant flow continuously changing in its own time and governed by it. Now we will have to explain how the living matter that detaches from this flow[1] (MM, 110) perceives matter. Our main focus will be perception. For Bergson, perception takes the most central role in the argument against the problem of duality which he seeks to destroy. This is because in perception matter and memory meet, i.e., perception is both matter and memory. Matter is really a flow of becoming and exhibits qualities that resonate with our senses. Our senses, matter themselves, point our consciousness at some of these qualities by concentrating attention and aiming our perception: here we have our immediate perception which gives to our consciousness a homogenous impression of a homogenous set of qualities. These are the sensible qualities, as selected by our body that is also part of it. That which perceives is consciousness since perception is only a mental effort guided by the

[1] "*notre vie intérieure peut se detacher du temps indéfini et vide pour redevenir durée pure*." (MM, 110). That is: Our own inner life can be detached from time, empty and indefinite, and brought back to pure duration. (MM, tr. 244).

body. A consciousness has its own rhythm of life and that rhythm is its duration. Duration functions by contracting into a single moment these given sensible qualities[1], e.g., the wavelengths of light particles are contracted into perceived light. The reason why we can consciously know that what we perceived here is light is because of the mental effort of actualization that recognizes light via memory images. When perception is thus contracted into a rhythm that is understood by consciousness, it is also hence divided into useful parts and then solidified through our memories into what we then call images of objects, or simply objects, and therefore, perception is also memory.

When we talk about consciousness we are also talking about knowledge. Therefore, it would be useful to note here that Bergson divides our capacity for knowledge into three distinct types: (a) immediate knowledge or awareness, i.e., we are aware of homogenous sensible qualities, (b) customary knowledge, i.e., used in practical life and (c) contemplative knowledge, i.e., such as used by philosophers to go beyond the practical use of all things and tackle realities. For thoughts and ideas like a theory of matter, for instance, we resort to contemplative knowledge and hence we need to use a different approach to what we are analyzing than the approach we use for practical reasons that are summed up in actions and reactions on our environment. For practical uses, we use a diagrammatic approach. In science, for example, we use diverse symbols that we apply onto our immediate perception in order to make sense out of it for the purpose of making a change in our environment. As for immediate knowledge, it is what is given to our consciousness by intuition. Here knowledge has not yet been

[1] Of course, here we must be careful not to mistaken sensible qualities for sensations although sensations are to some extent sensible qualities too, but they are vaguely localized and hence perceived as affections and not images.

touched by thought, i.e., no symbols have been applied to it and no contemplation has occurred making it factual. We have already seen this same pattern of division that Bergson makes on time and space and here knowledge is also in parallel to those notions. In our first section we have used our contemplative knowledge to discuss real time which is movement and real space which is quality. In this section, we will discuss factual time and space which are duration and extensity and their relative homogenous space-time that is a sort of diagrammatic net that the mind applies to duration and extensity in order to make use of them, i.e., to act and make new change in the universe.

We pass insensibly from the time of the universe to our own psychological time (MM, 109). Since our consciousness has its own internal life rhythm which is different from that of the universe, we can say that it has its own duration. But where does this duration come from? Duration is linked to consciousness. In fact, the primary role of consciousness is to record every instance of the totality of our perception, in other words, it is a record of our representations by date and by place (MM, 47-8) where representations are the shortest impressions of our surrounding by our awareness. This record is pure memory and stands opposed to pure or immediate perception. Bergson describes memories as layers or planes of consciousness where each plane contains the totality of a recorded representation, which is the whole of our perception of the universe at a given moment. The intelligent mind finds its abode in these planes as it goes through them and recreates them (MM, 102;143) to facilitate its movement between them. The more obvious word for this action is synthesis: the mind synthesizes the sequence of recorded perceptions and by doing this, it synthesizes the duration of consciousness (MM, 123) as an expression of the capacity of the mind to contract into a single moment as many phenomena as possible, i.e., the duration of a living matter

depends on the speed of its mind. This means, the duration lived by consciousness has a determined rhythm. This rhythm is different from the time physics talks about in that it can contain, in a given interval, a great number of phenomena (MM, 122). Also, duration is not limited to a unique rhythm for all living matter: some are slower and some faster, and each measures the degree of tension and relaxation of a consciousness, i.e., the mind's power, and according to this measure we have different categories of beings (MM, 123).

Because perception is really only an effort of this mind (MM, 107), we can claim that perception is within us as well as within the object perceived. (1) It is within the object because I perceive the object where that object is, i.e., the object is sensible qualities apart from me and exists where I perceive it. (2) Perception is also within me since it compresses an incalculable number of moments into itself through my consciousness, it being the current layer of memory that has just been recorded onto my consciousness. However, if my consciousness vanishes, the material universe subsists as it was without my particular rhythm of duration which was the condition of my action upon it (MM, 123). This is another iteration of the claim that perception is both matter and memory. But, more importantly, this brings us to extensity.

Extensity is the shape of the universe after being contracted into a single moment by our perception which is in function of the duration of our consciousness. Sensible qualities are now concrete extensity. They are in reality spread and diluted in an incomparably more divided time since matter resolves itself into numberless vibrations, all linked together in uninterrupted continuity, all bound up with each other and travelling in every direction like shivers through an immense body. However, through our consciousness and hence through the exigencies of life, the instantaneous

views of this matter are bound to be pictorial and vivid in colours condensing an infinity of elementary repetitions and changes (MM, 124): we perceive images. At any given moment, when we perceive our environment, we take in the effects of a multiplicity of inner repetitions and evolutions and contract them into images or perceptions. These perceptions are then discontinuous as our understanding starts shaping them. We bring back continuity into them, by the effort of imagination, by the relative movements that we attribute to 'objects' in space. Real movement is everywhere but it is located inside qualities where we cannot perceive them as they are. But with our mental effort, we localize the changes here and there and place them as outward forces. We then constitute bodies which are both stable as to their qualities and mobile as to their positions, such that, to our eyes, a mere change of place sums up in itself the universal transformation (MM, 124). We then divide space indefinitely and carve out of it arbitrary figures which we call objects and then the only way we can make sense of movement is as a multiplicity of instantaneous positions, since nothing in objects can ensure the coherence of past with present (MM, 110).

In duration we see our action as composed of dissociated and juxtaposed elements (MM, 109) while the real nature of what we perceive is a homogenous continuity. In duration, where we can act, our states melt into each other, i.e., we try to put ourselves in action by thought and by further speculation on this thought and action, which is the basic form of human freedom (MM, 109) as opposed to the necessary rhythm of time in the universe. Bergson expresses here that our freedom, is not in the spontaneity of action as in the case of animals which only rely on their affective life to act. Human freedom comes from the capacity of synthesis of both feelings and ideas and their evolution: humans have free acts and hence a true evolution with true change.

In light of this, Bergson adds that the independence of the action of living matter over matter is affirmed in the degree to which it frees itself from the rhythm of the flow of matter (MM, 125) which is the degree to which it becomes pure duration (MM, 110). All this emphasizes the higher development of the mental abilities found in humans[1].

Thus far we have explained duration and extensity but in order to complete the explanation we must also explain homogenous space-time. The continuity of the flow of becoming is really lived through the extensity and duration as we experience it: we experience an action as a continuity caused by a previous action and the current action is then experienced as an unfolding due to the previous action (Bergson 109). However, although sensible qualities are a homogenous continuity, we can perceive distinct and individual objects in space, i.e., we perceive heterogeneity. Initially, Bergson starts his description of the theory of matter from the phenomena of (1) movements which are a passage from rest to rest and are absolutely indivisible. From there comes his claim that these (2) movements are real and absolute. Therefore, (3) any and all division of matter into independent bodies with absolutely determined limits is an artificial division while (4) a real movement is a transition of a state rather than a thing. We will tackle this "artificial division". In fact, the continuity of movements as we experience them is artificially decomposed for the greater convenience of customary knowledge (MM, 109). For our spatial experiences, we apply to extensity, i.e., to the continuity of sensible qualities and their vibrations, a net to make clear cuts in perception. This net is infinitely deformable and indefinitely dividable and it is what we call homogenous space (MM, 124). We divide space indefinitely and carve out of it arbitrary figures which we then call objects. During perception, these objects take on a solid form when

[1] The topic of human evolution will be further discussed in the concluding chapter.

they are coupled with memory-images which flow into the appropriate objects in order to clarify our perceptions. The only way we can make sense out of movement in this fixed set of images, is as a multiplicity of instantaneous positions, since nothing in objects can ensure the coherence of the past with the present (MM, 110). Although movement is inwards in sensible qualities, we perceive of them as detached from the fixed objects by a trick of our imagination. Our imagination which is preoccupied by convenience of expression and the exigencies of material life, likes to reverse the order. Out of habit, imagination looks for a fixed point in a world of well defined and immobile images whose invariability is based on our needs. Hence, imagination cannot but believe in the apparent rest of these images and see nothing other than a variation of distance in movement, where space comes before it (MM, 129). Imagination will thus draw trajectories and fixed positions in a homogenous and indefinitely divisible space: it applies to movement a trajectory and demands that movement be also dividable and devoid of qualities, much like the imagined line of trajectory (MM, 129).

Next to our sense of space, we have our sense of time, which is an abstraction of our duration to which we are habituated. We find it easier to think of it as a homogenous time common to all (MM, 123). To distinguish these successive moments of duration and to bind them back together into a continuity that is common to our existence and to the existence of all things, we must imagine an abstract diagram of general succession, a homogenous and indifferent environment where the flow of matter is longitudinal and space is along the width and this would be the homogenous time (MM, 125). As we have seen, Bergson attributes homogenous space and homogenous time to our faculty of imagination as an artificial diagram applied to extensity and duration. The homogenous space-time is then used for practical purposes: for dividing

space and time according to our needs whereby homogenous space-time divides the continuous reality and fixes in place the continuous becoming and furnishes our activities with points of application (MM, 125), i.e., we can act on the flow of becoming when we fix it to some extent such that we know where to apply our changes. This is why, throughout the first chapters of MM, Bergson refers to our perception as "possible action"[1] to express this thought.

Homogenous time and space do not involve the properties of things or the essential conditions of our faculties of cognition. Space-time expresses, abstractly, the double effort of solidification and division that we must impose on the flow of matter to have a grasp on it and to have operational centres in it through which we can make real change: space-time is the diagram of our possible action on matter (MM, 125). Whenever we make space-time homogenous or the realities we contemplate, or these forms of contemplation themselves, we attribute to space and time a speculative interest rather than a vital one. Hence, one can see in homogenous space-time principles of division and solidification introduced onto the real on-site action (MM, 125). Space-time is a diagram furnished with symbols by scientific studies. These symbols of science, such as lines and vortices of force, are useful tools by which physics can calculate. The symbols can rejoin experience by indicating the direction by which we can find their corresponding signs in our representation of the real. They indicate successful modifications, perturbations and changes in tension or energy (MM, 119). But that is their only role. Similarly, the psychological analysis of movement shows us

[1] "*Notre représentation de la matière est la mesure de notre action possible sur les corps; elle résulte de l'élimination de ce qui n'intéresse pas nos besoins et plus généralement nos fonctions."* (MM, 22). "Our representation of matter is the measure of our possible action upon bodies: it results from the discarding of what has no interest for our needs, or more generally for our functions" (MM, tr. 30). By this Bergson means that we contract the sensible qualities into extensity through perception such that we eliminate all details that hinder our possible action on them, i.e., the apparent fixity of objects is in the measure of our need to act and change.

that movement is a real and absolute change in relation between objects as though change were added to these objects as something independent of them. Taking these into consideration, the claims we made about matter in our first section become more reasonable, such that neither science nor consciousness need to refute the claim that real movement is not a thing but rather a transfer of a state (MM, 120).

We have thus reached to the conclusion that matter is the successive moments obtained by the solidification of the real via our duration and that therefore matter is a memory-injected perception (MM, 125). We have claimed that we make all these alterations on matter according to our need for action. Now we will look at how it is that we act on matter as this is the goal and orientation of all living matter.

C. The action of living matter on the universe

In the first two sections we have covered three main notions. First, that the universe is a constant flow of movement which contains fixed laws – the laws of nature – through which it repeats itself. The flow of the universe is then a constant repetition of changes and hence can also be referred to as Time. Time was defined as a unified body through which various vibrations or movements expand. The second notion was that the universe contains particles that choose not to transfer the whole of movement that reaches them and instead reflect some and let some run through them. These we called the living matter. They are organisms that can act on the flow of the universe and bring change into its constant flow through the system which we call the actualization machine. We noted that these organisms have a consciousness that dictates certain duration on the organism which is different from Time although nested within it. Hence Bergson does not flinch from stating that consciousness is time. But he simultaneously

defines it as memory. The exact definition seems to become vaguer with these two definitions. However, it is easier to understand that consciousness refers to a sort of archiving mechanism that proceeds into archiving sequences of present moments in Time by date and location. The moment, which is the smallest interval of perception of the flow of the universe, is the basic unit of consciousness an organism has. This moment is the unit of the duration proper to the organism itself, which varies from one living matter to the other in the number of phenomena in Time each moment contains. Meanwhile, the archives of successive moments that Bergson calls the planes of consciousness are synthesised into duration. Duration is the succession of moments that the living organism is exposed to and hence the time that is proper to the organism. For practical purposes, this time is then exteriorised by the organism's imagination in order to create a theoretical time deemed common to all. Next to duration, the organism is aware of an extensity which is given by perception, in a given moment, and which is heterogeneous. With the help of its imagination which draws from its memory, the organism then casts on it a homogenizing network of references that shapes distinct objects and distances that change as the environment changes or the organism's location changes. This provides the organism with points of action or perception or possibilities of action or virtual actions. Bergson states that perception is a measure of possible action: the higher the power of action, the wider the field of perception which is the measure of the power of the body to act (MM, 31). The distance between a perceived object and the body measures the degree of the imminence of danger or of promise which highlights the fact that perception is distinct from the body (MM, 32) and as such, any virtual action whose distance from the body approaches to null is then an

actual action. This theoretical and practical network of time and space projected onto matter was the third major notion we covered in the previous section.

At this stage, we have arrived at a system of images that compose our possible actions on the universe and we have called it our perceptions. Perception, onto which the space-time network is cast in order to facilitate action, is then evidently a part of the actualization machine which is the core theme of this section. The actualization machine is a series of complex mechanisms that generate an action which actualizes by dropping from the consciousness of an organism into the flow of the universe creating new ripples within its constant flow and thus joining the flow and becoming part of it. The major components of the actualization machine are the body and the mind – which have been claimed to be irreconcilable; however, once the actualization machine's mechanisms are explicated this problem will eventually dissipate as Bergson claims. In fact these major components have different faculties. The body's faculties are (1) its nervous system which propagates diverse molecular movements captured by the flow of the universe that vary with the variation of the body in its environment; (2) the sensori-motor system which connects to the nervous system through the central transmission which is governed by the brain, (the motor mechanism is composed of muscles while the sensory mechanism is related to affections); and (3) the faculty of attention which works as a guide and compass for the mind and connects the memories to the present moment. On the other hand, the mind that perceives has different faculties; (1) it oscillates between the planes of consciousness and contracts phenomena into information, highlights the relevant ones and generates general ideas which become memory images that imitate perceived images in order to become part of them; (2) synthesizing perception and memory the mind constructs a holistic perception of the

universe which Bergson refers to as representation which is really the present moment under the space-time network, (3) certain memory-images can actualize by synchronising with the sensori-motor system of the body into the flow of the universe.

Now to look more closely at the actualization machine, let's sum up the trajectory of the flow: the body-mind machine is triggered by affections or sensations which guide the mind towards specific clusters of nebulous memories in the planes of consciousness. The mind oscillates between these planes and the present perception in order to successfully construct a general idea. When this general idea is compatible with the perception, it blends with it and covers the perception with memory-images. However, when the general idea is compatible enough with an affection; it blends with it and can trigger a sensori-motor mechanism much like an affection and hence move the body into real action: an actualization. Therefore, in this section our main attention will be: (1) affections and the sensori-motor mechanism as opposed to perception and the nervous system; (2) how attention functions; and finally (3) generating memory-images and actions.

1. *Affections and perceptions and the body*

What is it meant by claims such as the body perceives[1] and the body feels? Affection and perception are usually thought of being of the same nature with only differences in degree and affection is treated as inextensive while perception is extensive. It seems to us that we sense our perception and that somehow our body's senses which perceive our environment also cause affections in us. Bergson finds these only apparent and tries to connect the dots in a different way.

[1] In fact, Bergson claims that perception is not a faculty of the body but of the mind. The two faculties he clearly attributes to the body are its ability for real action and its ability for affection.

Senses do not perceive and they are not a cradle for our sensations. Although they are living matter, they are purely mechanical, having given up their individuality for the benefit the organism as a part of it (MM, 32). There is a confusion between perception, affection and the senses: the two are confused with the nervous system and sensory organs such that we find ourselves claiming that the nervous system senses and perceives. The nervous system and all parts of the physical body are part of the universal flow and hence distinguished from efforts of the consciousness such as perception and affection[1]. To distinguish sensations and perceptions from the chemical reactions that propagate in our body's nervous system whose function is to merely guide our perceptions (MM, 10), Bergson observes that what sense organs do is to simply modify the nerves and propagate their influence to the brain[2]. The movement thus traverses the cerebral substance and eventually blooms into voluntary action (MM, 23). However, the nervous system is only an image (MM, 11) and is not responsible for either affections or perceptions (MM, 24).

To elaborate, Bergson describes what happens in the nervous system. He takes a point P in the universe. P is then a vibration that has a certain amplitude with a certain duration and it impresses points a, b, and c on the retina, i.e., a sense organ of the nervous system. All these then are strictly happenings in the flow of the universe. However, when a, b and c are so impressed, the consciousness perceives light at P and we say that point P sent out to the retina vibrations of light. If the visual image of P was

[1] When describing pain, Bergson refers to the individual consciousness that each cell had before giving it up to the organism's consciousness that they are part of. Pain is the particular case of reminiscence of this forfeit freedom which allows the ability to run away from danger (MM, 34). In the example of pain that Bergson provides, we see how affections are related to consciousness, i.e., the freedom to run away from danger hence affections are also a faculty of consciousness much like perception is, however whereas perceptions are possible actions and are given by images, affections are actions and are given as an initiation to movement or an abstinence from it.

[2] The brain itself is a centre of transmissions that functions through algorithms and is hence not intelligent in as far as intelligence is defined by seeking knowledge (MM, 14)

not given by a synthesis in our consciousness, we would be forced to seek how this image was formed, i.e., how is the image of light composed out of vibrations? The vibrations from P reaching the retina are generally sent to optical cortical centres in the brain. These would either transmit the vibrations to motor mechanisms or stop them for a time. The interval of time before action depends on the integrity of these interested nervous elements as any lesion to these will cause the diminution of our possible actions which will diminish our perception (MM, 23).

In the flow of the universe, whenever a point does not transmit the whole of vibrations to other points, then we have a zone that contains sensori-motor processes whereby vibration Pa, Pb and Pc are vibrations that have been projected back on P instead of being transferred to other points, where projections Pa, Pb and Pc are possible actions (MM, 24). There is solidarity between P, the retina and the elements of the nervous system that are interested in these rays. P is part of perception through Pa, Pb and Pc that form an image of P where P is in the flow of the universe. Bergson continues his description adding that unless you have a compass, in a fog, you will never know where the north is. Similarly, the nervous system is the compass of perception leading it towards the images of interest without which consciousness will not be able to latch onto a specific point in space; however, the compass itself doesn't know where the north is even if it is pointing at it which is the case of the nervous system (MM, 25). An important faculty of the body is the faculty of attention which Bergson stresses considerably. Attention, he states, is the body's effort to summon the mind into the present moment. Lack of attention would loosen the bond between body and mind which is directed towards action through the immanence of the body within the flow of the universe where action can take place. Hence, with lack of attention the

mind is no longer in contact with its compass and recoils into the network of memories without an aim. Bergson defines this as the state of dreaming. With agile organisms such as humans, the mind can recoil back in though by suspending its attention yet without losing the tread that keeps it safe from the state of dreams (MM, 59). So why do we confuse perceptions and affections with faculties of our senses?

Perception draws from the environment quantities and qualities of concern in the shape of possible action which are the aggregate of images we perceive (MM, 12). These images are objects of interest to our organism since they can act on the body and the body can act on them and they thus present either possible danger, a possible promise, or a possible threat (MM, 18). As we organise the perceived images into a system, we eventually draw our body as its centre: the body is the only element in perception that does not change (MM, 15). Perception measures the degree of imminence of danger or of promise between the body and an image. The narrower this distance, the more urgent the danger or promise become and the higher the tendency of the virtual to become actual (MM, 32). The body is where the distance between actual and virtual action is null and where real actions take place (MM, 32).

On the other hand, affections can intercept the perceived images and coordinate an appropriate movement in relation to these images (MM, 10): they launch an action according to the images perceived and disappear right then. Affective sensations are actual actions rather than simply possible ones. The images we perceive do not encompass the whole of the flow of the universe and affections which are not perceived images are still part of the flow: they are not perceived images outside of the body, but are affections localised inside of it (MM, 29). Hence it is difficult to describe affections which explains why they are mistakenly thought to have no extensity.

Affections, Bergson explains, are like either an invitation to an action, a wait or a refrain from action and the choice is drawn from memory.

The body is therefore not just a mathematical point but a boundary image. The body itself is then both perceived and affected. As an image in the universe, it is subject to actions from its environment (MM, 32) and in turn, as living matter, the body has a sensory motor system composed of a nervous system and a central brain meant for action in the environment and a power system that sustains it. At the body, the distance between actual and possible is null and the body is where real action takes place (MM, 32). However, the body takes on this privileged position after it undergoes a certain amount of experience, i.e., a collection of memories of previous perceptions and an association between affections and perception (MM, 35).

As we explained previously, the body filters specific impressions from its environment, i.e., it chooses to reflect some impressions and lets others simply pass through indifferently. The choice is in accordance with the body's possible action on its environment. Each sense of a body is a reflecting system of the body (MM, 28) as we have seen in the example of the sense organ and the point P. The senses need to be trained in order to be able to coordinate between themselves to recreate homogeneity from the diversity of the impressions they reflect onto the environment. Senses are thought to be specific to each sensation of sound, sight, touch, smell and taste. However, as in the previous example, we also know that senses only conduct electric impulses and are excitable by mechanical causes that cause a modification of electrical balance in the nerves. It rather seems that each sense is sensitive to a specific type of mechanical cause, e.g., a chemical modification for taste or electro-magnetic perturbations for light (MM, 29). These impressions, chemical modifications or electro-

magnetic perturbations, collected by the senses are what Bergson calls sensation or affective sensations internal to the body (MM, 30). Each of these senses is linked to real actions which are of the same type as their corresponding virtual actions on external objects perceived which is the interest of action the body has in its environment which in turn explains the specificity of these senses (MM, 30). Additionally, the relation between real actions and affection is similar to that of virtual actions and perception. Therefore, perception is linked to affection in a way where each perception is linked to its complementary affection. This makes us capable of passing insensibly from perception to affection, e.g., needle to prick.[1] Affections, Bergson explains, are intermediary states of the body between internal inextensive ideas and external extensive images. Since we go insensibly from the perception of the contact of the needle to the prick, it seems as though perception and affection are only different in degree. But they coexist at all times inside and outside the existence of a being and they are different in that a perception is a possibility of an affection waiting to happen.

We have already explained the relationship between sense and perception. We should now illustrate the mechanics of the relationship between sense and affection. The living matter receives an impression from its environment; through its reflecting systems it reflects it back to the place from where it received it and this corresponds to perception; meanwhile, the imprint of the impression, or the absorption of the impression, which is the action of the environment on the living matter, corresponds to an affection (MM, 32). Bergson states that affections are to perceptions what actual

[1] Bergson describes that we go insensibly from the images of the needle to the sensation of a prick (MM, 30). The decreasing pain coincides with the lessening perception of its cause and exteriorizes itself into representation. Then, it seems there is a difference of degree between the affective sensation and the image although they have different natures (MM, 32); or it can also seem that perception is the projection of affection after being exteriorized while these two are different and are simply bound to the existence of the being (MM, 31).

action of the body is to possible actions (MM, 33). We have already lengthily explained how perception relates to virtual actions. With this, it becomes clearer how affections relate to our real action. And this is one of the major aspects of the actualization machine. A perception at the level of the body, i.e., at distance zero from it, flips into an internal affection: that is where we locate our action. Thus Bergson draws the important link between affections and real actions.

The impressions reflected and absorbed by the body leading to perception and affection, make up our representation. While perception is the material universe around us, affections are our materiality in the universe, that which we mingle into our representation from inside of us, impregnating virtual actions with real actions such that each perception is accompanied by affection (MM, 33). The relationship between perception and affection cannot be causal, explains Bergson, because they always coexist. What makes us think that they are causal is the way we train and educate ourselves since childhood to associate between affective sensations and our previous ideas of perceptions of touch or vision and thus we are able to predict an affection when we recognize a perception[1]. However this makes it seem as though the perception of an action on the body causes the sensation of pain or pleasure (MM, 34). It is by training our sensations this way that we are able to distinguish affections from one another and can associate them to their respective senses. All this means that affections are more deeply involved with memories rather than perceptions although without perception

[1] This is very similar to David Hume's understanding of causation as he explains in his *Enquiries Concerning Human Understanding,* sections 7. Hume says that the only thing we can actually observe in nature and be sure about is succession of events. He attributes causation to habit where habit connects between objects merely in our thought, i.e., causality is simply part of how we reason matters of fact or of existence. It is science that teaches us to control and regulate future events by their causes. Meanwhile, cause and effect which are related by cause followed by it effect is only based on all similar causes that were followed by similar effects and/or when the mind anticipates the effect by recognizing the cause through habit. Hume claims that there is no further affirmations we can make about cause and effect: it is simply based on previous uniform experiences and the idea of necessary connection is built from our sensation of expectation of the repetition of these uniform experiences.

there would not have been memories of them (MM, 34). However, the relationship between affections and real action, both faculties of the body or more precisely of the sensory motor system of a given living matter, is what really interests us in our discussion.

Affections are the real action of the body that is contained within it, right before it actualizes (MM, 33). Thus Bergson starts his description of affections saying that they can intercept images and coordinate an appropriate movement in relation to this image as though it were an invitation to act, to wait, or to refrain from action (MM, 10). He adds that affections draw on memories and vanish the moment the action is triggered (MM, 11). Affections activate motor mechanisms as sorted by the brain. The brain is a centre of transmissions which means that it conducts the sensory-motor system[1] of the body. There are diverse motor systems that are erected by the body through practice and repetition which we call habits. Habits are therefore mounted according to previous analogous perceptions and they need a call from similar perceptions to activate (MM, 99). And when these motor systems are activated, an action happens. The resulting action is similar to a drop of water leaving the bottle and merging into the ocean and becoming a part of it.

2. *Memory-images and motor actions*

Perceptions provide us with a field of points of actions which we called possible actions from the perspective of the body. At this stage, we are going to switch our perspective towards consciousness and give another compatible definition of possible actions which goes hand in hand with explaining how real action unfolds. The

[1] Although Bergson refers to them as bodily memories at the start of his second chapter of *Matter and Memory*, in order to differential the memory contained in the body from that which is contained in consciousness, we will refer to it as habits to simplify and avoid confusion.

relationship between possible action and real action are put forth by claims that perceptions are impregnated by memory images (MM, 80); or that possible actions are impregnated with real actions (MM, 33) and this will become clearer as we will see that memory images that engulf our perceptions are failed attempts for action turning perceptions into useful tools for possible actions.

We have already defined the relationship between affections and the real actions of the body, either as an action absorbed from the environment or a nascent action of the body drawing from memories (MM, 33). We have defined the body as the cradle of attentiveness and a centre of action and a boundary condition between possible action and real action. Put together, these might still sound very enigmatic. Hence, we will shift from the body's perceptive to the mind's perspective in an attempt to position each of the gears into their proper positions in the actualization machine by addressing the power source that moves these gears: the mind.

The mind is able to connect to the brain given the correct bodily attitude[1] (MM, 104-105): affected nerves bring the excitation in them to the brain and once the intelligence makes its choice, the brain transmits the excitation into motor mechanisms created and structured by repetition turned into habit (MM, 48). The brain helps in remembering useful memories and banishing useless ones: the nervous system is the extreme point of mental life; a point that is constantly inserted into the present moment and that can orient the memory toward the real, linking it to the present, although memory is absolutely independent of matter (see Fig.2) (MM, 104). In what follows we will discuss the activity of the mind, i.e., how it attains general ideas that have the

[1] The brain is like a center of transmissions where all the motor tracks of the nervous system reach positing a number of possible actions. The brain functions as an instrument of analysis in regard to the movement received, and an instrument of selection in regard to the movement executed (MM, 18).

potential of either becoming visions in the imagination, memory images impregnating possible actions or of being actualized into the flow of the universe.

General ideas are a synthesis from the memory baggage of a living matter. Memory is not stockpiled in matter since it is not extended. It is an ever growing archive of the sequence of all the moments given to our intuition: the totality of our perception without knowledge. The moment itself is defined as a group of phenomena contracted into a single interval of time, or duration, in a way that these phenomena cannot be divided any further in our consciousness. Each memory can be described as a plane that is a faithful archive, by date and place, containing the whole moment (MM, 90). The mind dwells in these planes of memories which Bergson eventually calls: planes of consciousness[1]. The mind is what perceives as the mind's rhythm is what decides the duration into which are reflected the phenomena contracted into a single moment. The mind is an intelligence, which means that it takes decisions which it eventually communicates to the brain which proposes choices. And in order to be able to make a

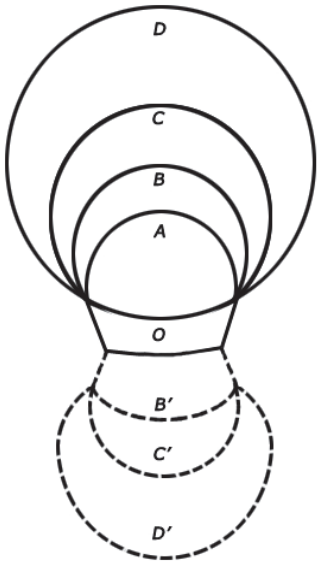

Figure 1: This diagram portrays the closed circuit of the reflection of perception which involves memory-images being actively layered by the mind. It portrays how perception becomes impregnated by memory as the attentiveness of the body increases at Object O perceived. A to D represent the layers of memory connected to O and B' to D' represent the image-memories impregnating the O with information from memory (MM, 63).

[1] Bergson use "planes of consciousness" four times in *Matter and Memory*, only in this concluding section of the book where he mentions them as a series of different planes that are virtual and that start from the oldest past memory up to the present one (MM, 141).

decision, the mind enriches its perception by using past information available to it: the key to all the mind's abilities is its ability to generate general ideas.

The equilibrium of the mind is set by the attentiveness of the body (MM, 103). The consciousness, which houses archives of memories, is practically indestructible in itself (MM, 102). The vulnerabilities happen mostly at the level of the nervous system or in the way the mind organizes the memories within consciousness (MM, 102). In fact, the mind is directed through the body not only to perceive but also, through the perception, to fetch relevant memories to the current perception. When a present state of the body calls for memories that can resonate with this state or are in the shape of it, the mind is directed towards memories that are now highlighted. Bergson continues that in order to respond to the call of the body, consciousness makes two distinct actions during this time: (1) a translation through which the consciousness presents itself in the moment by contracting itself into point S (see figure 3) and a rotation upon itself through which it summons useful memories (see figure 1). Within these simultaneous actions, i.e., diverse levels of contraction and expansion of the planes, different associations and distinctions can happen generating general ideas. The higher the level of tension of the contraction, the more the

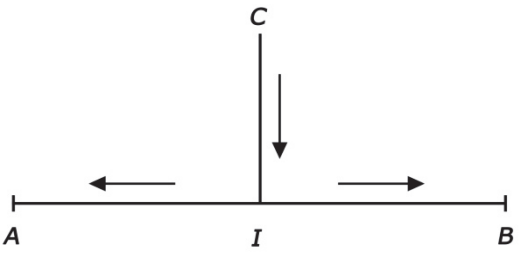

Figure 2: The double movement from the planes of consciousness (CI) to the plane of action (AB), intersecting at point I (MM, 86). Refer to Figure 4 for a more detailed version.

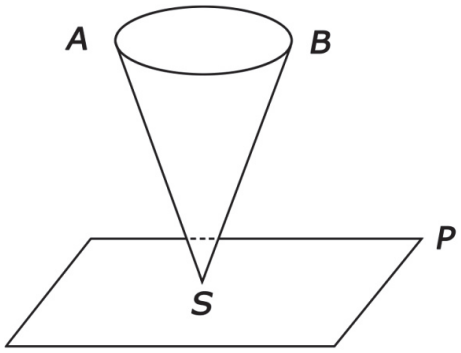

Figure 3: The cone of memory touching the plane of action at point S where the body is located. AB represents the highest level of memories (plan of dreams). (MM, 91)

useful memories, having gotten rid of irrelevant information regarding the present, can insert themselves into the present by forming bodily attitudes (MM, 96,100). The generality or particularity of a memory depends on the difference of tension: a more immediate response to a perception is rather general, while a specific memory requires a higher tension (MM, 100).

Due to the fact that the planes of memory are contiguous within each other and with the plane of perception, the mind is capable of oscillating between these planes, using resemblance and difference as its double movement through the planes (MM, 92-96). By doing so, the mind generates general ideas within the planes. Some of these memories are more important than others and become hot spots around which other memories clutter, creating clusters. Each of these spots are nebulous entities which offers more spots when the consciousness expands itself (MM, 101). Moving through these hot spots by its double current, the mind generates general ideas relevant to the current perception. At the level of S where the body is (see figure 3), the mind can locate resemblances through the motor mechanism instilled in the body which are constructed in a way to react to states similar to previous states in the same way. At the base of the planes of memories (see figure 3) the memories are all similar to each other and hence the mind can only distinguish them through their differences (MM, 92). To further explain this, in order to attain a general idea, a double effort is necessary between understanding and memory: memory tags distinctions upon resemblances mechanically offered to it through perceptions and the mind discerns in one's habitual reactions to resembling perceptions a generalized idea (MM, 96). This double effort accomplished at the same speed can stabilize the image of the object perceived, creating points of potential action, on one hand, and on the other hand, by archiving memories of

this stable object, it can create unextended virtual images (MM, 96), some of which have the potential of actualizing given the proper bodily attitude (MM, 93).

After the formation of general ideas, the cone of memory that pushes itself entirely into the present moment (MM, 105) by translational and rotational contractions (MM, 100), gives the general idea the opportunity to enter the present moment. The nebulous memories are in the virtual form and are thus unextended (MM, 81). They have a tendency to slip into the actual when the consciousness contracts inserting itself into the present moment; they do this by infiltrating a perception that is analogous to them as though pouring into a mould and imitating perception (MM, 59). The closed circuit in figure 1 illustrates the infiltration of information, as the rotational contractions of the consciousness work through the attention of the body on a perceived object, the amassed memories start to invade the object whenever they correspond to it (MM, 62-63), solidifying it into a clear recognizable object. They are however still memories, i.e., a memory-image, and therefore still virtual (MM, 81), although by enacting a perception, memory-images give up a lot of their details (MM, 59).This is how they play their role in impregnating perception with possible actions which can therefore also be referenced as virtual actions. However, when moulded into a perceived object, memory images don't simply represent the past but they act it (MM, 48) since they are actively perceived in our representation of the universe, i.e., our conscious perception of our surroundings (MM, 81).

In other cases, the image corresponds to a bodily attitude, i.e., the image generates an affection that can now trigger an action. This here is then the highest form of an actualization. It stops being just a representation and becomes an action (MM, 48).We can see in the process of actualization that the unextended virtual image

becomes actual by negating or neutralizing itself (MM, 33), i.e., it gives away its existence in order to create a new existence: a new action in the flow of the universe. There is a gradual passage from the general idea to the image and from the image to affections that connect to the motor system and trigger an action. From one stage to the other it reaches actualization as it finds the state of mind that corresponds to an affection and connects to it regardless of the difference in nature (MM, 130). This union begets the action to which both body and mind owe their existence (MM, 130).

And whereas actualization requires a present object, whether it is the body or other objects, there can still be general ideas that don't have an object, i.e., their object is absent (MM, 45) and this would account for imaginary objects.

3. *The actualization machine*

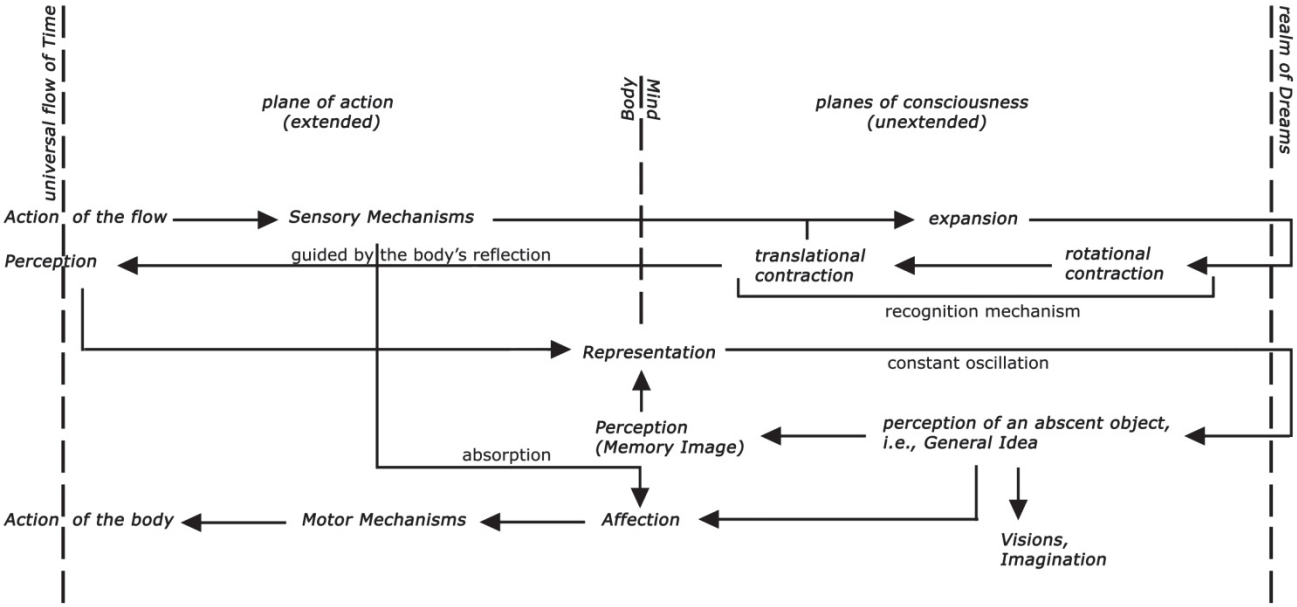

Figure 4: diagram of the actualization machine – this is a detailed version of Bergson's figure 1 which this thesis provides, where the 90 degreed fold of consciousness is flattened to show how the consciousness pushes itself in its entirety on the plane of action (MM, 100). Although Bergson represents the body as a point (I) touching the present moment, he clearly states that the body is extended, and so are affections within the body. This diagram presents the interaction between mind and body as per their orientation towards action, i.e., the actualization of an unextended idea into an extended flow.

We have thus elaborated on the main gear system that makes up the actualization machine. First, the body from its own perspective is an organism that is oriented towards action and hence it is a body that transmits the movement of the universe but also reflects some of them in so far as they are interesting, i.e., in so far as the movement is something that the body can act on. From the perspective of consciousness, the attentive body is a strategic element in the flow of the universe that guides consciousness towards the plane of action that the body selects from the flow of the universe as the ground of its possible actions upon the universe. The body thus provides the *perceiving* mind a fixed reference point through which it can now generate a practical network of time and space that helps it locate possible points of action around it and make intelligent decisions for action. Similarly, the body is a strategic element for *affective* consciousness. The body is both affected and perceived, forming a boundary condition whereby the limits of the body is defined when the distance between possible action and action is null: this defines affection. Affections are then internal to the body and cast their network on memories instead of outward on the universe which is the case of perception. When the attentive body guides the perceptive mind, it also indicates through perception a path in the planes of consciousness. The mind has then a reference to the nebulous memory checkpoints. Once there, it can compose a general idea through resemblance and differentiation.

A general idea has three conditions that go from the most ideal to the least ideal: a general idea can become an action through the conscious body when it resonates with the body's affections or a memory image through the static body when it resonates with its shape waiting to contact the conscious body in order to become an action (i.e., it is only a possible action); or in the worst case, it is simply a vision without a body yet.

In order to become an action, the general idea has to find its way to the body. When a general idea can trigger an affection, the affection being in communication with the brain and hence with the sensori-motor systems of the body, it can trigger motion in the body. At this point both the affection and its responsible general idea dissipate and an action takes their place: the body and mind have then accomplished their purpose. In a lesser ideal scenario, the general idea finds no compatibility with affection but instead can find perceived images that are compatible with it. It treats these images as its mould and penetrates them as memory images making an object recognizable and clearly available in our representation: memory images are therefore perceived as part of the object they impregnate. They become layers of nebulous information readily available to us when we perceive the universe, such that the intuited perception becomes far less important in quantity than the memory images that invade our perception.

Finally, the whole mix of perceptions and affections combined with memory-images generate our representation. Representation is then the holistic universe we are exposed to, as a final product of the efforts of our body and mind given at our present moment. This leaves us with the final scenario where a general idea is summoned but is neither compatible with affection nor with perception, and hence cannot turn into action nor can it turn into a memory image. This general idea will then stay in our consciousness as imagination or thought or a vision. And this, in a sum, is how the actualization machine of a given organism functions (refer to Fig.3).

D. Conclusion

The whole process of the actualization machine creates a zone in which we are able to act, i.e., we can act, be prepared for an action and plan an action. We can call

this zone our representation of the present moment. This machine produces from flows a solid space populated with objects. These are properly defined as points of action, i.e., an array of tools waiting to be made an action upon. To act on them, we use our knowledge to give us a variety to choose from, we use our understanding to choose from this variety and our imagination to prepare our choices. This means we can actively only use these parts of our mental and physical abilities while everything else is automated and designed to work in a certain way. And it is by treating these three parts as a derivative that we are able to trace back the integral sources which are the mind and the body each set in their environments.

However, with this position Bergson would seem to be saying that tools don't actually have a starting point in history, nor will they have an end point because when we solidify the flow of the universe into space, we translate this flow into separate entities that we call objects which are all tools for action; this necessarily includes the grids of space-time we lay over our perceptions to have a common reference.

Understanding Bergson's approach to representation also helps us in understanding his approach to technology and language by tracing a parallel line between how we compose our representation of the universe, how we manipulate it, and how we compose the use of language.

CHAPTER III

PARTS OF THE INTELLIGENT MIND

A. The role of technology

If for living matter, perception is a field of points of action we can use, then within perception itself we are already exposed to the idea of tools and our bodies are therefore the first tools of action that we are given by nature. But, at the same time, humans are essentially manufacturers (PM, 37). Nature, which denied us tools such as those it gave to insects and animals has given us a tool we call intelligence, i.e., the power to invent, to construct an indefinite number of tools that are always modelled, perceived or imagined (PM, 37). Bergson links the creative power to the power of generating general ideas. He presents this inventive power by breaking down the general idea generated in the process of recognition into three categories (1) the first is biologic resemblances meaning subdivisions of species, genera, etc..., which we translate into general ideas, separating the organic from the inorganic which means in turn, that (2) the second is the inert matter which is divided into forms and qualities while (3) the third are tools, Bergson expresses that our whole civilisation rests on this category. We know the contents of this category and its value is eminent because we cannot live without them. Once consciousness is capable of grasping these three types of general ideas, it comes into the possession of the general idea of general ideas: it can now generate its own (PM, 34-38) which are evidently reflected in language, as we will discuss in section B.

Bergson points out that it is essential that humans should create materially and morally, i.e., to make things and to make themselves. The *homosapien* says Bergson is born when the *homofaber* reflects on what it has made (PM, 51). And if fabricated tools are artificial organs, we should then take a look at technology through sensori-motor organs because our primary tools are in fact our organs, making our tools artificial ones (PM, 23). What makes tools a technology is that they are fabricated or manufactured with the use of our intelligence to help us to know and manipulate matter (PM, 37), and the key to our intelligence's clarity is science (EC, 136).

1. *Tools as artificial organs*

When Bergson calls tools artificial organs, it would seem that part of the definition of tools falls in the definition of organs. And to be able to talk about organs we must first talk about the *élan vital* or vital impetus. The big picture that Bergson portrays for us is the crossing of two opposing flows: that of the *élan vital* and that of the universe (EC, 243). From their interaction comes matter in its two forms: living and inert. According to Bergson the *élan vital* is an inventive and creative force which is found in the evolution of species and in the creative and absolutely new growth of Time (EC, 17), but also in the moral and material creative and inventive abilities of humans (PM, 51). In fact, all work that encloses part of invention, every voluntary act that encloses a part of freedom and every movement that an organism manifests in spontaneity, brings something new to the world (EC, 163) indicating the presence of the *élan vital*. Bergson explains that the *élan vital* tries to break free from matter and that so far, only humans were able to achieve this feat.

There are different lines in evolution that carries the *élan vital.* On the different lines there are different forms of consciousness that have not been able to liberate themselves from the constraints external to them and therefore have not been able to re-conquer themselves as did the human intelligence but they still express something immanent and essential to the evolving movement (EC, 8) such that the human intelligence evidently relies on them to keep its freedom.

Our organs are cradles of the *élan vital* but how do they express it? In an organism, all parts are necessarily coordinated with one another (EC, 51). The organism strives to collect energy in order to manipulate matter rather than become locked inside it. This is the impetus that is carried through the diverse species we encounter and it is the fraternal line linking all organisms. However, within each specie this forces tends to become more specialized in one of its aspects (EC, 87) hence the vegetable and animal realm where the vegetable realm is specialized in gathering and storing energy while the animal realm is specialized in action and mobility which leads to manipulating matter. Within the animal kingdom there are two ways in which action is possible either through internal knowledge of matter governed by instinct or by external knowledge of matter governed by intelligence. However, the means to act is always carried through organs: either from ones given directly by nature or by ones indirectly given by nature, i.e., fabrications.

The animal's organs are divided between a sustaining system of organs which is the digestive and respiratory systems which provide the energy and repair needed to

the sensorial organs, motor organs, and the nervous system[1]. Everything starts from the sensory motor system and everything converges towards it and the rest of the organism is at its service (EC, 90). The sensorial organs recognize the prey; the motor organs capture the prey and the nervous system coordinates their movement with the sensations. The more the nervous system is developed and the more precise the movements between which one has a choice become, the consciousness that accompanies them becomes more luminous (EC, 81). This is the case of the human: the human is capable of learning any exercise and fabricating any object and acquiring any motor habit while by contrast, the ability to combine new movements is strictly limited in the most capable animals. Although the human brain is made like any other brain to generate motor mechanisms and to give choices between them at any given moment, it is different from other brains because of the number of mechanisms it can make and the big number of choices it can give which are indefinite. There is a big difference between the limited and unlimited number of choices enough for it to be different in nature and not just in degree (EC, 178). And consciousness corresponds exactly to the power of choice that a living being has and it is coextensive with the range of possible actions that surrounds the real action: consciousness is synonymous with invention and freedom (EC, 178). Life's history shows that life is an effort of consciousness to carry matter. However matter always fell back on life completely crushing consciousness. But life is about creating with matter where matter is the instrument of attaining freedom. It is about fabricating a mechanism that triumphs over mechanism and employs determinism in nature to escape from the chains that matter has spread over life. And life has remained captive to the mechanisms that it constructed with automatisms that pretended

[1] Bergson points out that the body is made in such a way that the last organ that is deteriorated is the brain. This can be observed in animals who die from famine and the only organ that seems to have been the least damage is always the brain which is the centre of the sensori-motor system (EC, 90)

to carry it towards freedom but turned back to surround it and drag it down[1]. This changed with humans, because humans don't only maintain the machine of life (the body), they also use it as it pleases them[2] (EC, 178).

The nervous system, as the moderator of sensori-motor systems, is a simultaneous development of automatic activity and voluntary activity where the first provides the second with the appropriate instruments. The progress of the nervous system insures a growing precision to the act, a larger variety, an efficacy and a growing independence. With this growth, the organism behaves more and more like a machine of action that would reconstruct wholly for the sake of every new action as though it were elastic and could at any instant change the form of the whole piece (EC, 171). It is therefore no surprise that Bergson describes the instruments invented by humans in a similar fashion. However, an instrument fabricated intelligently is an imperfect instrument and it can only be obtained through effort and is obtained only after a lot of painstaking work (EC, 101). Since it is made by inert matter, it can take any form and serve any use and save the living being from any new difficulty that rises up and gives it an unlimited number of powers. Inferior to the natural instruments that are controlled by instinct in animals such as insects, it still has as many advantages over the latter where needs are not important (EC, 101). More importantly, the tool reacts on the nature of the

[1] Animals are closed up in animal habits of their species and cannot escape automatism. Even if for an instant they have time to create a new automatism, the gate of the prison closes as soon as they open. In the case of the human, consciousness is liberated (EC, 178).

[2] Humans owe this to the superiority of their brain that permits them an unlimited number of motor mechanisms, which evidently includes artificial mechanisms, to oppose nonstop new habits to older ones and to divide the automatism against itself and dominate it (EC, 179). Humans owe it to language which provides their consciousness an immaterial body where it incarnates and they release it thus from resting solely on the material body whose flow was dragging the consciousness first and then drowning it (EC, 179). They owe it also to their social life that stores and conserves efforts like language stores thought and fixing by this an average level where individuals must higher the bar and by this initial excitement prohibit the mediocre from sleeping and pushes the bests to climb higher (EC, 179).

being that fabricates it because when it is made to have a new function it gives the maker a richer organization because it is an artificial organ that prolongs the natural organism[1]. For each need that it satisfies, the instrument creates a new one and thus instead of closing the circle of action as instinct does, it opens for this activity an indefinite field where it pushes the activity further and renders it more free (EC, 101). However, this advantage of intelligence over instinct comes later, when intelligence, having brought fabrication to a higher power, fabricates machines of fabrication whereby intelligence seems to be more capable of having a bigger empire in nature as opposed to instinct[2] (EC, 101).

To talk about the nervous system is to talk about habits and as such, habits include artificial organs. They are authentic extensions of nature (PM, 42). Animal habits which are shared also by humans contract the will that is meant to accomplish a movement drawn by habit that is stored in the mechanisms. The motor habit of humans can have a second result that is incommensurable to this first one. Human motor habits can keep in check other motor habits by taming their automation[3] (EC, 128). For example, the cerebral mechanism that corresponds to words has in particular the ability to engage other mechanisms like those that correspond to the same things or the ability to engage one another. In the mean time, consciousness that rises from the accomplishment of an action recovers itself and is freed (EC, 128). This results into having the brain of an animal having to be very attentive during the accomplishment of

[1] In the case of animals such as insects, a change of tool means a change of species, while the artificial organ does not induce a change of species but becomes rather an extension of its beings.

[2] Bergson states that the success of a species is related to their adaptability to a wider range of geographic changes and thus the ability to live in different places which would eventually lead to a "bigger empire in nature". (EC, 101)

[3] This frees the consciousness from the grip of matter (EC, 128).

an action, while that of humans stays at rest and leaves the mechanism to conduct each other (EC, 129). This is again something we encounter in instruments we fabricate that can carry an action without the necessity of our attention. We must note that the nervous system doesn't create function: it only brings it to a higher degree of intensity and precision by giving to function a double form of reflex activity and voluntary activity (EC, 81). All the mechanisms natural or artificial are locked into the nervous system which moderates them.

2. ***Fabrication and invention***

We relate the appearance of the human race to the time where the first tools have been discovered (EC, 99). The presence of tools indicates the presence of intelligence. With intelligence an animal is capable of making for itself a rough instrument or it can use an object fabricated by humans to its advantage. There are also those who can recognize a fabricated object, e.g., a trap. These must have a certain amount of intelligence in order to make the inference. This inference is based on past experiences used for the current experience and it is already the first step towards invention says Bergson (EC, 99). However, invention becomes complete when it materializes into a fabricated instrument. This seems to be lacking in animals claims Bergson[1]. As for human intelligence, its essential step was the mechanical invention. The road of progress and its direction are in fact marked by our societies' gravitation around the use of artificial instruments and inventions up untill today (EC, 99). The habits instilled in us by our industry are so intrinsic to us that the effects of an invention

[1] Animals use found objects as instruments however they don't seem to actively make any.

are only remarked when we have already lost its novelty (EC, 99). These habits even affect the relations between humans (EC, 100).

Intelligence, as it moved forwards, became the faculty of fabricating artificial objects, in particular tools to make tools and to change indefinitely their fabrication (EC, 100). Fabricating is the operation proper to humans. It consists in assembling parts of matter shaped in a way that can be inserted one into the other to obtain from these parts a common action. Fabrication goes from the periphery to the centre or from the multiple to the one (EC, 69). The job of fabrication is more efficient when it has a bigger quantity of matter says Bergson. It proceeds by concentration and compression as opposed to arrangement which is explosive[1]. The fabricated work draws its form from the work of fabrication, i.e., from the action it is meant to accomplish. The manufacturer finds exactly in their product what they placed in it: if they want a machine they would tailor its pieces and reassemble them. This way, the built machine would show both its pieces and their assembly. The completed result represents the totality of a work and to each part of a work corresponds a piece of the result (EC, 70). However, mechanisms only show that part of reality which is similarity and repetition (EC, 39), which are in fact readily grasped by the human intelligence. Every fabrication, however rudimentary, lives on similarities and repetitions like the natural geometry that serves it as support: it works on models that it can reproduce through similarities. And when a fabrication invents, it proceeds or imagines proceeding via a new arrangement of known elements, because its principle is that the same begets the same (EC, 38) and cannot account for absolute newness. And so, the fabricated machine works on the

[1] An arrangement needs at its start the minimum amount of space and a minimum amount of matter. Bergson brings the example of a sperm that puts in movement the whole process of life which is itself a very small entity that eventually develops an organism of trillions of cells (EC. 70)

principles of finality: its past, present and future are all given along with its mechanical causality (EC, 39).

Now fabricating consists of informing matter, taming it and folding it, to convert it into instrument in order to master it. For Bergson, this mastery profits humans more than the result of material invention. If we obtain a direct advantage from fabricated objects, just as any intelligent animal could, even if this advantage was all that the inventor was looking for, it is nothing compared to the new ideas and sentiments that the invention can generate from all sides, as if the invention had as its essential effect to raise us above ourselves and thus enlarge our horizon. Between the effect and its cause the disproportion is big; so much so that it is difficult to allocate this effect to its cause. The cause triggers the effect and gives it direction. It turns out as though the handling of matter by intelligence has as its principal object to release something that matter is inhibiting (EC, 127-128). And this would be the expression of the *élan vital*.

3. *Tool based on science*

The causality that thought looks for and finds everywhere expresses the mechanism of our industry where we recompose indefinitely the same with the same elements and where we repeat the same movement to obtain the same result. We work on a model given in advance, i.e., old or composed of known elements. As for the invention which is the start point of the industry, our intelligence is incapable of grasping its flow, i.e., its indivisibility or its generality, or more precisely its creativity (EC, 115). Explaining it consists in resolving creativity into known elements arranged in

a different order although it is unpredictable and new. Intelligence does not admit the complete novelty of becoming: it lets go the essential aspect of life as though it were not made to think such an object (EC, 116).

Positive science is the work of pure intelligence. From unorganised inert matter science draws the better part of mechanical inventions and these become easier for it the more it thinks of matter mechanically. Science carries in it, in the form of a natural logic, a latent geometry that comes forth when science penetrates further into the intimacies of inert matter (EC, 136). Science is auxiliary to action and action aims at a result. The scientific intelligence asks what one should do in order to attain a certain result. More generally it addresses the conditions needed for a certain phenomenon to be produced. It goes from rearrangement to rearrangement, from simultaneity to simultaneity (PM, 77). Science is part of the recognitions system which works by abstraction and generalization (PM, 22) and therefore it is also part of our dialectical mechanism as we will see in section B. It moves from this system to the faculty of judgment and reasoning which is intelligence (PM, 22). Whether speculating or acting, science always measures our ability to act and grasp the solidity of reality, i.e., matter (PM, 23). Science arises from pure intelligence and finds itself at home when tackling matter (PM, 23). Intelligence is the prolongation of our senses and is the instrument of science (PM, 23). At the same time, both our organs and our tools are there for us to live, which means, according to Bergson, to make use of matter (PM, 23). The role of science is therefore entwined with that of our organs and our tools. Intelligence is meant to make instruments and to guide the action of the body on bodies that surround it and science pushes this objective of intelligence forward without changing its direction which is to make us master of matter (PM, 23). In order to master matter, intelligence,

which is the relational knowledge of matter becomes clearer with science and widens its knowledge of matter which it uses in turn in its industry creating instruments of various indefinite uses, triggering more needs to be met with every invention. The combination of science with the industry of fabrication is what we call today technology.

Acting and fabricating require the mind or intelligence to consider all actual forms of things, even the natural, as artificial and provisional. It requires that our thought erases from the perceived object, if it is organised and alive, what marks its internal structure in order to capture its material as indifferent from its form, subtracting the creative flow of Time. The whole of matter must appear to our thought as an immense cloth where we can tailor whatever we want and turn it into what pleases us (EC, 112). We view space, a homogenous and empty place that is infinitely divisible, as ready for any type of decomposition. This kind of place is never perceived because it is constructed (EC, 112). What is perceived is the extensity which is coloured, resisted, divided along lines that draw contours of real bodies or their real elementary parts. When we use our power over matter, i.e., our faculty of decomposition and re-composition at will which allows the complexity of our industry, we project in blocks all the possible decompositions and re-compositions behind the extended reality supported by homogenous space (EC, 112). This space is the scheme of our possible action over things and therefore it clearly involves our industry. It is a representation that is characterized by the indefinite power to decompose according to any given law and to recompose into any system (EC, 112).

If human intelligence opted to fabricate, for this reason it also associates with other intelligences. It is difficult to imagine a society where the members do not communicate. Even within societies of insects there must be language that is adapted to the necessities of common life. Common action must be possible. In an insect society where instinct governs, roles are clearly distributed and each individual is driven by its structure to their functions. These societies may have a language but the signs of this language should be limited in number and fixed to or adherent to a specific object or operation (EC, 111). But in an intelligent society, fabrication and action are of variable form and each individual must learn their role, since none of them is predestined by their structure. Thus in human societies, language is unavoidable and the system of signs is more advanced and more complicated (EC 112).

B. The role of language

Scientific research has been detecting the implication of language in many different animal cultures: different communities of same species have different habits based on their environment (Hohmann & Fruth, 563) and pass on techniques vertically from one generation to the other (*Discovery News*, 2012) or even horizontally within the same generation (*PLoS Biology*, 2014). It is clear to science at this point that animals have communication skills. Research has been finding traces of basic semiotic use in diverse animal communities, such as vocally advanced ones like the avian class and the cetacean order of mammals, e.g., whales, other than having their different dialects, can at least imitate the utterances of a different kind of cetaceans like dolphins (*J. Acoust. Soc. Am*., 2014) and even sometimes imitate human speech (*New Scientist*, 2012).

Likewise, penguins are known to recognized their mates and offspring from the crowds of millions of other penguins through the recognition of specific cries (Jody & Sidtis, 168). While Bergson expresses his gratitude to both *homosapien* the intelligent and *homofaber* the fabricator, he also expresses his antipathy towards *homoloquax* the speaker whose reflection is bundled up in its talk (PM, 51). How do we define language?

1. ***Acquiring language***

Bergson calls language an artificial motor system elaborated by the mind itself (MM, 96). This means that although language takes part in the motor mechanisms of the body, its direct parent is not the body but the mind. In other motor mechanisms, even though the mind is involved in the process of the creation of habit in discerning the various mechanical details of an action, i.e., when learning a movement, the body henceforth uses this habit as a reflex. This is not the case of language, since language can break out of the habit when necessary.

Language naturally involves the body when it actualizes into the flow of the universe however, it is the other facet of the prism[1] that is the consciousness that reflect onto the universe the movement it receives from it and places an object where the movement came from and creates a word on the other side (PM, 19). The idea is that consciousness solidifies (or condenses) objects in perception in order to be capable of grasping the movement in the flow of the universe and in turn it must solidify words from the movement of the flow of its mind, i.e., the general ideas, through which

[1] The illustration of the prism will be revisited in Chapter II, D.

language reflects the internal life of the mind (MM, 75). Language is therefore an interesting example that we can run in the actualization machine since it covers the whole ground between the base AB of the cone to the point S positioned in the present moment (see figure 3) and drop from there into the universal flow of time. As such, it could give us a thorough understanding of how the machine works and consequently an understanding of how language itself works.

Language can be given as spoken utterances or written words. On the one hand, during the time of learning, we instil in our body mechanical habits by repetition and with each repetition the words and utterances become more and more linked with each other and become more organized (MM, 47). By each repetition, we increase our precision and recompose the action, always bringing new details to our attention (MM, 67). By doing so, we divide, classify and distinguish the essence and the inner structure of the action and we train our motor system for speech (MM, 67). At each syllable pronounced, a multitude of motor systems are activated in harmony (MM, 68). As such, they become properly imprinted on our motor system[1]. With our language motor mechanisms installed, we are capable of discerning automatically the acoustic continual flow of noise as utterances and the visual symbols representing these utterances. To this we must also add another mechanism, which is a memory mechanism which is also activated with the activation of the language motor systems in order to recognize these utterances as words. During recognition of words, this semi-automatic motor process is activated. At the moment of perception, we are given a sketchy frame and an automated request summons to it appropriate memory images, i.e., those that are able to infiltrate

[1] This is illustrated by pathologies where a person cannot utter a word yet is capable of reciting prayer or singing lyrics of a song that they had previously learned, i.e., as a part of their motor habits that are activated reflexively (MM, 51).

the sketchy frame which evokes a range of affections forming a bodily attitude and by linking to these attitudes the memory-images transform the sketch into a recognizable entity (MM, 64). This is the work of the recognition machine[1]. This way we have recognized the sound and next we must find a meaning that we push towards an interpretation. For this, we go through several degrees of attention provided by the body and use several memory powers provided by the mind (MM, 65): this falls in the scope of the recognition mechanism.

When hearing an unknown language, we can either recognize it in general or through a certain sound that seems particular if it has been heard before (MM, 100). These two forms of recognition reflect two different ways of remembrance: (1) relying more on the memories stockpiled in consciousness which generates a general idea of this acoustic perception, and (2) relying more on a certain habit mechanism that evokes the appropriate memory automatically (MM, 100). The second type of recognition is used by most of the complex living matter, e.g., mammal, reptiles, etc... However the first type is generally more recurrent in humans (MM, 95). But, if we do not have the proper habits instilled in us to discern words and the proper memories that link to them, we will not recognize the language, let alone find a meaning or an interpretation for it. When the proper sound discerning motor systems are not present, i.e., when we can't tell syllables and words within utterances, we have no means to choose between memory images to make sense out of these utterances (MM, 66), all we have is a continuous noise (MM, 69): an unknown language will be a set of utterances that cannot

[1] To form the memory image, the consciousness goes through rotational compression and leaves behind much of the detail of the memories finally enveloping our perception in a way that we can no longer tell the difference between our perception-image and our memory-image (MM, 64).

be distinguished and that make no sense to us even if we hear the utterances perfectly well (MM, 66).

Recognizing a language is different from using a language. Recognizing and distinguishing words is only a habit that sketches the boundaries of words and does not make us capable of actually speaking these words. To complete the use of language, the motor systems that accompany our hearing of utterances start off by imitation, during which we decompose and analyze in detail, we coordinate our vocal motor systems with the impressions of our hearing and become capable of speech (MM, 66-67). But these are two different mechanisms. Bergson argues that the mechanisms of hearing words are ultimately related to those of uttering them (MM, 68). He also argues that without the discerning sensory-motor systems instilled through intentional attention by repetition and turned into habit, intelligent recognition of words becomes impossible (MM, 69). This activity is classified between automation and will as it is a mechanical action supervised by our will (MM, 70).

So far, it would seem that language, as complicated a form of action as it is, behaves similarly to any other movement that we make with our body, i.e., it actualizes in the same manner as walking, running, driving, swimming, etc... However, Bergson makes an additional claim about language. He says:

> This idea of generality was, in the beginning, only our consciousness of a likeness of attitude in a diversity of situations; it was habit itself, mounting from the sphere of movement to that of thought. But from genera so sketched out mechanically by habit we have passed, by an effort of reflexion upon this very process, to the general idea of genus; and when that idea has been once constituted, we have constructed (this time voluntarily) an unlimited number of general notions. It is not necessary here to follow the intellect into the detail of this construction. It is enough to say that the understanding, imitating the effort of nature, has also set up motor apparatuses, artificial in this

> case, to make a limited number of them answer to an unlimited number of individual objects: the assemblage of these mechanisms is articulate speech.[1] (MM, 96)

Habits that discern words in a continuous noise are from one side automated as part of the body through resemblances while from the other side they are intelligent as part of the mind that recognizes relevant distinctions[2]. These motor systems, as complex as they are, are wired to our consciousness. In order to speak a language, the basic method of the actualization machine follows the vocal ideas that rise and turn into representations of sound and introduce themselves into their relevant motor system given the proper bodily attitude which they can ride, in order to become uttered pronunciations (MM, 70). Vocal ideas are generally turned into uttered words, the material form of language. To understand someone else's utterance is to reconstruct it intelligently, seeking its meaning in our ideas, starting with the discernment of continuous sounds that we perceive. With the proper discerned words, vocal general ideas relevant to the word flood into it from our consciousness (MM, 70). When we hear speech, the spoken utterance is not the memory itself: it evokes a memory that itself evokes an affective sensation that brings forth a memory image. The utterance 'hot' is not hot itself but evokes a memory of hotness, which given the circumstances, e.g., hypnosis, could place the body in a state of hotness (MM, 82). In fact, a lot of remembrance problems are not because of forgetfulness in the layers of memory but rather a malfunction or a confusion at the level of the motor systems wired to these forgotten memories, such that the individual is incapable of summoning the memories because the system that is wired to it is no longer compatible to it (MM, 71-72). This is

[1] *Matter and memory*. 209

[2] When motor habits are instilled, they work by detecting resemblances in the type of movements they chose from the universal flow. The mind itself is responsible for detecting difference in memories that are otherwise all similar in nature. Refer to Chapter II, C.2.

because memories need a complementary motor system in order to actualize (MM, 73). Some of these motor systems are so complex that they imitate intelligence (MM, 51), however, motor systems are not intelligent. They present to the mind only an outline which the mind would subsequently fill in with the appropriate memory-image, thus intellectualizing our perceptions and making sense out of them (MM, 73). However, language, unlike most motor habits, is not only fixed in the body as a reflex; it is constantly related to the mind as a semi-automated motor mechanism that relies on unconscious activities of the mind.

Bergson argues that listening to a speaker is not about finding the right memories stockpiled somewhere in the brain but rather an actual state or a predisposition to which we adjust ourselves depending on the spoken language and the theme (MM, 73). This is because general ideas are not passive and fixed in Bergson's scheme; they change with every oscillation of the mind. Much like how we solidify our perception of a moving, changing universal flow in order to be able to act on it, we solidify our mental flow into ideas turning its continuity into discontinuous concepts and images which reflect, albeit remotely, the internal life of our mind (MM, 76). However, it is a mistake to treat our perceptions of sound, our audio memories and our ideas as three separate and self-sufficient entities that are welded to each other in that order because the real progress of language is not clearly determinate: it is more of an undivided continuity. Words are the solidification of mental and physical attitudes and a concretization of these moving entities (PM, 16). However, because we are fixating attitudes through corresponding words, we start thinking of them as though they were fixed (PM, 16).

Bergson stresses the importance of the meaning beyond the word and beyond the sentence. Meaning is less of a thought but more of a movement of thought and less of a movement and more of a direction (PM, 74). The movement of all acts of thought brings this thought to spread out more and more on the successive planes of the mind by constantly subdividing itself, similarly to stem cells, until it reaches an utterance (PM, 74). In the utterance, the movement is expressed by a sentence. What is a sentence? It is not a group of words that evoke images of things by disregarding the relations and nuances that exist between different images they are supposed to evoke. Each word can have different meanings depending on where they are placed in a sentence. Also, each language implies many things that it does not explicitly express Bergson states (MM, 75). Language is an attempt at an expression of the steps that our mind takes when it moves continuously organising memories and generating general ideas that it pushes into perception to concretize it; however it expresses it with units that are discontinuous and juxtaposed which we call words (MM, 75). The understanding of speech happens when a thought analogous to that speech arises in the mind through the speech itself destined to guide my thoughts although the verbal utterances are not comprehensible in themselves. The verbal utterances are not in themselves things and therefore cannot have meaning without thought that flows into them to turn them into things for our consciousness (MM, 75). Language is associated to the life of the mind, it unfolds according to the discursive intelligence that cuts the movement of the mind into phases and solidifies them into things, i.e., articulate speech. If it were simply a metaphysical entity, then it could not have followed the movement of the mind nor simplified this movement into acts.

2. *Thought's relation to language*

Naturally, thought and language are related. However, how does Bergson describe this relation? One of his major claims about this relationships is that thought stays incommensurable with language (*Essai*, 74). This incommensurability is due to the fact that thought is a flow while language is an aggregate of solid pieces (words) that try to capture this flow through the succession of juxtaposed chunks. Bergson repeatedly expresses his disdain towards language because of the fixed frames that it offers us to capture the flow and hid the differences between things by highlighting their similarities[1]. That being said, Bergson does not give up on language. He states hopefully that it is the function of our ideas to be modelled and enlarged according to reality and this should be our constant aim (PM, 129). Moreover, language plays a very important role for Bergson: that of making intelligence disinterested by creating a virtual body for consciousness. In fact, the dialectic insures the harmony of thought with itself without forgetting that through the dialectic which is a sort of relaxation of the mind, many harmonies are possible of which only one is true (EC, 163).

a. Words and sentences

Language is an infinite array of signs which are extendable to infinite things. The sign has a tendency to be transported from an object to another through similarities (EC, 112) where linking the same to the same is an essential function of intelligence (EC, 139). In fact, we can observe this in children who learn using words by learning to

[1] For example, feelings cannot endure in time because a multitude of impressions come and enrich it and modify its nature (*Essai,* 87), i.e., feelings are a flow that is constantly changing. We solidify our impressions to express them by language (*Essai*, 60). With our words, we impose a name to feelings and treat them as non-changing objects diminishing their duration but also forgetting that states of consciousness are progressions and no objects (*Essai*, 87); by doing so, we influence our feelings by our language believing that feelings are invariables and we subvert from them, i.e., although they are very personal we objectify[1] them and impersonalise[1] them when we use words to express them (*Essai*, 60).

find closeness between things however distant to the use of a word: the innate knowledge of the intelligent mind is to arrive to general frames and using them, intelligent knowledge being that of relations involving matter (EC, 105). It uses relations between equivalent things, contents, cause and effect, etc..., whereby each sentence implicates a subject, an attribute and a verb expressed or implicit (EC, 105). The basic approach to learning language is that anything can designate anything (EC, 112). This mechanism is that of language and is an added part to the generalization mechanism which is instinctively present in all animal forms (EC, 112). It helps us recognize things and distinguish them from one another (PM, 34). As we mentioned in the previous section, humans are capable of having more complete general ideas which are thought and created by intention although based on an instinctive mechanism (PM, 34). Part of this difference is that the sign is an adherent sign[1] with the animal recognition mechanism, whereas with complex language, the sign becomes a mobile sign, i.e., it goes from one thing to the other based on similarity[2] and this allows it to extend from external things to concepts which are internal (EC, 112). Thus, the use of language does not necessarily indicate an ability to think intelligently such as when language is only used in an outwardly practical way, as is the case of most animals (EC, 112). An intelligence that thinks is an intelligence that can turn inwards and that has, beyond the practically useful effort, a surplus of force to spend, i.e., it is a consciousness

[1] By adherent sign is it meant that the sign and the signified are interlocked and lose meaning if changed.

[2] Language describes that which we cut in the real with our perception and the properties it relates to are those that are of use to human action (PM, 49). The word is therefore the same if the functions of the object are the same and through the use of the same word, we will be allocating the same properties to that which we refer to with this word. This affects in turn our representation of the object, the way we perceive it, since objects are only so much matter and mostly memory. The mind will thus group all these objects under the same idea. Whenever there's the same advantage to gain or same action to be done the same word is called forth (PM, 49).

that has virtually re-conquered[1] itself. But this is where the usefulness of language lies vis-à-vis intelligent thought: we can presume that without language even the thinking intelligence would have reverted to the material objects that it has an interest in and then intelligence would have lived in a sleeping state, external to itself and hypnotized by its work (EC, 112). Language has contributed a lot to its liberation from this. Bergson explains how this is possible. In fact, in a thinking intelligence, the word, in order to go from one thing to the other, is essentially mobile and free: it extends by similarity from perceived things to other perceived things but then it encounters the memory of the thing in the oscillating flow of the mind and reaches the precise memory (the general idea). From there it passes on to the memory image that is represented and perceived, and from the memory image it latchs onto the action of representation which is none-other than the concept (EC, 112) (refer to figure 5). Thus language moves the intellect's attention inwards to the spectacle of its own operations. And the intelligence is already on the lookout for this occasion. It uses the fact that a word itself is a thing to penetrate into the interior of its own work, carrying itself there through the word (EC, 112). Although the first job of the thinking intelligence is to fabricate instruments, some fabrications are possible only through the use of means that are not tailored to the exact size of their object and surpass it and this permits intelligence to do a supplementary work which is a disinterested work (EC, 112). When intelligence is able to think its own unfolding, it perceives itself as a creator of concepts and there would be no object of which it wouldn't want to have a concept even if it had no relation to practical action

[1] Bergson believes that consciousness eventually became a slave to matter as it put up automated mechanisms in matter between which it makes a choice. The only time a consciousness is awake is when it is making a choice after which is goes to slumber. By re-conquering itself, it is meant that the consciousness is no longer in a position of going back to sleep and it is awake all the time. This is a feature of language as we explained in the first section of this chapter, i.e., language is a semi-automated feature of intelligence moderated constantly by the mind although at the same time automated like any other material habit.

(EC, 112). This language enlarges the operation's field of intelligence beyond that of inert matter, although both are originally designed to tackle only inert matter (EC, 113). In this way it is able to detach consciousness from the burden of matter and brand it with the concept of the self[1]. In fact, we register a resemblance between thing and state whenever our body reacts in the same way to both (PM, 34). It is therefore important to realize that some of the things that the frame of a word brings to light are not objects, i.e., not inert matter, but artificially modelled concepts proper to humans (PM, 34) so that we need to be wary while using these words especially since they compose the large majority[2] and try not to mingle them in science and philosophy (PM, 35). Bergson is against substituting things for concepts, i.e., in indulging in socialization of all truths[3], instead we should maintain this substitution only where practical realities are concerned. In fact, the human mind is not conditioned for philosophy or science but rather for practical acts (PM, 53), and language is developed for the sake of these acts. Still, Bergson does not give up on words because of their inherent flexibility but we should be aware of this flexibility and use it appropriately taking into consideration the dangers of treating some things as objects.

[1] Although the word is what turns the attention of intelligence to the inside of its mechanisms, or to encounter the mind, to present itself to intelligence and be accessible to it, the mind is perceived through concrete ideas which are images and not concepts which are abstract ideas (PM, 27). This is the idea of the self to which we refer to. It is given to our intelligence as an idea, however it is more than an idea (PM, 27).

[2] Still, even this majority can be simplified or reduced into a smaller number of ideas which showcase essential resemblances to which they are linked (PM, 35). Bergson divides these resemblances into three groups: biologic resemblances of living organism, qualitative and physical resemblances in inert matter and finally the ability to invent not only out of matter but also out of general ideas. Language constructs those that are needed for social life and then it can create any out of pure speculation and those constructed for no particular reason: all concepts that don't come from the first two categories, which is evidentially the majority of our concepts, they are born from the exigencies of conversation and action. (PM, 37-38).

[3] By socializing truths, it is meant that we treat as things not only matter but also feelings and other conceptions such as God for example. We risk falling into believing that these exist outside the boundaries of our thoughts and hence turn them into truths.

Since language is primarily built for practical social purposes where every object is discontinuous and distinct, concepts follow the same construction by being external to one another much like objects in space (EC, 113). They have the same stability as the objects which they have been modelled upon. Together, concepts create an intelligible world that resembles by its essential character the world of solids but whose elements are lighter, smoother, and easier to handle for the intelligence than the pure and simple memory images of concrete things (EC, 113).

Speaking, thinking and perceiving guide us towards stability with superadded accidental movement and change, where each quality and state is rendered stable and change consists in their succession and where the substance which supports the succession of states and qualities is the stability itself: this is the immanent logic followed by our language. The essence of intelligence is to judge, and judgement operates by attributing a predicate to a subject. When a subject is named it is declared an invariable and the variability it is subjected to is expressed in the diversity of its successive stable states. We are forced to have absolutely stable subjects undergoing stable qualities and states which we relate to as attributes of said subject. When we name a subject, we rely on a knowledge previously acquired by the listener, just as we rely on the fact that the substance is generally supposed to remain invariable, such that the listener is able to relate to the same substance through the named subject. The structure of language is related to the structure of our representation of the world because our perception works according to this same principle: it carves out from the continuity of the universal flow chosen elements precisely such that they can be treated as invariables when dealing with them in various ways. Even when the tailored object is still a flow, we find other states in it that do not vary. With this, we are individuals who

are capable of social action: although language and thought are not complete replicas of each other, this helps them make room for the contingency and variability that we subtract from the flow of the universe. By thinking, perceiving, and speaking in individual or social activities, we synthesize static objects from the flow (PM, 42-43).

We necessarily express ourselves with words juxtaposed in sentences (*Essai*, 7). Although words are signs or symbols, unlike concepts and images, they do not preserve memory (PM, 46) but they correspond to concepts and images (PM, 33) as their mirage (PM, 40). They reflect the three types of representation (1) qualities, (2) forms or essences and (3) actions or goals. These are three manners of seeing which correspond to the three categories of words: (1) adjectives, (2) substantives and (3) the verbs that are primordial elements of language. Adjectives and substantives symbolise states while verbs only express themselves (EC, 202). To illustrate this, Bergson highlights one of the more important verbs: "to become". He points out that this is a verb with an undetermined meaning destined to mask the absurdity we fall in by attributing a state to a subject that doesn't match it, e.g., as when we say "the boy became a man". It works similarly to the movement that we subtract from our perception and add later on as an external force (EC, 207-208). To explain the endurance of a concept, Bergson points out that the forms and qualities that we isolate and store in concepts are the moments that were condensed in the flow of the universe. The forms and qualities in fact do not endure, but because the concepts are artificial reconstructions and symbolic expressions are the intellectual equivalents of form and quality, it is only in this way that they become eternal[1] (EC, 211). Each word in

[1] Our intelligence judges all truth as being eternal, thus if a judgment is true now, it must have always been true even if that truth was just formulated and had no existence before: it existed by right before

language may be conventional but language itself is not. The primitive function of language is to communicate for cooperation always in preparation for a future action: it transmits orders and warnings, it prescribes and describes. Whether industrial, commercial, or military, its function is always social (PM, 49).

b. Ideas and Concepts

Concepts are formed similarly to words by capturing a meaning from the layers of consciousness, i.e., there are no pre-existing ones (PM, 74). We have two modes of expression of meaning: concept and image. In concepts the expression system develops while in images, the expression system contracts the more we push it towards the layers of consciousness from whence it came (PM, 73). Bergson differentiates between abstract ideas and concrete ideas. Abstract ideas are concepts and relate to language and abstract languages which only portray an imitation through matter, i.e., they are mainly based on the external world. Concrete ideas are more like images (PM, 27). A new concept for a new object can be a new method of thinking (EC, 41).

On various occasions, Bergson compares language to scientific symbolism (PM, 11). Our consciousness which is swayed by the desire of distinguishing, substitutes symbols for reality. The point made by Bergson is that we cannot perceive reality unless we perceive it through symbols which we juxtapose (*Essai*, 59), and words are part of this symbolism. The mind has a natural tendency to distinguish, separate and see relations between entities and then bring them back together by adding layers of complexity. In the realm of the mind, these entities are symbols or a multiplicity of symbols: "The more we perceive symbolically parts in an indivisible

existing in fact. We treat things as though the thing and the idea of the thing, its reality and possibility, were not created at the moment of their invention through art or nature (PM, 13).

whole, the more the number of the relations that the parts have between themselves necessarily increases since the same undividedness of the real whole continues to hover over the growing multiplicity of the symbolic elements into which the scattering of the attention has decomposed it"[1] (EC, 144). In other words, ideas which are concepts and memory images are also symbols in the mind, which connects them to geometry and logic[2].

'Ideas' can be translated into 'moments', because an idea is the stable view taken on something unstable. To bring things to ideas consists of resolving the flow of the universe into principal moments each of which is subtracted from the flow as though picked out from eternity (EC, 209). Ideas are always known to us[3], without anything hidden while an object is a resource of possibilities linked to a reality[4] (PM, 71). Each idea and each sensation is a practical question that our activity asks reality and to which reality responds by a yes or a no (PM, 116). As mentioned above, concepts are necessarily immobile while we consider them (PM, 110). We sometimes adopt ideas

[1] *Creative Evolution*. 221

[2] The relationship between words and space and intelligence in general will be expounded in Chapter II,C.

[3] Either when we're thinking or intuiting thought always uses language (PM, 21). Concepts of intellectual origin are immediately clear with sufficient effort but ideas of intuition begin by being obscure and turn into concepts (PM, 21). This means there are two origins for concepts. and Bergson defines here two kinds of clarity we can attain: (1) a new idea can be clear as a rearrangement of elementary ideas we already possessed and (2) a radically new idea is an absolutely simple idea that captures an intuition and it is first very obscure as it does not have smaller elements that constitute it that we can use to understand it. We bring this idea to other ideas within our repertoire and see that it dissipates obscurities present there and by doing so, it starts to pick on intellectual aspects, becoming clearer to us. Here Bergson invites us to distinguish between ideas that keep their light to themselves and those that radiate outwardly illuminating regions of thought. By the way they function we can know what they are (PM, 22).

[4] Bergson returns to this claim several times: "You will never get out of an idea which you have formed anything which you have not put into it; and if the unity by means of which you make up your number is the unity of an act and not of an object, no effort of analysis will bring out of it anything but unity pure and simple." (*Time and Free Will*, 81)

only because they match other ideas we have and reflect something in ourselves[1] (*Essai*, 61-62). They don't have a common form like words and even if they bear the same name, they are not the same in other minds[2] (*Essai*, 62). What affects the general state of the self, also affects ideas, says Bergson pointing at their ability to change but also pointing out that an idea occupies the self (*Essai,* 62). However, conceptual thinking cannot reach the depths of the mind (PM, 19), it simply imitates the life of the mind. At that level, the general ideas are blended into each other but the ideas which are concepts and images are dissociated and exclude one another (*Essai*, 62).

We can also explore here the relationship concepts have to things, and through things, to space. When we tag an object with a concept, we mark the type of actions or attitudes that this object suggests to us because to apply concepts to things, we follow the diverse possible actions and attitudes of an object which are conceptual directions of our thoughts that are determined once and for all (PM, 109). When we find an idea for an object we place that object in a pre-existing frame (EC, 41). Concepts relate to objects and facts by gathering into the same compartment things that concern the same need. So when we react the same way to different perceptions we say we're facing the same kind of object; if it's an opposite reaction then it's an opposite kind of object (PM, 22).

[1] Bergson explains that the reason why we sometimes are incapable of arguing why we adopted an idea or an opinion that seems right to us, it is because this opinion is somewhat in harmony with the rest of our ideas. And our lack of ability to express them comes from the fact that they become banal when we fit them into a word thus bringing these ideas that interpenetrated with our other ideas into an artificial isolation, losing all the ramifications that made them what they were. In fact, Bergson compares them to cells which are affected by the total state of the organism except that an idea occupies the whole of a state while a cell occupies only a fixed point (*Essai*, 62).

[2] This is probably only the case for deeper ideas which mingle about with other deep ideas such as for example love or hate and not surface ideas such as tables and chairs.

An idea constructed by the mind is not an idea unless the pieces of meaning that compose the idea are able to coexist. It is reduced to a simple word devoid of meaning if the elements that construct it are chasing each other out. When we define a circle, we can easily represent it as dark or white or wooden or transparent but we cannot represent it if it were a squared circle because the law for constructing a circle excludes the possibility of straight edges (EC, 188). Bergson links the example of a squared circle to that of abolishing the meaning of an idea (EC, 188). Abolishing a meaning is eventually linked to the meaning of negation. In sentences, we deliver a judgment of the intellect which is one of the faculties of the intellect: we are either affirming or negating. We usually think of these two as symmetrical to each other, meaning that we treat them both as self sufficient and capable of creating ideas either positive or negative. However Bergson challenges this view insisting that a negation is only half of a construction of the mind as it pushes the other undetermined half into the future (EC, 192). Moreover, contrary to the intellectual purity of an affirmation, negation addresses an erroneous judgment made by someone instead of targeting an object, i.e., its job is to remove or warn of an error in a potential or actual affirmation (EC, 192). This makes a negation a second degree affirmation: it affirms something about the affirmation that itself affirms something about an object (EC, 192). Whenever someone negates, they accomplish two acts: (1) one is interested in an affirmation made by someone or that is about to be made by someone or that someone could have made and warns them; (2) one announces that an affirmation must be replaced without announcing the content of the substitution. There are no ideas in the negation and no contents other than the positive affirmation that it is judging (EC, 193). The negative judgment expresses a contrast between a possible and an actual where the possible does

not match the actual (EC, 194). With this in mind, Bergson states that concepts ordinarily come in couples (PM, 109). There is never a concrete reality towards which we cannot adopt two simultaneously opposing views, and consequently, there are no realities that do not subsume two antagonistic concepts. There is always an antithesis to a thesis that cannot be logically reconciled because there never is a single act. However, through intuition, we can grasp both opposing concepts and can easily contemplate both thesis and antithesis and understand how they can be opposed to or reconciled with each other (PM, 109).

Concepts are more or less artificially created by the human mind, i.e., extracted through its free initiative from the continuity of experience. Concepts are represented by the same conventional words. Propositions target a social and pedagogical goal because the first propagates a truth and the second prevents errors (EC, 194). From the point of view of logic, affirming and negating are two symmetric acts where the first establishes a relation of convenience and the second a relation of inconvenience between a subject and an attribute. An affirmation however is not restricted to logic, since it will go on existing without language or logic because it is inscribed in sensations which even a preliminary intelligence would be able to affirm. Neither concept nor word, nor the desire to spread the truth around one's self, nor that of ameliorating one's self, are ever part of the essence of affirmation. Negation, however, involves all these as part of an advanced intelligence: this intelligence must be awake and should be able to formulate the disappointment of a real or possible expectation; it should correct an actual or eventual error; finally, it should propose to turn this into a lesson for one's self or others (EC, 195).

c. Thought:

Thinking means going from concepts to things and not from things to concepts says Bergson (PM, 109). This is an automated correspondence we make between thing and concept. For Bergson, to know is to weigh and combine ready-made concepts until we obtain a practical equivalent of the real because we think for the sake of using an object. All knowledge is oriented towards a certain direction or taken from a certain point of view, even if our interests may be complex. This generates different orientations for our knowledge of the same object and varies our points of view on it adding up to a comprehensive knowledge of the object since it can participate in more than one concept (PM, 109). He reiterates this thought by pointing out that concepts lead to knowledge in two ways: either by keeping their light to themselves and being understood on their own or by radiating outwardly illuminating region of thought and staying in the dark themselves. However, by shedding light on areas, i.e., by the way they function, we can know more things about these second type of concepts (PM, 22). It is through this same approach also that the intellect which is oriented outwardly can understand itself through what it discovers.

In fact, we think in two ways: intelligence and intuition where intelligences works on outward relations between entities while intuition thinks inwardly through the entity itself. Ideas and words have evolved from their utilitarian existence with intuition where intuition reflects on the intellect and thus generates thought: “there is no thought without "esprit de finesse," and the "esprit de finesse" is the reflection of the intuition in the intellect[1]” (PM, 49). Although words were first meant to be just signals, with intuition reflecting upon the mind, words become instruments of art. Both thought and language are meant to organize the work of humans in space and they were born from a

[1] *The Creative Mind*, 93

vague intellect, "a very general adaptation of mind to matter which society is to use[1]" (PM, 49). This is for example the type of language use we encounter today other animals who live in communities. After this come the dialogues and distribution where humans sought to agree upon a meaning of a word and the repartition of things according to the indications of language. This system that is modelled on words has to have exact knowledge represented by more precise signs leading intelligence to reach a complete understanding of materiality and thus an understanding of itself[2]. Language is then used to express thoughts that are intuitive and thoughts that are intelligent. However, even between these two forms of thoughts, language still only expresses in its preliminary way: intelligence calls everything into question while language requires stability; intuition is always renovating and reinventing the depth of things but words needs to have a definite meaning relatively fixed. That is to say, words can express the new only as a rearrangement of the old (PM, 50).

Let us look back to the animal societies to help us retrace the evolution of language in human societies. The claim that Bergson makes is that although animals construct their representation in the same fashion as we do, i.e., they tailor the flow of the universe in the same articulations even if not the same bodies, they do not have the same representation of the world. They might not need to perceive objects but only need to distinguish properties (EC, 131) which they do instinctively through the recognition mechanism (EC 112). With animals who use signs for communication however their sign differs from that of humans in that the human sign is mobile, i.e., it goes from thing to thing and from thing to concept etc (EC, 112). According to Bergson, just as all

[1] *The Creative Mind*, 94

[2] Intelligence becomes clearer to itself when it understands its environment.

living matter has a consciousness that is either awake (animals) or slumbering (plants)[1], consciousness has both instinct and intelligence which are independent of one another and can range between vagueness and clarity (EC, 82). We can therefore look into the animal world to find a simplified version of language where we can seek the relationship between thought and language.

With their instinctive recognition machine, animals can distinguish between things of interest which can be oriented towards finding a source of energy for their system. They can successfully choose from a variety, i.e., they would not eat meat mistaking it for grass. This means they have the general ideas of what interests them and this indicates a legitimate thought process. As we recall from Chapter II, from these general ideas three things are generated (1) the action of eating, (2) locating food and (3) picturing food. The extra step that comes in with language in the case of an animal that needs to communicate is (4) asking another about this food. This happens via the third possibility which is that of the image that has no object to merge with, meaning the image of food. This particular image can have a particular sign as Bergson mentions, through which a certain animal can voice their demand. However, the sign is fixed to its image. Most animals have a fixed number of signs that involve the same number of images and in the same manner most animals can count only to a certain amount of numbers (Tennesen, 2009). In the case of humans, the sign is flexible and can account for an infinity of images, while there could be an infinite number of signs; this is why humans use concepts instead of image and have a more elaborate semiotics. Concepts

[1] Animals can be distinguished by their sensibility and awakened consciousness while vegetation by their sleeping consciousness and insensibility. However, the mobility and consciousness of vegetal cells are not sleeping to the point where they cannot be awakened when the correct circumstances are available (EC, 83).

are created by the inventing and fabricating human whenever the need arises and eventually language becomes complicated.

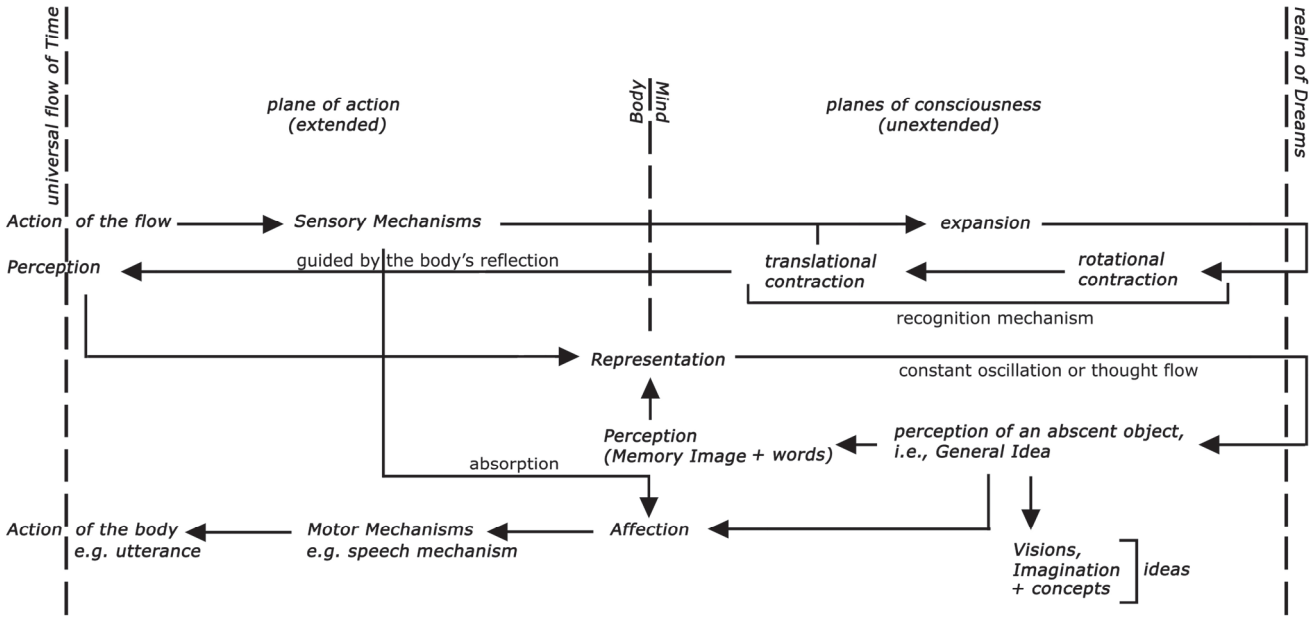

Figure 5: Diagram of the actualization machine including the placement of language. The thesis provides this diagram to show the trajectory the word follows through representation, the recognition mechanism and the oscillating mind and finally reaching to ideas and concepts which are thus applied on representation.

In other words, the general ideas which accompany the flow of the oscillating mind are transformed into a perceived memory image. The word which originally designated similar objects can now move to designate the same similarities in memory. With memory it now follows the stream of general ideas and thus from the general idea it proceeds to the memory images and from there to the representation, and with the self-observing ability that language gives to the intellect, it can now designate a concept, which is the act of representation.

C. The role of space

Through the previous sections we have hinted that both technology as a cooperation between science and fabrication of tools, and language as the imitation of thought processes work in influencing both our thoughts and perceptions. Bergson says that the common thought, as a result of the structure of the senses, intelligence and language is near to that of science: our thoughts have the same categories as science where perception is a beginning of science and science is a mature perception (PM, 77). Useful knowledge and scientific knowledge are both destined to prepare us for action upon things and are therefore necessarily acquainted and differ only in precision (PM, 77). Both language and technology, which are oriented towards action, influence our perceptions. In this section we aim at exploring the relationship between space technology and language, taking into consideration that both technology and language are products of the intellect. The aim is to find out how they influence our representation of the world.

We have discussed space in chapter II and divided it into three types: (1) the movement of the flow of the universe; (2) matter which is heterogeneous and extended qualities; and finally (3) the homogenous space time which is a network created by the living beings that blends into their perception of matter and allows them to cut out from the flow of matter exact bodies and objects that it can act upon. However, the automated application of homogenous space-time over heterogeneous space depends on the level of their intelligence making humans a special case (*Essai*, 48). This homogenous space-time is therefore the product of the mind. It is generated by the mind's natural tendency which is to distinguish, separate and see relations between entities, bringing them back together, by adding layers of complexity (EC, 144). We should note here that the mind's

ability to see relations is that of intelligence (EC, 105) while distinguishing and separating is the role of the recognition mechanism.

Bergson explains this mechanism of the mind further through the example of hearing a sentence. As we hear, our thought tries to sympathize with the thoughts of the speaker and if our mind relaxed itself and let go of the tension, the utterance that was clouded in meaning becomes a series of distinct successive sounds individualized (EC, 144). By relaxing further, the letters of the words become loose and all the letters and syllables of the sentences become visible as though they were written on an imaginary sheet (EC, 144). By keeping this trajectory of the mind, one becomes more aware of complexities and extension (EC, 144). This is the homogenous space (EC, 144). In this realm of the mind, these entities are symbols or multiplicity of symbols.[1] The symbolism is the basic feature of our representation, which is our final perception of the world, and since language consists of symbols, it is an essential part of the generation of our representation. Because of this tendency towards spatialization, materiality is highlighted when viewed by the mind (EC, 140). Bergson goes as far as saying that it is matter that helped the mind to run down its path[2] by giving it momentum (EC, 140). This seems to be because without matter, the mind would simply have nothing to decompose and recompose into representation. Once having gained the ability to spatialize, the mind uses it as a net with chains that can be done and undone at will (EC,

[1] "*Plus on aperçoit symboliquement de parties dans un tout indivisible, plus augmente, nécessairement, le nombre des rapports que les parties ont entre elles, puisque la même indivision du tout réel continue à planer sur la multiplicité croissante des éléments symboliques en laquelle l'éparpillement de l'attention l'a décomposé.* " (EC, 144) [T]he more we perceive symbolically parts in an indivisible whole, the more the number of the relations that the parts have between themselves necessarily increases since the same undividedness of the real whole continues to hover over the growing multiplicity of the symbolic elements into which the scattering of the attention has decomposed it (CE, 221)

[2] We recall here that the flow of matter is described as a descent by Bergson and that of the élan vital by an ascent, the references to this can be found in "*L'Evolution Creatrice*" on pages 168, 181 and 185.

140). This net cast over matter divides it as needed according to our actions (EC, 140). Our geometric space and the space of objects is generated by action and the reciprocal reaction of two things with the same essence but going in opposing directions (EC, 140), i.e., matter and mind.

The homogenous space is not perceived because it is a mental construction or a mental rearrangement: what is perceived are qualities (EC, 111). When we use our faculty of decomposition and recomposition at will, we project in blocks all the possible decompositions and recompositions behind the extended reality supported by the homogenous space (EC, 111). This space is the scheme of our possible action over things and the mind finds that things have a natural tendency to enter into this kind of scheme (EC, 111). Bergson emphasizes here that this ability to represent is due to the human's faculty to fabricate which is really at its heart the ability of decomposing according to any given law and to recompose into any system (EC, 111).

The homogenous space-time is an absence of all qualities[1] and it happens in two forms: coexistence of contents (space) and succession of contents (time) (*Essai*, 47). Bergson links the homogenous space-time to counting as well as geometry and logic and thus to mathematics. He says that space is the material with which the mind builds up numbers (*Essai*, 42). In space we are able to count and therefore differentiate between a unity and multiplicity. A succession leading to a sum happens in the homogenous space-time: to count we need to juxtapose units where each unit is in fact a

[1] Because by a principle of differentiation, we can differentiate between perceived qualities, therefore homogenous space cannot be a quality itself (*Essai*, 46). On the other hand, the concrete space of the extended is within the things, i.e., it is part of their quality (PM, 59). A homogenous place, which is the absence of all quality (*Essai*, 47), allows simultaneity of terms that can have identical qualities but can still be distinguished one from another (*Essai*, 46). Because of this lack of quality, space allows itself to be decomposed and recomposed (*Essai*, 53).

multiplicity that we must consider as undividable, pure and simple during an operation[1] such as 1+1+1=3 (*Essai*, 39). This is similar to the solidified perception upon which action is possible and also similar to the concepts which we have to consider fixed while using them. Counting means to think of things separately, that is when we apply the concept of number to a material object through language but it also means to think of simultaneity, which is when we have a multiplicity of states of consciousness which cannot be regarded as numerical without the help of some symbolic representation (*Essai*, 42). With this Bergson boils down the space-time homogeneity into just space which provides both the juxtaposition of objects which we call coexistence and the juxtaposition of states which we call succession: to count a succession we need to juxtapose the states of consciousness in space therefore a succession leading to a sum does not happen in time but in space (*Essai*, 40). The juxtaposition of states of consciousness is only possible because we retain in memory past events (*Essai*, 51) which we then place next to each other to create a succession.

This evidently means that homogenous space doesn't only function outside the self and only on matter but that its network also spreads to our thoughts and our concepts which are inherently spatial which in turn allows their application onto external objects. That which synthesizes the unextended with the extended is none other than the mind (*Essai*, 46). The mind embraces everything that coexists at the same time and juxtaposes it (*Essai*, 46). By this we are acquainted with the conception of an empty homogenous place which is in turn is the only possible definition of the homogenous space (*Essai*, 46).

[1] In fact, although arithmetic teaches us to split things up without limit, in common sense we hardly need to divide so much and we are more inclined to build up numbers with the indivisible (*Essai*, 42).

In his earlier works, Bergson is keener on separating homogenous space from matter and calling it the work of human intelligence: he calls it an extraordinary feat that is a kind of reaction to the deep heterogeneity of our experience and points out that it is a special faculty to perceive and conceive a space without quality (*Essai*, 47). However, in his later works, Bergson adds to his former claims and points out that the human intelligence would not be able to model its perception geometrically if geometry were not already part of matter[1]. He says that intellectuality and materiality have to have the same nature and be produced in the same way[2] (EC, 150), however, matter is not fully defined through geometry because mathematics cannot invent newness while matter is new at every moment due to duration. Matter then already contains a spatial quality that the intellect uses in order to cast its homogenous space and grab onto matter. The success of science in mathematical form would have been less comprehensible if matter did not have all that is needed to be placed within our frames (EC, 150). The mathematical order works with interruptions and since matter consists of such interruptions we can say that matter is filled with geometry (EC, 151).

The next claim that Bergson makes is that the intellect and space are modelled upon each other (EC, 174). Intelligence is a way of thinking which is directed towards matter and can only evolve smoothly in space and feels at ease only in matter (PM, 48). Intelligence's main and basic task is to fabricate (PM, 48). In early mechanical work,

[1] Between intellect and matter there is symmetry, concord and agreement. Matter resolves into mathematical relations. Our intellect functions most precisely when applied on geometry. The human mind has a natural mathematics upon which mathematical science and conventions are formed. This mathematics is instantaneous where the effort of understanding is fact rather than right. When intelligence works in precision matter begins to reveal its structure to us, and the intellect seems to apply exactly on matter. Bergson states that we have not established that our perception is an illusion, therefore it is a reality, even if only part of it, i.e., we do not change or deform or construct objects we perceive through our knowledge (PM, 23-24)

[2] This refers back to the collision of the opposing flows of the universe and of life where one falls and the other rises which generates matter in its two forms: inert and living.

we already see imprecise mathematics which later becomes a trigger for other sciences and works towards perfecting the mechanical arts (PM, 48) which we call today technology. At first, intelligence is still vague because it is still not well acquainted with matter but it becomes clearer to itself the more it learns about matter (PM, 48).

Thought with language is meant to organize the work or the action of men in space. They are both born from a vague intellect which is "a very general adaptation of mind to matter which society uses"[1] (PM, 49). On the scale of evolution, this lead to the stage which involved dialogues and distributions where humans sought to agree on the meaning of a word and the repartition of things according to the indications of language (PM, 49). This way, language exacts the knowledge of more precise signs that starts to move away from words that adhered to things and this leads to science that investigates the object of the sign, i.e., matter, as its ideal experimental subject (PM, 49). Thus intelligence comes to a more complete understanding of materiality and to an eventual understanding of itself (PM, 50)[2].

Our intelligent mind distinguishes in two manners: similarity and difference. (*Essai*, 56). We encounter this even in the vaguest of intelligences in living beings through the recognition mechanism. However, without a symbolic substitute which is possible with higher intelligence triggered by language, we could not conceive of a

[1] *Creative Mind*, 94

[2] On the other hand, and picking up the opposite side of this development, this exploration of the sign and meaning leads to free philosophy from language and push towards the understanding of the mind (PM, 50). However, language still remains fulfilling its function, although now burdened with science and philosophy. First it identified with intelligence and shared its imprecision but now that intelligence has become more precise with science and no longer shares this imprecision with it and on the other hand, it used to be influenced by intuition which looked at the mind and now with philosophy it is forced to become more coextensive with mind. Even between these two forms of thoughts, language still only expresses in its preliminary way: science calls everything to question while language requires stability and philosophy is always renovating and reinventing the depth of things but words need to have a definite meaning relatively fixed. The problem is that words can express the new only as a rearrangement of the old and they can't account for what is truly new (PM, 50).

homogenous medium, in which the terms of a succession remain outside one another: identical things have a double aspect to us (1) sameness and (2) otherness (*Essai*, 57). The symbol frames the aspect and artificially separates them (*Essai*, 61). This is the same approach that concepts apply to ideas where every separation from the whole is only made artificially. As such, in a homogenous environment, we perceive things external to one another and these things are no longer acts of the consciousness but their symbols or to be more precise, words that express these acts (*Essai*, 73). There is an intimate correlation between a homogenous environment and thinking of ideas because a state of consciousness has evolved into impersonal elements, external to one another where each element evokes an idea and is expressed by a word (*Essai*, 74). Language refers to these states by words common to all men and works in the same way as points in space: just as we can indefinitely insert points between points, we use many juxtaposed words to express or translate our feelings (*Essai*, 74). To emphasize the correlation between language and space, Bergson adds that the essential mechanism of common sense likes to tailor distinctions expressed by well-defined words or well designated positions in space (*Essai*, 78). He also states that we necessarily express ourselves with words and most of the time we think in space (*Essai*, 7).

Intelligence is before anything else the faculty of relating a point in space to another point in space, a material object to a material object (EC, 122). It can be applied to everything but it stays outside of itself and never perceives other profound causes but the diffusion of juxtaposed effects (EC, 123). Intelligence is represented rather than lived and in contrast to intelligence, intuition or even instinct is lived rather than represented (EC 123). Intelligence, however, even under the most humble forms, aspires to perceive matter acting on matter (EC, 123). If matter can be divided into agent and

patient or even just simply into fragments coexisting and distinct, that is where intelligence will turn its attention (EC, 123). The more it divides, the more use it makes of space in the form of extensity juxtaposed to extensity (EC, 132). This means that the more consciousness intellectualizes, the more matter is spatialized (EC, 132)[1].

The relationship between the intellect and matter is that of siblings[2]: they have progressively[3] adapted themselves to one another in order to attain at last a common form (EC, 142). This adaptation has been brought about quite naturally because it is the same inversion of the same movement which creates at once the intellectuality of mind and the materiality of things (EC, 142). The operations of the intellect tend towards geometry and that is where they find their fulfilment (EC, 145). But this means that geometry is prior to these operations and that these operations are not responsible for constructing space; instead, they are given space to work in it (EC, 145). Space therefore seems to be generated solely by the mind's ability to separate and distinguish an infinite array of things, whether these are the number of choices of action proposed by the brain or the number of words in language or the number of extended things that range differently in degrees. This faculty of the mind is different from the operations of the intellect which functions on relational bases (EC, 105). To explore the relationship

[1] Intelligence has for essential function to link the same to the same, and what is completely adaptable to this function are that which repeat themselves (EC, 139). This means that matter already contains repetition within its absolute newness. However, to grasp the new in the real moments of real duration, the intellect reconstitutes the new states of consciousness by a series of perspectives taken from outside on them, each of which resembles something already known to the intellect (EC, 139) and the absolute newness of the moment shift from the moment's newness to the newness of the arrangement of the known elements.

[2] Neither does matter determine the form of the intellect nor does the intellect impose its form on matter, nor have matter and intellect been regulated in regard to one another by we know not what pre-established harmony (EC, 142) says Bergson.

[3] It is interesting to note here that Bergson does not only attribute evolution to living beings but also to matter; this is due to his argument that the flow of universe and the flow of life are together the parents of matter whether inert or living making matter and the intellect siblings of some sort.

of the operations of the mind with geometry, Bergson proposes to look at the two faculties of the intellect which are deduction and induction.

Deduction is when one can see in space the relation of a given definition to its consequence or that of a given premise to its conclusion (EC, 146). When concepts, which are gathered from experience and therefore left imperfect, are used in the premises and conclusions, evidently there will always be imperfections in the deduction (EC, 146). But there are two kinds of deductions we make: one that depends on scientific geometry and the other on a geometry that is natural. Scientific deductions bear on qualities instead of magnitudes, although the first thing presented to our intellect are situations and magnitudes as externalized by intelligence and resolved in activity, before reflective intelligence appears: judging distances, determining directions, retracing through memory etc. Without explicit deductions and explicit concepts, one cannot form the idea of a homogenous space (EC, 146). This space is directly related to virtual geometry which eventually degenerates to logic[1] (EC, 146). If space were the ultimate goal obtained by the detention of the mind's movement, we cannot beget space without positing logic and geometry which lead to pure spatial intuition. And in fact, deduction is not a good tool for moral and psychological problems. Clearly it works best in geometry, astronomy and physics where we deal with things external to us and where we necessarily need observation and experience to arrive at principles, i.e., "discover the aspect under which things must be regarded. [...] Deduction is an operation governed by the properties of matter, moulded on the mobile articulations of matter, implicitly given, in fact, with the space that underlies matter. As long as it turns upon

[1] Logic is not a positive mental effort because it is related to a creative process which means a letting go of the intellect, and this is the only effort the intellect must do in order to deduce the new (EC, 146).

space or spatialized time, it has only to let itself go."[1] We cannot have deductions without spatial intuition (EC, 147). The same is true for induction. We don't need to think in any way to retrieve similarities as our bodies, like any other living being's body, can retrieve similarities of interest in successive situations and it responds appropriately. Induction however, depends on belief in cause and effect and that the same cause will be followed by the same effect. Thus, we decompose reality into groups that we regard as provisionally isolated; an independent entity would always behave in the same way, i.e., when a certain number of elements form a system, the system will complete itself automatically[2] (EC, 147): "The considered microcosm contains only magnitudes."[3] To make an induction, we superpose the microcosm we're observing today to the one we had observed in the past in the same way that we make an induction if and when two triangles superpose and we induce they are the same (EC, 148). But to superpose two microcosms from two different occurrences in duration, these must have been simultaneous as one should have waited for the other for the superposition to be exacted. However, microcosms are only artificially separated from their environment and they cannot truly be superposed because they are part of duration and happen at different times where the world should be considered new[4]: induction therefore implies that time should not matter in physics like it does not matter in geometry (EC, 148). But it also implies that qualities could be superposed as though they were magnitudes (EC,

[1] *Creative Evolution*, 225

[2] Bergson gives the example of a kettle placed on the stove. This system completes itself when the water boils and it is never influenced by my will (EC, 147).

[3] *Creative Evolution*, 227

[4] By this, we mean that a microcosm, however separated and isolate cannot be considered to be similar to a triangle with a given angle and two given sides which is enough to automatically close the system of the triangle and superpose it with any triangle that has the same dimensions. This is because every microcosm is new whenever it occurs and is therefore different from other microcosms which may contain similar premises.

148). How can one make qualities coincide or how does one superpose them and make sure they are identical? This is why physics turns, as much as possible, qualities into magnitudes (EC, 148). However, turning qualities into quantities also means using a geometric mechanism. Geometry is the ideal limit of our inductions just as much as it is of our deductions (EC, 149).

Science thus aspires to the mathematical form of quantity and by this it also over-accentuates the spatiality of matter (EC, 142). It generates precise formulas that need always to be reformulated (EC, 143). For a final scientific theory, the mind would have to embrace the totality of things and place each thing in its exact relation to every other thing (EC, 143). Measuring is a human operation that implies we superpose in reality or ideally two objects one to the other for an amount of times (EC, 150). Nature itself does not measure or superpose. But, physics counts and measures and relates and it is successful (EC, 150). This success would be incomprehensible if the movement that constitutes materiality were not a movement that could be measured, counted and had terms that could be related to one another, i.e., if homogenous space couldn't be applied to it. The mind naturally works through space and mathematics but intellectuality and materiality have to have the same nature and be produced the same way (EC, 150). The success of science in mathematical form would have been less comprehensible if matter did not have all that is needed to be placed into our representational frames (EC, 150). The mathematical order works with interruptions and matter consists precisely in such interruptions (EC, 151).

Bergson describes societies as different solidifications within the universal flow: the solidification is more perfect when the intelligence of a society is higher (PM, 50). This is because the essential purpose of society is to insert solidity into the moving

universal flow (PM, 50). This happens through the intelligence of a society, which is its faculty of arranging concepts reasonably and handling words suitably. By doing so, societies heighten their intellect and carve out from the flow with more precision. The mathematical function of the mind that leads it to knowledge of matter through science is in contrast to this intelligence (PM, 50). However, we refer to the first kind of intelligence when we speak of intelligent humans and what is meant by it is that humans are agile in marrying useful concepts to get to probable conclusions (PM, 50). This distinction of two kinds of intelligence brings us back to Bergson's depiction of the prism of which one side is space and the other is language (PM, 19). Essentially, a prism refracts light using two of its sides and the light that enters from one side as white, is refracted out of the other side in a range of different colours. What happens during the refraction is the spreading of the light stream such that each wavelength is redirected by an angle slightly different than that of another wavelength. Space and language compose this prism which refracts the flow of the universe and spreads it out and rearranges it. The information according to which the refraction happens is already present in the initial intuition just as the various wavelengths are already present in the ray of light. But what is then the relationship between these two sides? Words and letters have been invented through a positive human effort, while space rises automatically (EC, 145). In both cases, the infinite complexity of parts and their perfect coordination are created by an inversion which is itself an interruption or a diminution of positive reality (EC, 145) but this diminution of positive reality is contrasted in turn with the infusion of possibilities into reality which becomes far more useful for generating actions.

D. Conclusion

In a sum, we have developed here the basic components of mathematics whose main elements are the symbols used in arithmetic, which deals with countable numbers or multiplicity and unity; in geometry, which deals with points; and in logic, which deals with deductions and inductions. With this we have explored the contrast between language and mathematics where concepts are symbols[1], words are points, and meaning is deduction and induction. At the same time we have explored the contrast between science and mathematics, which is already more obvious, where qualities or magnitudes are numbers, microcosms are points and scientific theory is deduction and induction. However, we must also contrast mathematics with space, since, in a sense, mathematics seems to be the language and the science that articulates for us the homogenous space whose basic role is to arrange our perception such that similarities are distinguished by their difference. Clearly, not only homogenous space but language and technology are both articulated by mathematics but more importantly through them mathematics becomes clearer to itself. At the same time, our homogenous space becomes clearer to our intellect. We can even say that the clarity and precision of space depends on the clarity and precision with which the intellect grasps itself. This clarity of the intellect is directly related to the advances in language and technology, which use mathematics to probe further into matter and have a better grasp of it. This means that our perception which is articulated by the homogenous space-time network that we cast over the heterogeneous mix of qualities that is given to us through intuition, is altered and

[1] Concepts are no longer a perception of the same things but a representation of the act by which intelligence fixes itself upon them. They are no longer images but symbols and our logic is the system of rules that we have to follow to manipulate symbols (EC, 113).

refined through the refinement and advances in our linguistic and technologic abilities, thus altering and refining our representation of the universe.

CHAPTER IV

THE KEY TO HUMAN EVOLUTION

In many instances, we have referred to human intelligence whenever we talked about technology, language or space. Intelligence is a feeling one has as a creator of one's own intentions, decisions, actions, habits, character and one's self (PM58): we make ourselves by the materials given to us by heredity and opportunity and by acquiring skills and technique (PM, 58). Technique deals with what is common to others and depends on what the material on which one is forced to operate allows. It also concerns the nature of repetition and fabrication, but does not involve creation itself and therefore we know little about creativity itself (PM, 58) so that unless we repeat our actions, we cannot come by any novelty (PM, 59):

> Our normal faculty of knowing is then essentially a power of extracting what stability and regularity there is in the flow of reality. Is it a question of perceiving? Perception seizes upon the infinitely repeated shocks which are light or heat, for example, and contracts them into relatively invariable sensations: trillions of external vibrations are what the vision of a colour condenses in our eyes in the fraction of a second. Is it a question of conceiving? To form a general idea is to abstract from varied and changing things a common as multiplicity and variability of the objects represented is what first marks and delineates the generality of the idea. Finally, is it a question of understanding? It is simply finding connections, establishing stable relations between transitory facts, evolving laws; an operation which is much more perfect as the relation becomes more definite and the law more mathematical. All these functions are constitutive of the intellect. And the intellect is in the line of truth so long as it attaches itself, in its penchant for regularity and stability, to what is stable and regular in the real, that is to say to materiality. In so doing it touches one of the sides of the absolute, as our consciousness touches another when it grasps within us a perpetual efflorescence of novelty or when, broadening out, it comes into sympathy with that effort of nature which is constantly renewing. Error begins when the intellect claims to think one of the aspects as it thought

> the other, directing its powers on something for which it was not intended.[1] (PM, 59)

Through intelligence, we have also mentioned instinct and intuition. Realized intelligence is the faculty of fabricating and employing the instruments made of inert matter (EC, 101). In contrast to this, instinct is the faculty of using and even constructing instruments that are made of organic matter (EC, 101). As for intuition, it is the disinterested instinct conscious of itself and capable of thinking its object and enlarging it indefinitely (EC, 123). Intuition is therefore generally referred to our consciousness of the operations of the mind as the direct vision of the mind by the mind (PM, 27) which evidently links it to pure perception which is our awareness of matter without the layers of memory that overlay it and make it useful to our action upon the universe (PM, 19).

Intelligence and instinct, although completely distinct (EC, 98), are both means for approaching matter, where one applies relational rules to matter which it individuates and places in space, while the other grasps the inner mechanisms of nature (EC, 105). Through Bergson's descriptions, they seem to be both present in any living matter and each can vary between extreme vagueness and extreme clarity[2]. In fact, one continues the other because they complete each other by being different from each other and being present in different proportions (EC, 98). Neither intelligence nor instinct allows for rigid definitions, they are tendencies and not things. They are offspring of life

[1] *Creative Mind*, 110-111

[2] We can find various references in Bergson's writings where he mentions a vague intellect or a vague instinct as well as a higher intellect or a higher instinct. At the same time, he mentions that that there is no thought without the "esprit de finesse" which is the reflection of intuition on the intellect (PM, 49). We also know that even the simplest of living beings have the ability to distinguish between what interests them and what doesn't and actively make a choice however straight forward that choice is, meaning that all living beings have the rudimentary recognition system which is really what the process of thinking is in its very primitive and basic form. This means that both instinct and intelligence is present in all living beings but what differs is the degree.

that places them on its track. And life, as manifested by organisms, is for Bergson an effort to obtain something from brut matter while intelligence and instinct are two different methods of action upon inert matter (EC, 98). Where intelligence orients itself towards consciousness, instinct orients itself towards the unconscious (EC, 103). The organic instrument of instinct is provided by nature, including the point of application and the required result (EC, 103).

Intelligence and instinct are the two diverging tracks of evolution on which the animal kingdom is accomplished (EC, 97). The most perfect instinct is that of insects which even then is accompanied by a shimmer of intelligence if only in the choice of environment, the moment, and the material of construction (EC, 102). In contrast, intelligence is in more need of instinct than instinct is in need of intelligence, because shaping brute matter presupposes that the animal is a superior organism which couldn't have reached to that stage without being first supported by instinct (EC, 102). In the case of instinct, when the instrument is handled by nature, there is little room left for choice, and knowing that the consciousness which is where intelligence is put to use, awakens whenever there is a need for choice, we can note that with instinct the consciousness is left to slumber. However, equipped with a brain that is capable of offering an infinite range of choices (EC, 178), the human mind is kept conscious for longer intervals, allowing humans to improve their intelligence through further knowledge of their environment. Human intelligence, with the developed use of language, technology and space, keeps its consciousness awake. With active consciousness, life is expressed. Life's main goal is to free itself from the chains of matter by using matter (EC, 178). This freedom becomes possible in the case of the human because being conscious of one's activity is the point at which life can express

itself and act freely upon matter. With this feature, humans are rendered different enough from the rest of the animal kingdom to be, at this stage, different from them not only in degree but also in nature (EC, 178). Bergson claims through this that humans have already fulfilled the goal of the *élan vital* and are the successful line of evolution (EC, 179). But he also adds that we cannot know what the end point of the whole of evolution will be because evolution proceeds via different divergent lines. If human beings are one of the extremities of one of these lines, the other lines have been followed by other species (EC, 179). It is for a completely different reason that we take humanity to be the *raison d'être* of evolution (EC, 179). This reason is that humans were able to free themselves from the captivity that matter enforces on life whenever freedom is turned into a necessity, i.e., whenever a free act turns into an automated habit which can be carried out simply by the attention of the body without involving consciousness which goes back into slumber dragging with it the full expression of life into sleep. This seems to be similar to the case of instinct which is very similar to habits, where the body's attention is enough to accomplish an act without the involvement of consciousness. However, life has renounced precious things in the course of human evolution (EC, 180). The conscious human is mostly intelligent but a perfect and complete humanity would be one where the two forms of activity, i.e., intellect and intuition, attained their full development (EC, 180). Between this humanity and ours, we can see many possible intermediaries corresponding to all the imaginable degrees of intelligence and intuition (EC, 180). In other words, the subsequent development of human evolution is going to be a series of differences in degrees perfecting what has been already physically achieved by evolutions.

According to Bergson, and according to what has been explored in this thesis, humans are already acquainted with their own intuition and their intelligence, i.e., they have already crossed the threshold of success. It seems that there needs to be only development of these two, where Bergson finds that our intelligence, through the correct path that science has finally taken after years of wrong turns (PM, 119), is already on its way to development. But he wants to bring to our attention that the same kind of wrong turns are being taken by metaphysics and intuition which will in turn find the correct path of development to walk hand in hand with science and intelligence towards perfecting the human (PM, 120). In fact, in his book *The Two Sources of Morality and Religion*, in his final chapter titled 'Mechanics and Mysticism', Bergson dwells on the technological advances that human societies have been going through, and mentions that, since our tools are nothing other than the extensions of our bodies, we need to expand our souls as we expand our technology in order to be capable of freeing ourselves from matter. However, this does not mean that the path is predestined because the future is always new according to Bergson. It is even possible for intuition to remain dormant under the strength of intelligence and prevent the human from achieving the perfection that Bergson portrays. As for this portrayal of perfection, we could say from a Bergsonian point of view that Bergson uses past information about repetitions and rearranges it to forecast a possible future for human evolution that may as well never happen.

However, we can here posit a new question regarding the perfected human: would achieving a perfect human species be yet another threshold to cross leading to a development of a new species? It seems that this would not be the case for Bergson. Regarding a change in species, Bergson only mentions that a change of organic tools in

a being would produce a change of species (EC, 101). This means that, the changing of inorganic tools does not seem to culminate into a change of species for Bergson (EC, 101). Otherwise, with our technological advances, we should have achieved several changes of species by now. This is probably because the change was already made when the species was able to enhance its intelligence: Bergson seems to suggest that instinct is a pre-requirement for the development of intelligence (EC, 102). This could mean that in order to develop intelligence, a species must have already achieved the required instinctive development which would mean that the species has already developed its physical aspect and may not be inclined towards further changes culminating in a change in species. However, Bergson does not say that evolution stops when a species stops physically evolving, since there is a long way for the human species to evolve into higher intelligence and higher intuition. However, the question remains: would the human species evolve into a new one once this threshold is crossed? Wouldn't this be a change similar to that which exists between the limited and the unlimited where there is the whole distance between the closed and the open (EC, 178)? Wouldn't it be no longer a difference in degree but a difference in nature (EC, 178)?

APPENDIX

BERGSON'S THEORY OF MATTER

It is important to properly understand Bergson's theory of matter if one wants to properly understand what is meant by words such as *perception, representation, memory, consciousness, understanding, imagination, body, mind, duration* and *matter*. More importantly, it is through the theory of matter that Bergson directly addresses the duality of mind and body and offers his solution to the problem. Therefore, here we will attempt to follow step by step Bergson's reasoning by giving a simplified retelling of the theory of matter, to offer an understanding of this theory.

The function of the body is to limit the life of the spirit in the frame of action. The body itself is an instrument of selection (MM, 106). It is a sort of compass that directs the attention relative to perception towards the selected parts of the universe (MM, 14). As a part of the universe, the body on its own, cannot engage in intellectual states (MM, 106), however, during perception, the body occupies a specific place and time and guides perception towards possible actions where the role of perception is to measure these possible actions (MM, 106), i.e., perception is guided by the body and so, using it as its instrument, it can contract a part of the flow of the universe into a fixed perception (MM, 125). We will explain this further in the later paragraphs. Now, we need to bring memory into perspective because without memory, there is no duration and no perception, since memory is a constant recording of the present by specific date and synthesizing memory would provide us with a consciousness of a certain time flow or rhythm which is that of our consciousness (MM, 123).The body's relationship with

memory is that of useful and efficient selection of memories vis-à-vis the present situation and in no instance could this relation be that of stockpiling memory inside the material body (MM, 107). The task of the recalled memories is to clarify the present situation in regard to the final action. But since the body selects from personal data, instead of common data like in the case of perception, the selection from memories is not as rigorous. A big array of memories could fit the frame of action and determining which memories to use is not done according to a strict rule of nature and this eventually opens room for fantasies (MM, 107). Consciousness itself is oriented towards action, much like the body, and consciousness is the fundamental law of our psychological life. Hence, matter and spirit are profoundly distinct but since their goal is set at the same mark means that there is enough incentive for a possible union between them.

Here we can make several observations. The mind seems to oppose matter as a pure unity opposing multiplicity since perception seems to be composed of heterogeneous sensible qualities. But the perceived universe resolves homogenously and by calculable changes. This means we have inextensity and quality on the one hand opposing extensity and quantity on the other. In fact, from the whole of matter, we only perceive that which interests us and perception is always a mental effort guided by the selecting body, so perception is more than a cerebral state. However, since we only perceive what matters to us, then there is more to matter than what we perceive at any given moment (MM, 107). Bergson will work his way into defining and explaining what these unperceived things might be and this by differentials and derivatives from what we perceive, much like in mathematics (MM, 110). We do not accept that the brain which is matter and part of the flow of the universe would generate representation

and we do not accept that our personal understanding should generate the laws of this flow as it is independent of us. Therefore, Bergson will treat consciousness as different from the body but working with it: consciousness will shows to our mind (a) a body, our own, as an image and (b) understanding as a certain dissociating faculty that distinguishes and opposes logically but that does not create or construct (MM, 107). The cerebral state is a start of an action and not a start of a perception as perception is a mental effort simply guided by the body[1]. The perception itself happens outside of the body, that is, we perceive an object where the object is, hence, perception is a part of *thinghood* and things in turn participate in the nature of our perception, i.e., different objects will bring about difference in perception. Material extensity is not a multiple extensity but is rather undivided, similarly to its representation[2] (MM, 107), except that the homogeneity of representation is crafted by our own consciousness which picks up the pieces handed to it by understanding. The homogeneity of nature is then crafted by its own consciousness following its own rules and regulation for balancing, compensating and neutralizing all things in the flow of continuous becoming (MM, 123). Hence, pure perception which is prior the division that understanding undertakes, can give us a hint about the extensity of the flow of becoming, which is in fact the real nature of matter (MM, 107); pure memory that is radically separated from cerebral state is not an expression of matter but from it derives the individual's duration in which we have the expression of matter (MM, 107). The heterogeneity of our perception of matter comes from understanding which is the faculty of dividing according to its laws that

[1] Bergson explains that perception is different from sensory vibrations that circulate in the sensori-motor system of the body. The sense that receives vibrations from its environment will simply guide the attention of perception towards a possible object, a possible action. This guidance is an act of selection. For each vibration received, the brain will trigger appropriate motor reactions which intrinsically depend on the memory images the vibrations in the brain will summon and this is the memory selection. Consciousness works with the body in order to facilitate this task.

[2] More about representation: refer to glossary

depend on commodity of life and the homogeneity comes from consciousness which is the faculty that links or synthesizes all things according to its laws. So, our final perception, however short, is already divided and then synthesized through memory of infinite numbers of successive pure perceptions resulting in representation. The heterogeneity of sensible qualities is due to the contraction of these qualities within memories and the relative homogeneity of the objective changes is due to the natural release of these qualities (MM, 108).

What we call fact is in reality the adaptation of the real to practical interests and exigencies of social life. We intuit the universe as an undivided continuity, we then fraction it and juxtapose elements that respond to distinct words or independent objects (MM, 108), and since we have broken down the continuous unity of our intuition we are now obliged to reestablish it by disjoint links that are eventually external add-ons (MM, 108). What we have then is not the reality of the flow but a disfigured articulation which is solely arranged thus to facilitate our action on the flow (MM, 108). Because of this, the internal lines of the structure of the flow are no longer phenomenal observations hence this is the reason why we dismiss the qualitative aspect of the flow. So to recover these divided phenomena given to us, the philosopher must work by differentials, much like in mathematics, to figure out the flow of becoming by integration from phenomena (MM, 109). Consciousness, as the utilitarian life of the mind, governs our duration. What happens then is that we pass insensibly from the state of the flow of becoming to the state of the flow of our own consciousness (MM, 109). In duration we see our action as composed of dissociated and juxtaposed elements. This duration where we act is where our states melt into each other, i.e., we try to put ourselves in action by thought and further speculation on thought and action, which is

the basic form of the human freedom (MM, 109). Bergson wants to express here that our freedom, is not in the spontaneity of action as in the case of animals, because free act is a synthesis of feelings and ideas and their evolution which leads to free act and hence is a true evolution with true change. The continuity of the flow of becoming is really lived but it is artificially decomposed for the greater convenience of customary knowledge (MM, 109). Due to this, we experience an action as a continuity caused by a previous action and the current action is experienced as the unfolding of the resulting of action preceding it (MM, 109). Here Bergson wants to separate or distinguish between customary or useful knowledge and true knowledge, i.e., customary knowledge is knowledge about life while true knowledge is about the reality of life (MM, 109).

Bergson offers us arguments for all these claims that should narrow down the problem of duality. He says we divide space indefinitely and carve out of it arbitrary figures which we call object and then the only way we can make sense of movement is as a multiplicity of instantaneous positions, since nothing in objects can ensure the coherence of past with present (MM, 110). It could be possible to transcend space to a certain degree without stepping out from extensity. For this, we should have to stick to immediacy because it is at this stage that we perceive extensity before space as space is conceived as a kind of mental diagram. The down side of this is that we can argue that we are arbitrarily attributing a privileged value to immediate knowledge. But here, without the difficulties and contradictions that reflection generates, we have no room at all for doubting any knowledge, i.e., immediate knowledge is self-justified and there are no difficulties, contradictions or problems rising from symbolic figures that cover it and become themselves a reality and only an intense effort can banish off these layers (MM, 110). In other words, by immediate knowledge, Bergson does not refer to the usual kind

of knowledge, practical knowledge, but rather to a knowledge that consists of simply an awareness of the existence of something. Only when we are at this stage, can we propose a theory of matter (MM, 111). What he proposes for a theory of matter starts first from the phenomena of (1) movements which are a passage from rest to rest and are absolutely indivisible. From there comes the claim that these (2) movements are real movements. As such, (3) any and all division of matter into independent bodies with absolutely determined limits is an artificial division while (4) a real movement is a transition of a state rather than a thing.

Let's follow the reasoning of Bergson that leads him to form his theory of matter through these four stages which will lead us to understand how he manages to dissipate the problem of duality through them. Bergson starts his theory of matter by addressing the two main aspects of matter which are movement and immobility in space. Any movement from a random point A to a point B is an image and an act, as grasped by our consciousness. We are also conscious of an internal affection related to this movement: a sensation of a halt at A followed by an halt at B, and this is a single undivided action going from rest to rest. Externally, we can perceive a track going from A to B closely followed by our imagination that conceives, as the movement unfolds, a series of fixed pointed creating the line of the trajectory. This line then becomes a dividable line on which I can project a series of halts and hence grasp the movement as a series of successive halts. But if we stop the imagination from this act, we can easily understand that the movement from A to B is not dividable. What is dividable is only the track and not the movement itself. Senses on their own will present the real movement and the real points of stop as a single undivided solid (MM, 112). The trajectory of the movement is given to the consciousness as an undivided whole. It is

unfold in a certain duration which coincides with that of the affection impressed on my consciousness. If the trajectory measures the duration of the movement, then the points between A and B do the same. This is our natural understanding of a representation of space-time. Our mistake however is when we stop treating the trajectory as a symbol of duration and make it represent movement itself or the flow of its duration and hence make the flow and the movement dividable. The movement is not the trajectory (MM, 113). However, when common sense and language make this translation of movement and duration to space, they are righteous in their act, more so, that is their duty: to see becoming as useful things. They do not mind about the internal movement much like a worker who does not care to know about the molecular structure of tools. Two things are expressed from this act: (a) all things that move describe a space and (b) at each point in space the mobile *could* stop (MM, 113). So, next is the reality of this undivided movement.

Where in math, a position is described by references and a movement is expressed as only a change in distance calculated according to these references making no movement absolute, in physics, where abstract study of concrete movements in universe is studies, each isolated point is either moving or at rest. But, in each system of points, the internal configuration varies such that we can no longer tell which points move and which are at rest: movement is then an incontestable reality (MM, 115). To say that all movement is relative means simply that we only have reference axes or points of reference as mathematical symbols capable of expressing that the moving object moves and this is why we use these references, but the movement itself is not

relative, it is absolute[1]. No one argues against the existence of real movements, otherwise there would be no change in the universe and our consciousness of movements would mean nothing[2] (MM, 115). When we thus claim absolute movement as reality then do we mean simply a change in place? A change in place would mean that there is a diversity of places and these places should be absolutely different and should be distinct by absolute positions in absolute space. But can we even conceive this? A place can only be distinguished by its quality or its relevance to an aggregate of spaces: these spaces would either be composed of heterogeneous parts or finite parts. However, a finite space has always another space that contains it and parts of a heterogeneous space are imagined as being supported by a homogenous space. In both cases, a homogenous and indefinite space is necessary (MM, 115). Then it seems that we can only conceive of place as relative to another and believe that movement is absolute (MM, 116). The question is then: do absolute movements have a real cause and are they then generated by a force? In science, force is part of the movement and shares its relativity and is measurable in the function of speed and mass. To postulate an absolute movement would mean postulating an absolute space which science would avoid since it cannot be conceived. In metaphysics, movement is supported by causes analogous to the impression of the effort done to move. But this analogy is not very successful since the sentiment of the effort is not the cause, and is only the

[1] Bergson and Einstein had a very famous debate about the notion of relativity which was considered by the Nobel Prize Board as an important argument and hence it "negatively affected Einstein's Nobel Prize, which was given "for his services to theoretical physics, and especially for his discovery of the law of the photoelectric effect" and not for relativity." (Canales, 1177)
Canales, Jimena. 2005. *Einstein, Bergson, and the experiment that failed: Intellectual cooperation at the League of Nations*. Modern Language Notes 120(5): 1168-1191.

[2] Bergson famously brings up a short story here about a conversation between Henri More and Descartes. More says while he sits calmly and watches a man run a thousand paces away from him, the redness of his face showing his fatigue is enough to tell us that he is the one that had been moving and More was at rest (MM, 115).

consciousness of a movements already unfolding. Hence, founding the reality of movement on a cause will always bring us back to the movement itself and that is where we should start (MM, 116). When the eyes give the impression of a movement, this is a reality: something has happened, an object moved or the eyes moved. I can know the reality of a movement when I produce it and I am conscious of it through my muscle's movement: I touch the reality of the movement when it impresses on me as a state or as a quality. The same thing happens when I see a change of quality in a thing. All changes are absolutely real phenomena. Hence, I hold both ends of the chain: internal muscular sensations and external sensible qualities of matter. At both ends, the movement is not given in the form of a relation: it is absolute (MM, 116). When it comes to external objects, we cannot distinguish an apparent movement from a real movement: we cannot tell which part of objects moves and which part is immobile. This means that we admit that there is a discontinuity established by common sense, for the sake of commodity, between these independent and individual objects in order to solve this problem by allocating immobility to parts of the objects and mobility to other parts. The question is then not about how the changes in position come about in these mobile parts but how, in the whole, does change of aspect happen and what is the nature of this change (MM, 116). This brings us to the third claim that we need to explain: any division of matter into independent bodies with absolutely determined limits is an artificial division made for the sake of commodity.

The body is an independent material object given to us as a system of qualities and so, to it are bound resistance and color which are subsequently called touch and vision. These two are manifest extensities in space. As for space, its essential characteristic is continuity, i.e., even though there are intervals of silence between

sounds, smells and tastes, when we open our eyes, the visual field is all colored and the solids are necessarily contiguous to each other and our touch can follow the edges of the objects without any interruption in vision or in touch (MM, 117). This continuity changes its aspect without interruption between changes. It is given and it is a continuously changing continuity. Yet, we dissociate in this continuity between permanence, as bodies, and change, as homogenous movement in space. This discernment is not given by immediate intuition but it is also not a scientific necessity because science tries to find the natural articulations of a universe that has been thus artificially cut by us. And in fact, as science finds the reciprocal actions that material points have between them, it reaches to a universal continuity (MM, 117). Hence, both science and consciousness agree as long as we position consciousness in its immediate givens and science in its further aspiration. Because life is different from science and consciousness, since life is action, we conceive a discontinuous material universe where at each section of discontinuity, bodies with edges change place relative to our central body (MM, 117). Distinction in the continuity of the universe is according to the needs I have for action. Whatever the nature of the matter, life will establish in it a first discontinuity expressing the duality of need and of that which has a satisfactory use. There are different kinds of needs that are interlinked and all have as purpose the conservation of the individual. These needs are like rays that hit the continuity of sensible qualities and draw on them distinct bodies. They will always carve into this continuity a body, their own, and then they will delimit other bodies with which the first body can enter into relations of gain or repulsion. To establish particular relations with these carved out portions of sensible reality is exactly what we call to live (MM, 118). Looking into these carved out sensible qualities will not bring us to the answers we seek

about materiality. We would only be transporting the ordinary condition of useful action onto the domain of pure knowledge which should not involve them (MM, 118). Experiences in science show that there never is real contact between two bodies that repel and that solidity is not an absolute state of matter. Solidity and shock are based on apparent clarity of habits and necessities of practical life (MM, 118), i.e., it is how we discern them within continuity. However, at the level of atoms, there is next to matter something we call force. Life obliges us to distinguish in our daily experiences, inert things and applied actions by thing in space. Since it is useful for us to make a cradle for a thing at the very point where we can touch it and its contours become the limit of their reality. Therefore, for us, its action is something that detaches from it and is different from it: force. This is the usual image we have relatively to our needs which we use to find a theory of matter (MM, 119) by deriving from it the real nature of matter. Evidently, matter and force have become closer with scientific research (MM, 119), and more so after a hundred years since Bergson's times with advances in quantum mechanics theory. Force is materialized as atom and atom is idealized but as they converge to a common limit, the universe regains its continuity. The solidarity and inertia of the atom dissolves into movement or into lines of force, the reciprocal solidarity of which would reestablish the universal continuity, i.e., these symbols of science, such as lines and vortices of force, are useful tools by which physics can calculate. The symbols can rejoin experience by indicating the direction by which we can find their corresponding signs in our representation of the real. They indicate successfully modifications, perturbations and changes in tension or energy (MM, 119). But that is their only role, just as the psychological analysis of movement shows to us successfully that movement is a real change in relation between objects as though it

were added on these objects as something independent of them. Hence, neither science nor consciousness would refute the claim that real movement is not a thing but rather a transfer of a state (MM, 120).

Until here, we have strived to breach the gap between sensation and movements, between heterogeneous movements and homogenous movements and between indivisible sensations that cannot be measured and divisible movements that are distinguished by the calculable direction and speed. We did this by showing that movement is qualitative, homogenous and indivisible and that we render it as quantitative, heterogeneous and divisible only for the sake of commodity of life, otherwise movements is no different than sensible qualities. We always render qualities as sensations in consciousness and movements as independently executed in space and we are eventually forced to claim that movements, by a mysterious process, are translated by our consciousness that cannot touch it since it is of a different nature, into sensations that are projected in space and cover over movements mysteriously (MM, 120). And because of this, we find ourselves in front of two different worlds incapable of communicating other than by means of miracle. The difference between quantity and quality is surely irreducible. But, clearly real movements present between them differences in quality that vibrate interiorly to them and expose their proper existence by an incalculable number of moments, rather than simply a difference of quantity (MM, 120). When science studies movement, it abstracts it and treats it with symbols for the sake of comparison between real movements. But a movement in itself is indivisible; it occupies a duration and it has a before and an after; in addition, it links successive moments in time by a thread of varying qualities that are somewhat in the likeness of the continuity of our consciousness (MM, 120). What comes in between is

our habit of attaching movement to elements, such as atoms, which reduces movement to only quantity and ignores the quality into which it develops (MM, 121). Still, in our immediate perception, we can grasp both a state of our consciousness and a reality that is independent from us. This mixed character that appears as some contradiction is the principle theoretical reason whereby we believe in an exterior world that does not coincide absolutely to that which we perceive. When we ignore this and consider all sensation heterogeneous with movement, i.e., making sensation a language of consciousness, then we consider sensation as the only thing given, which ultimately makes movement merely a useless duplication of it (MM, 121). With a more or less homogenous substratum of sensible qualities, an action could reveal that indeed as we suspected in immediate perception, something does exceed our sensation: it is as though the sensation of sensible qualities contained unperceived details of the substratum (MM, 121). That which stays unrevealed is the immanence of the multiplicity of vibrations which is captured by sensation: it's as though these vibrations are lodged inside a chrysalis of which only the surface is revealed. This surface is in fact our perceived reality which is homogenous; therefore the reality of matter is given to us right before this perceived reality is crafted by our understanding and imagination: if we agree that states of matter can be deduced by one another then there must be homogenous and calculable elements under the apparent heterogeneity of sensible qualities (MM, 121); and if we postulate that these elements are exterior to the qualities that they exhibit then we will not reach to this homogeneity and calculability since qualities would then be only additions on the elements that happen to be miraculously harmonious with them. It is thus more likely that these qualities are rather internal to the elements wherein we can also position movements, in the form of internal vibrations. We can then consider

movements as less homogenous and these qualities as less heterogeneous as opposed to how they appear on the surface because of necessity, such that these undefined contracting multiplicities are so narrowly positioned in duration that it becomes impossible for us to perceive them[1] (MM, 122).

Duration lived by consciousness has a determined rhythm. This rhythm is different from the time of which physics talks about in that it can contain, in a given interval, a great number of phenomena. For example, red light makes over 400 trillion vibrations a second; we must separate the vibrations enough from one another so that our consciousness can detect each vibration. But then, these vibrations will need to be spread over days and months or years even. We can only be conscious of 1/500-th of a second, which is why we probably can't consciously perceive successive intervals of this length. Hence, this red light is a succession of phenomena that we perceive in a second. Therefore, we must distinguish between our duration and that of time in general. In our duration, that which our consciousness perceives, there is a given interval that cannot contain more than a limited number of conscious phenomena (MM, 122). As we have seen, we can push the division of space indefinitely however much we want without changing anything in nature. Space is external to us: a part of space subsists in our perception even if we stop being concerned with it and even if we leave it undivided it will not vanish and can still be divided some other time as it doesn't stop being space. Space always shows juxtaposition which can hence be divided because

[1] We usually attribute heterogeneity to sensible qualities since we can count at least 5 ways of sensing them. On the other hand, movements seem to be homogeneous passing from rest to rest as we have discussed previously. The claim that in reality movement is heterogeneous comes from the fact that movements are the internal vibrations of the sensible qualities which reach our senses. This means that the vibrations are the source of heterogeneity of sensible qualities while they themselves are rather homogenous. Sensible qualities and their vibrations are contracted multiplicities that are squeezed in together in a single moment of duration.

space is the diagram of infinite divisibility (MM, 122). Duration is different. Its parts coincide with the successive moments of an act which define the division of duration, i.e., the more instants we provide the more parts it will have. And when consciousness cannot distinguish a number of acts in an interval, i.e., if it stops at a given point, then there can be no further division (MM, 123). We cannot imagine having further division although we know that millions of phenomena are successively happening within this final division. We know this only through divination and that's because internal states or impressions of duration are not as rapid as our perception and can give us this type of awareness. Also, there is no duration that can exceed the capacity of imagination, if there were, then this would be neither our personal duration nor the impersonal and homogenous duration of the universe, that which is for all and would flow indifferent and void outside of what endures. This is a make-belief homogenous time that is an idol of language, a fiction (MM, 123). In reality, duration is not limited to a unique rhythm of duration: some are slower and some faster, and each measures the degree of tension and relaxation of a consciousness, and according to this measure we have different categories of beings. But, because the elasticity of duration eventually becomes a habit, we substitute the real duration as lived by consciousness with a homogenous time that is independent of our consciousness[1] (MM, 123).

We condense enormous periods of an infinitely diluted existence, such as the vibrations of red light, into a few more differentiated moments of a more intense life, that would be red light. This is why to perceive is in fact to immobilize: we grasp, in the

[1] This is the source of the problem that Bergson had with Einstein's theory of relativity. Bergson divides time into three perspectives, the perspective of reality where Time is Movement, the perceptive of facts where Time is Duration and through it the Time that is Movement is contracted into perceived matter and the perceptive of commodity where Time is Diagrammatic. Science studies Time that is Movement through Time is Diagrammatic but if the diagram used to study Time the movement is based on relativity, it does not mean that Time the Movement is relative.

act of perception, something which exceeds perception itself but the material universe is not essentially different or distinct from our representation of it (MM, 123). My perception is within me since it compresses an incalculable number of moments into itself. If my consciousness vanishes, the material universe subsists as it was without my particular rhythm of duration which was the condition of my action upon things (MM, 123). Sensible qualities are spread and diluted in an incomparably more divided duration, this durations is that which science studies. That is, matter resolves itself into numberless vibrations, all linked together in uninterrupted continuity, all bound up with each other and traveling in every direction like shivers through an immense body. However, if we bring our consciousness in this setting, and hence the exigencies of life, then instantaneous views of this matter are bound to be pictorial and vivid in colours condensing an infinity of elementary repetitions and changes (MM, 124). The glance which falls at any moment on the things around us takes in the effects of a multiplicity of inner repetitions and evolutions. These are effects which are therefore discontinuous. We bring back continuity into them by the relative movements that we attribute to 'objects' in space. The change is everything but it is inward. We localize this change here and there but outwardly. We then constitute bodies which are both stable as to their qualities and mobile as to their positions, such that, to our eyes, a mere change of place sums up in itself the universal transformation (MM, 124).

There are certainly multiple objects that are clearly distinct from each other and each depends on characteristic properties and obeys the determined laws of nature (MM, 124). Still, an object cannot be completely cut off from its environment. During perception, we pass gradually, although insensibly, from environment to object and from the solidarity that links all objects to their perpetual actions and reactions. By this

we can already suspect that objects don't have the precise limits we attribute to them. It is our perception that draws the form of the residue of these objects and stops these limits where our possible action over them stops, i.e., when our interest in them ends (MM, 124). The first job of the mind is to trace divisions in the continuity of the extensity according to the suggestions of needs and necessities of practical life (MM, 124); this is allocated to the faculty of understanding. To divide the real, then the real must at least be arbitrarily dividable and hence when we lay a net on this continuity of sensible qualities and their vibrations to make the divisions clear cut. This net is then infinitely deformable and indefinitely dividable and it is what we call homogenous space (MM, 124). With our actual perception, the division cuts out independent object and with our memory, the divisions of the continuous flow are solidifies into sensible qualities (MM, 124). Our actions need the past in order to cast a possible future whose proportions are thickened by memory which is developed from the past. And matter responds to an action by an immediate reaction within the flow of the same duration, which is the present that always starts over. This is the fundamental law of matter and it is a necessary law (MM, 124). On the other hand, free or partially undetermined actions are ones made by beings capable of more or less fixing the flow of becoming, on which their own becoming depends (MM, 125). They do this by solidifying the flow in a distinct moment, condensing matter and assimilating it and digesting it into movements of reaction (MM, 125).These movements will go through the net of space into the continuous flow of becoming. The level of tension of the duration expressed through the level of intensity of life, determines the level of concentration power of perception (attention) and the degree of their freedom (indeterminacy). The independence of the action of living matter over matter is affirmed in the degree at which they free

themselves from the rhythm of the flow of matter. Sensible qualities are then the successive moments obtained by the solidification of the real: they are the memory injected perceptions (MM, 125). To distinguish these successive moments and to bind them back together into a continuity that is common to our existence and to the existence of all things, we must imagine an abstract diagram of general succession, a homogenous and indifferent environment where the flow of matter is longitudinal and space is along the width and this would be the homogenous time (MM, 125). Homogenous time and space do not involve the prosperities of things or the essential conditions of our faculties of cognition. Space-time expresses, abstractly, the double effort of solidification and division that we must impose on the flow of matter to have a grasp on it and to have operational centers in it through which we can make real change: space-time is the diagram of our action on matter (MM, 125). The first error we make is claiming homogeneous space-time as properties of things. This leads to absolute sections that are successive along the flow of the universe and then vainly we try to link these sections by a qualitative deduction: the sections are attached by their instantaneous differences of size and position and by the variation of these differences, they generate a succession of sensible qualities. But if space-time is a form of our sensibility then we should declare that matter and spirit are unknowable. However, if we should compare the opposing hypotheses, we find a common base: when we make space-time homogenous or realities that are contemplated or forms of contemplation themselves, both hypotheses attribute to space and time a speculative interest rather than a vital one. Hence, there is room between metaphysical dogmatism and critical philosophy, for a doctrine that sees in homogenous space-time principles of division and solidification introduced on the real on-site action and not of cognition (MM, 125).

Cognition would attribute to things a real duration and a real extension manifested directly to the spirit; it would see homogenous space-time as the origin of all difficulties since space-time is what divides the continuous reality and fixes in place the becoming and furnishes our activities with points of application.

Erroneous conceptions of sensible qualities and space are profoundly rooted in the mind. Bergson sums the common errors under two postulates: (1) there is nothing in common between diverse types of qualities and (2) there is nothing in common between extensity and pure quality (MM, 126). In contrast, Bergson's claim is that there is something common between the different types of qualities and they all participate in the extensity at different degrees and moreover, we cannot mistake these two truths without adding millions of difficulties on the metaphysics of matter and psychology of perception and generally the question concerning the relation between consciousness and matter (MM, 126). That is because whatever complicates the picture instead of simplifying it, much like these two postulates, is something Bergson would highly doubt to be truthful. Hence hr argues against them to dispel the illusions that lead to these two postulates.

We can postulate thus that extensity is only tactile perception that means we make sensible qualities sensations where sensations are only states of mind. But then we cannot reach a foundation of the parallelism between phenomena and sensible qualities: we would have to explain the parallelism through habits where for example the visual perceptions suggest tactile perceptions. But if the impressions of two

different senses do not resemble[1], then we cannot find in one of them impressions of another since these impressions do not have common elements. Hence, if extensity is tactile then there can be no other sense impression possible because of lack of common elements or in the sense-givens other than givens of touch, not to mentions that senses are not extensity (MM, 126). Now, let's take a different case: if we put separately movements in space and sensations in consciousness, we will never discover anything in common between modifications or phenomena of the extended and the sensations that are supposed to respond to them. Sensations must communicate to the soul the phenomenon that has caused them yet they do not reflect the image of their causes. The problems start with the movement in space where sensations evolve outside of space and must be linked to their cause which however is in space. Breaking out of space where their cause is, they also break their connection with each other such that the phenomena have no longer anything in common in between them and hence also nothing in common with extensity (MM, 126). If we consider for the sake of this exercise that sight gives us no spatial relations, then the visual form, the visual relief and the visual distance become symbols of tactile perceptions. Why are these symbols successful when applied to tactile perceptions? Consider objects that change their forms and move: sight can detect the changes, touch verifies them. Something makes these two corresponding to each other and insures the consistency of their parallelism. What's the principle of this link? In the two examples we took, the first one would submit the link to mystery and for the second the principle of correspondence of sensations is in a distinct space of sensations, but then, how do homogenous movements

[1] Previously Bergson explains that all senses receive the same vibrations from the environment, these vibrations themselves contain a multitude of information from which the specialized senses pick selectively the ones they are interested in (MM, chap.1)

in space evoke different sensations that are unrelated with these movements? Sensations would be unrelated to the movements that cause them (MM, 127/8).

In reality, all sensations participate in extensity such that all have roots in it. Also, space is outside of us just as much as it is inside of us.[1] Space is thus the symbol of fixity and the infinite divisibility which we apply upon extensity (MM, 128). Extension itself is not space. Extension is the diversity of sensible qualities and space is trusted onto it because space is not the support on which real movement is posited. It is real movement that is posited itself under space (MM, 129). However, our imagination which is preoccupied by commodities of expression and exigencies of material life, likes to reverse the order. By habit, imagination looks for a fixed point in a world of well defined and immobile images whose invariability is based on our needs. Hence, imagination cannot but believe in the apparent rest of these images and see nothing other than a variation of distance in movement, where space comes before it (MM, 129). Imagination will thus draw trajectories and fixed positions in a homogenous and indefinitely divisible space. It will then apply movement to trajectory and demand that it be also dividable and void of qualities, much like the trajectory line. Because of this, our understanding always ends up finding contradictions. Having assimilated movements into space, we think of them as homogenous like space and since we only need to see between movements only calculable differences of direction and speed, all relation between movement and quality crumbles. Hence, all that is left is arranging

[1] Bergson talks more about the notions of outside and inside and says: "*Toute image est intérieure à certaines images et extérieure à d'autres ; mais de l'ensemble des images on ne peut dire qu'il nous soit intérieur ni qu'il nous soit extérieur, puisque l'intériorité et l'extériorité ne sont que des rapports entre images*." (MM, 15). That is: Every image is interior to a cetain image and exterior to another; but in a sum of images we cannot say that they are interior nor that they are exterior to us, since interiority and exteriority are only relations between images. Bergson also say: "*Et je comprends aussi comment naît alors la notion de l'intérieur et de l'extérieur, qui n'est au début que la distinction de mon corps et des autres corps.*" (MM, 27). That is: And I understand also how the notions of interior and exterior are born, while they were at the beginning only a distinction between my body and other bodies.

movement in space, qualities in consciousness and establishing between these two a mysterious correspondence (MM, 129).

Perception which occurs with its object exists in theory, like the one we're composing, rather than in fact. Because, in fact, consciousness and matter same as mind and body, all are in contact within perception. A part of this was obscure because consciousness and perception seemed to participate in the divisibility that we usually attribute to matter. The reason why we accept the partial coincidence of perceived objects and the perceiving subject, is because we are conscious that we perceive an undivided unity instead of an object appearing indefinitely divisible. But if divisibility of matter relies entirely on our possible action on it or our needs as living matter, and is not part of the qualities of matter but of space which we lay above it so we can grasp it, then the difficulties vanish: the whole of extended matter is like a consciousness where all is balanced, compensated and neutralized (MM, 130). This consciousness offers us the indivisibility of our perception such that we can attribute to perception part of the extension of matter. Perception and matter meet whenever our attention is focused through the body: sensation recovers extensity, and the concrete extensity takes back its continuity and natural indivisibility. The homogenous space has no more reality than that of a diagram or a symbol and is used only for the behavior of a living being which acts on matter. It is not useful for the mind's work which speculates the essence of matter (MM, 130).

Therefore, matter is not essentially divisible and states of the mind are not rigorously inextensive. Then there is no break of communication between the two. There is a gradual passage from idea to image and from image to sensation, and as this passage evolves towards actuality, or action, the state of mind nears extensity when this

extensity is attained, the state becomes undivided and hence no longer part of the unity of the spirit. The mind can rest over matter in the act of pure perception. It is united with it and yet distinct from it radically. The distinction is memory. Memory is a synthesis of the past and present for a future. It contracts moments of given matter and uses it. It manifests in it by actions that are the raison d'être of this union. We can hence say that there is a distinction of body and spirit which should not be established in function of space but in function of time (MM, 130). We are in error when we place matter with its modifications in space on one side and place inextensive sensations in consciousness from the other. It becomes impossible to understand how the mind acts on the body or how the body acts on the mind. Therefore, we have established instead that psychology and metaphysics are bound. Bergson starts his book from pure perception where the subject and object meet. He then pushes the development of these two in their own durations: matter tends more towards being a succession of infinitely fast moments that are deduced from each other and hence well balanced and mind is a memory in perception and affirms, as a prolongation of the past into the present, a progress, a true evolution (MM, 131).

If the role of the mind is to link together the moments of duration of things, if in this operation it takes contact with matter and distinguishes itself from it, we conceive an infinity of degrees between matter and fully developed minds. The mind is capable of action not only undetermined but also reasonable and reflective. Each of the successive degrees that measures a higher intensity of life answers to the highest tension of duration and manifests in the bigger development of the sensori-motor system (MM, 131). The independence of the body is a manifestation of the independence of the mind. Between brute matter and mind that is capable of reflection,

there are all possible degrees of memory which is same as saying all the degrees of freedom. Here, mind and body are two separate rails that connect, such that we pass insensibly from one track to the other (MM, 131). The distinction between matter and memory, however, is still there but the union becomes possible. Bergson grounds this in the radical form of partial coincidence between matter and memory in pure perception. Pure perception is the lowest degree of the mind and is also a real part of matter. Memory does not intervene like a function in it and does not imitate it and matter has no premonition of memory. Matter does not remember the past because it repeats it unceasingly (MM, 131). As subject to necessity, it unfolds a series of moments, each of which is equivalent of the previous one and may be deduced from it, thus, its past is truly given in its present. But, a being which evolves more or less freely, creates something new every moment. We cannot seek to read the past of a living being in its present unless its past were deposited within it in the form of memory. Thus, it's like the past should be acted by matter and imagined by the mind (MM, 132).

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GLOSSARY

body, is an intrinsic part of the flow of becoming and submits to the laws of nature but because of its selective facility it also has its own consciousness or time. It can select vibrations from the continuous becoming and only reflect those of interest to it while other matter will channel the totality of the vibrations they receive from all the parts of the universe.

consciousness, consciousness is the faculty that contains the necessary laws by which it links together by juxtaposing and contiguity all events on a chain and crafts a homogeneity. Therefore, consciousness contains a specific rhythm and is time itself. There are two kinds of consciousness, one is consciousness is that of the universe, it is hence the Time of the universe. Within this Time the flow of matter repeats itself constantly and although the repetition is different each time, it is none the less never new: the past, present and future of the material universe is contained in its Time. The other is a consciousness that detaches itself from Time and has its own duration and is concentrated on the present flow of Time but because it relies on selected perceptions and selected memories it does not contain a future and is thus capable of new action within Time via the body which helps it in selection. Consciousness is the expression of the flow of life.

duration, duration is a time specific to consciousness. It is the inner life of consciousness and hence it measures the tension and relaxation of consciousness. This leads to the rhythm of life in our representation, hence the contraction of the flow of Time into apparent fixity whereby action upon its points becomes possible.

élan vital, it is the vital impetus of the flow of life mingled in matter which is expressed by living matter's evolution.

imagination, imagination closely related to understanding. It synthesizes the distinctions offered by understanding. Part of its task is to cast a dividing network onto the extensity of sensible qualities that we perceive. This network is a mental diagram we refer to as space used for commodity of life. Via this net we can divide space. Similarly, we use a homogenous time with the homogenous space, through which we can also divide time symbolically. The synthesis of imagination crafts our understanding of perceived images or memory images of absent objects for practical reasons.

matter, inert matter is in reality a constant flow of continuous becoming which is governed by its own Time or the laws of nature, which is ultimately movement. Living matter are parts of the constant flow but they also have their own flow depending on the rhythm of life of their individual consciousness that's called duration. In the duration of each living matter the flow is contracted into fixed sensible qualities. The living matter have bodies that are completely part of the flow however they are selective in the type of information they grasp in their environment. This allows them to have their own time which is their own consciousness whereby they contract into a single moment a multiplicity of phenomena and hence render the continuous changes in the flow as fixed. It then becomes possible for us to discern matter as fixed objects upon which we can act and consequently generate new and positive change in the flow of becoming.

Inert and living matter are the result of the crush between two opposing flows of Life and Time where the élan vital tries to over-ride matter and free itself.

memory, memory is divided into (a) mechanical memory, which are known as *habits* that are composed of motor systems that can be set up by the body and that react to the proper senses and memory images producing a positive action, a change in the flow of becoming. (b) *Memory images* are a synthesis of pure memory that are properly called recollection, they are images with no material body seeking that would therefore easily sink into an appropriate material image which would work as their receptacle; once in a receptacle, memory images become part of the matter forsaking their virtual nature and becoming actual and therefore they are actively perceived. (c) *Pure memory* is the memory that auto-records the totality of experience and archives them according to dates. When these layers of memory are synthesizes they produce the rhythm of consciousness which is then called *duration*.

mind, the mind is conscious. It understands and imagines. It dwells in the layers of memory recorded by consciousness; the mind's work is to constantly move between the layer of perception provided with the guidance of the body and the layers of memory, in which it can travel efficiently through the guidance of the body. By the double movement of contraction and rotation, it creates nebulous networks of memory and constructs an idea which becomes a memory image. This memory image forsakes its virtuality to become an actualization. Also, the mind lays a network called space on perception in order to have a proper grasp on the environment; this network is homogenous space which is connected to the homogenous time of the individual.

needs, or needs or necessities of life are actions based on distinguishing our own bodies next to other bodies and nourishment to conserve the body. Needs are the basic law according to which we distinguish objects or as Bergson says, carve the continuous sensible qualities and are hence responsible for our experience of distances. Naturally, the content of needs is different for different species of living matter. However needs are always for survival: sustaining and moving the sensori-motor system according to dangers to avoid and pleasure to obtain and these are all expressed as positive action. Bergson does not explain how these needs are formed and why they are not overall efficient as some dangers like viruses and bacteria or radioactivity are a treat to survival, and that leaves room for questioning.

perception, perception is divided into types, (a) *pure perception* which involves no memory images and is guided by the selection of the senses; it perceives the reality of the flow of the universe (b) *conscious perception* perceives distinct objects in space there where the objects are located, (c) *affections* which are the perception within the body and are also an important link between memory images and perceived objects as affections channel the memory images into actuality. Perception plays a key role in the annihilation of the problem of duality because it is both matter and memory at the same time, albeit only partially and in a diluted state.

representation, representation is our image of the whole of the universe as we consciously perceive it. That means, it is a space full of images that have been crafter after the division applied by understanding and through memory images that have found receptacles in these divisions guided by the body itself. And all these images are within the duration of our consciousness which contracts the flow of time into a fixed state.

Hence, representation is the sum of all our perceptions positioned in the homogenous space-time of the individual: it is both matter and memory.

sensible qualities, are matter. They can be fixated by contraction according to an individual's duration and be perceived according to the needs of an individual as heterogeneous; it is in reality homogenous prior to the division of understand and synthesis of the imagination that pictures them as objects in space.

understanding, understanding is a faculty of consciousness, it dissociates and distinguishes and creates discontinuities in the continuity of the universe according to the commodities of life. It picks up its material from the immediate intuition or pure perception of the flow of continuous becoming and carves into it its divisions by distinction giving us a plan of nature. It decomposes and recomposes via imagination.

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