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# Peter and Paul: a Ghost Story?

Let us in a word become accustomed  
to see everything *sub specie durationis*:  
immediately, in our galvanised perception,  
what is taut becomes relaxed,  
what is dormant awakens,  
what is dead comes to life again.

Bergson, *La Pensée et le Mouvant*

## Abstract

For Bergson, Special Relativity affirms the unity of real Time more rigorously than either Newtonian mechanics or common sense. Yet, *time* and *unity* describe different realities in the metaphysics of Einstein's theory and the metaphysics of Bergson's creative duration. The time Einstein adopts as the fourth dimension of space is only a 'mobile image of eternity', and the unity it preaches is an abstract unity, synonymous with mathematical invariance. This is why, according to Bergson, Einstein's Relativity is not completely *relative*. It admits a *unique* real Time in the sense that it admits only *one*: that of the physicist engaged in measuring the world. The so-called twins' paradox is exemplary in this respect.

## I Ghost-Relativity

### 1 The Ghost-Book

Why a ghost story? Because *Duration and Simultaneity* (henceforth *DS*) is, above all, a ghost-book. It appeared as a book by Bergson but then, after its 6<sup>th</sup> edition (1931), disappeared at the author's request. It returned later, it is true, but only as a ghost, such that nobody knew where to place it. It finally found a place in the *Mélanges* (1972), not in the *Oeuvres*. But, on the occasion of its 7<sup>th</sup> edition (1968), Jean Wahl, Henri Gouhier, Jean Guitton, and Vladimir Jankélévitch still felt the need to issue a statement to justify its (re)appearance in French bookshops. In a way, then, no one can establish with confidence if *DS* is really Bergson's book or, rather, something more like a symptom: a missing act, for example. If it is spectral, this is also because the term 'ghost', together with all its syno-

nym, obsessively haunts the book. ‘Phantom’ is one of the words that Bergson uses most often to comment on Einstein’s Special Relativity (henceforth SR) and, even if in *DS* it is not always a matter of ghosts – at least not always literally – one finds marionettes and empty puppets.

For Bergson, SR<sup>1</sup> involves virtual or fictitious beings: mirages that seem to have life but really do not. In his opinion, this is exactly what emerges from the famous paradox<sup>2</sup> devised by Paul Langevin in 1911<sup>3</sup> and adopted later, in the strict form of a *twin* paradox, by Hermann Weyl in 1919.<sup>4</sup> Here, the twins Peter and Paul<sup>5</sup> take turns as the ghost: if one acts as a reference system, then the other suddenly disappears becoming a phantom. There is, in short, a dizzying game of mirrors which, for Bergson, reveals the very essence of SR: if Peter lends his eyes to Paul, then Peter can no longer see. He is only seen but does not see. ‘*Peter – in Bergson’s own words – would no longer see himself as anything but a vision of Paul*’ (Bergson 1965, 72) because, as soon as he is seen by Paul, he becomes a puppet (Bergson 1965, 78): an entity whose ontological stuff consists solely in being watched *from afar*.

According to Bergson, Einstein’s SR is like a baroque theatre: a theatre of deforming mirrors which is, at once, comic and uncanny. Comic because, as Bergson argues in his essay on laughter (1900), a comic effect results when an observer suddenly grasps the inanimate, phantasmatic, and virtual nature of somebody’s real and actual movement, i.e., a fall or, as in our case, a journey on a cannonball.<sup>6</sup> Uncanny because, as Freud pointed out in his essay on the uncanny (1919), when the most familiar experience suddenly turns into the most unfamiliar, this disturbs us greatly. Now, Bergson assumes that Paul is the homo-

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1 Not General Relativity. See Bergson 1965, 157–160.

2 As is well known, this is only a paradox as long as one assumes the symmetry of the uniform motions relative to each other (see, e.g., During 2007, 80–82). The point is that for Bergson there is no difference between a system moving in accelerated or uniform motion. Therefore, from the analysis of SR alone Bergson draws conclusions that are valid for Relativity *tout court*. Also note that, for Bergson, this paradox only has value as a mental experiment. For an analysis of these thesis and their consequences, see During (2020).

3 Von Laue first employed the term ‘paradox’ in 1912, attributing it to Langevin. See von Laue 1912, 118–120 and von Laue 1913 43; 57–58. But Paul Painlevé was certainly the first to formulate it clearly as such on the occasion of Einstein’s visit to the Collège de France on April 5 1922. See Nordmann 1922, 143–152.

4 In *Raum, Zeit, Materie*, Weyl speaks about two twins: ‘zwei Zwillingenbrüdern’ (Weyl 1919, 158). Max Born, in turn, mentioned twins in his 1920 work on the theory of Relativity. See Born 1922, 194. See also During (2014).

5 Bergson is the first to name the twins.

6 As is well known, depending on the formulation of the paradox, the means of transport changes.

zygotic twin of Peter – a crucial supposition as we will see – such that no one is more familiar to Peter than Paul. Yet, who precisely is said to be returning younger, and thus also changed, from the journey?

Nevertheless, Bergson argues that Paul's movement can produce a comic and uncanny effect, only and precisely to the extent that neither the travel nor the traveller Paul are real in the proper sense. For Bergson, *to be launched into space on a cannonball* means *to be projected onto a screen, to be painted on a canvas*. In short: to be represented.<sup>7</sup> 'The Paul who gets out of the projectile on returning from his journey and then again becomes part of Peter's system, is something like a flesh-and-blood person stepping out of the canvas upon which he had been painted' (Bergson 1965, 169). Paul is only the name of Peter's imaginary doppelganger: the virtual projection of *what would happen to Paul, from Peter's point of view*, if Paul was travelling on a cannonball around the Earth.

For Bergson Peter's reasoning and calculations while Paul is travelling only apply to a painting, because *what is real* is only the Paul who comes back, as soon as he comes back. Yet, if his movement is only apparent, it is not even correct to express oneself in this way. According to Bergson, we should rather say that Paul is always there and always present: the spectral, i. e., modal, character of plural times proves that Paul is, in reality, contemporary to Peter,<sup>8</sup> even if this does not mean they are identical. As twinning shows, Peter and Paul *are and are not the same person* because twinning, especially of the homozygotic kind, is a strange kind of one which is two and a not-less-strange kind of two which is one.

## 2 The Ghost Theory

For Bergson, the two twins *are not really two although they are more than one* and that is why the hypothesis of twinning is so essential for him but not for Einstein, who only spoke about clocks. Twinning undermines the Leibnizian principle of indiscernibles, forcing thought to equip itself with blurred vision. Peter and Paul are not really two, as the letter of SR demands, but neither are they one, as its spirit suggests. Then, it is only as an argumentative strategy that Bergson says

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<sup>7</sup> For Bergson, criticizing SR means criticizing the cinematographic mechanism of thought that underlies it (Bergson 1965, 142). See his *Creative Evolution* for the definition of this mechanism. But see also Poincaré's influence on Bergson, which explains the credit that the latter gave to a reading of Einstein's SR focused on the primacy of perspective and symmetry.

<sup>8</sup> The unique time proven by the fictitious character of SR's multiple times is a non-spatial co-existence that Bergson calls 'intuitive simultaneity' and which he thinks of as a non-standard simultaneity for which twinship offers a powerful image.

that Paul could replace the painting becoming a ‘referrer’ from the ‘referred’ he was, as soon as he suddenly passes from motion to immobility.<sup>9</sup> That Paul can become a referrer *again* – by assuming himself as a reference system in place of Peter – proves that, in reality, he has *always* been one, although the Peter who takes the measurements on Earth can, for a while – the very time that he is measuring – pretend that this is not the case, that is pretend to be *the one and only* reference system.

Indeed, as soon as Peter starts measuring, Paul becomes nothing but Peter’s vision: that very same Peter but, so to speak, doubled as a virtual image. In *DS*, in fact, Bergson employs the term ‘virtual’ in a classical sense: virtual, he writes, is each phenomenon that is subject to ‘a mental torsion’ (Bergson 1965, 107), i. e., to a projection. So, if Paul can be said to be ‘virtual’ with respect to Peter, this is because he is depicted ‘at a distance’ by Peter and because ‘at a distance’, for Bergson, means ‘according to those rules of linear perspective which are Lorentz’s formulas’<sup>10</sup> (Bergson 1965, 77; 108).<sup>11</sup> These rules ‘quite clearly express what the measurements attributed to S’ must be in order that the physicist in S may see the physicist *imagined* by him in S’, finding the same speed for light as he does’ (Bergson 1965, 171). Whenever SR supposes only one of the two systems at rest, it is understood that

only the physicist in system S exists as a physicist, the one in system S’ is merely imagined. Imagined by whom? Necessarily by the physicist in system S. The moment we make our system of reference, it is from there, and from there only, that a scientific world view is thenceforth possible (Bergson 1965, 87).

Bergson’s thesis is clear: when a physicist adopts a reference system, thereby immobilizing it, everything that occurs in the other reference systems will be expressed prospectively according to the more or less considerable distance that, on a scale of varying magnitudes, exists between the speed of the referred-to systems and the supposedly null speed of the referrer one. The physicist, in other words, acts like a painter who has to represent the greater or lesser distance of his model: he will modify its dimensions at will. As soon as he immobilises

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<sup>9</sup> The relationship between Peter and Paul is the same relationship that language’s theories establish between the ‘referrer’ and the ‘referred’ (Bergson 1965, 76–77; 109; 169–171; 184), that is between the subject of enunciation and the subject of enunciated.

<sup>10</sup> Virtual, then, means perspectival and perspectival, for its part, means possible thanks to a calculation.

<sup>11</sup> And it is for this reason, after all, that they are perfectly symbolised by that formal ether which is Minkowski’s space-time and that they also find a good translation in SR’s hypothesis of multiple times (Bergson 1965, 156).

his reference system, Peter makes the others mobile, but mobile in a different way. Yet, in the mathematical representation that he elaborates on the differences between his system and the others, providing data that quantifies the greater or lesser slowdown of the other times, he measures only the greater or lesser distance of their speed with respect to his own which, by contrast, is null by convention.

For Bergson, the slowing of the moving clock is a means, for SR, to record displacement in the same way as the shrinking of the objects that move away is a means, for the eye, to record their moving away. So, if the slowdown of time is real, it is real in the same way that objects shrink due to distance, which actually only translates into ‘the impossibility of touching’ (Bergson 1965, 74), that is, the impossibility of being physically in more than one place at the same time. Paul’s slowed-down time is only an ‘attributed time’ (Bergson 1965, 77): a simple mathematical expression destined to indicate that it is the system of Peter, and not that of Paul, which is considered as a reference system. Therefore, what is presented as rejuvenation is only shrinkage: a size variation to which no real temporal variation corresponds. The interval that SR estimates between two or more systems is empty. Reduced to mere spacing, ‘it is only the nothing of the original time, producing some kind of optical effect in the mirror of motion’ (Bergson 1965, 154). Paul’s motion is this optical illusion: nothing but a projection of Peter dictated by a theoretical need. Bergson reliably compares it to the one we would obtain by trying to move a piece of furniture in the living room by acting on its reflection in the mirror: if we were able to move over to the distant object and catch it in its true size, we would see the object we have just moved away from gradually shrinking.

Peter and Paul, in sum, are only two people of normal size who see each other reduced by distance (Bergson 1965, 163–164): each of them is a midget in the representation of the other but, neither of them can conclude from this fact that the other is also in reality a midget. The midget remains a ghost, while it is the man of normal size who is real. Vice versa,

If we reasoned about someone far away, whom distance has reduced to the size of a midget, as about a genuine midget, that is, as about someone who was a midget and acts like a midget, we would end in paradoxes or contradictions; as a midget, he is “phantasmal” the shortening figure being only an indication of his distance from me (Bergson 1965, 163).

### 3 The Ghost Reciprocity

For Bergson, the Paul considered in space-time is a double of Peter which, spatially, has contracted in the direction of its motion, and, temporally, has expanded each of its seconds; and which, finally, has broken up into succession in time every simultaneity between two events whose distance apart has narrowed in space (Bergson 1965, 21). But these changes, which can be summed up as variations in the length of successive intervals (Bergson 1965, 33), escape the moving observer: ‘only the stationary observer is aware of them’ (Bergson 1965, 21). Indeed, when Peter attributes slowed-down time to Paul’s system, he is no longer thinking of Paul as a physicist, nor even as a conscious being: ‘Peter is emptying Paul’s visual image of its inner, living consciousness, retaining of the person only its outer envelope (it alone, in fact, is of interest to physics)’ (Bergson 1965, 72).

Nevertheless, as soon as Peter represents Paul consciously, i.e., a Paul who lives within his own duration of time and measures it, Peter ‘would by that very act see Paul take his own system as system of reference and therefore take his place within this single time, inside each system’ (Bergson 1965, 72). Hence, Peter would temporarily do without his reference system, his existence as a physicist and, finally, also without his conscience: he would see himself as ‘a vision of Paul’s’ (Bergson 1965, 72). Peter, says Bergson, takes the figures by which Paul would have designated the time intervals of his own system, were he conscious, and multiplies them by numbers so as to make these figures fit into a mathematical representation of the universe conceived from his own point of view and no longer from Paul’s (Bergson 1965, 72). But, Bergson insists, if Paul came alive, it would be Peter who – from the SR’s point of view – would find himself deprived of his ability to see, becoming the one observed by an observer he once was.

A real Paul who actually measures real Time, would be an existing Paul who assumes his cannonball as a reference system making it immobile, because, if one of the phantom observers suddenly came to life, he would install himself ‘in the real duration of the former real observer, who would become phantasmal in his turn’ (Bergson 1965, 149) and then live within the time of an immobilised system, i.e., within the same time that Peter would have lived. ‘Would have’, Bergson clarifies, because Peter no longer lives it since Paul, until that moment represented, now becomes *living and conscious*.

Yet, this leaving-and-entering of consciousness, it might be added, obviously does not begin until we turn our attention to physics, because it is then clearly necessary to choose a system of reference. Outside of that, *the men remain as they are*, one group like the other. There is no longer any reason for their not living the same duration and evolving in the

same time. The plurality of times looms up at the precise moment when there is no more than one man or group to live time. Only that time then becomes real (Bergson 1965, 80, our italics).

If Peter lived, felt, and existed as Paul, he would find that his twin is of the same age (Bergson 1965, 64) and of the same size (Bergson 1965, 64), i.e., that his twin's time has passed and has been measured in the same way as his own. However, as long as he chooses to transport himself to Paul only in his imagination, he will remain a victim of the deceptions of perspective formalised in Lorentz's equations. But Peter is a physicist and, given the impossibility, in physics, of tracing back events in the universe to two different systems of axes at the same time, he can only assume one real Time at a time. Unlike the philosopher, his attention 'is not able to be divided without being split up' (Bergson 1965, 52) because, although he implicitly assumes that reciprocity is the cause of the invariance drawn from Lorentz's formulas, and therefore that Paul, if necessary, can become the physicist in place of Peter, he will always record only the optical effect of the reciprocity of movement (Bergson 1965, 76).

For Bergson, however, this is an error that cannot be corrected in terms of physics: complete Relativity is open only to philosophy. The physicist, on the contrary, has to give the universe a stable configuration (such is his ethical responsibility) and is forced to transpose the hypothesis of reciprocity onto that of non-reciprocity, 'because to express mathematically the freedom of choosing between two systems of axes is actually to choose one of them' (Bergson 1965, 77). This is why, by following the prospective laws of SR, the physicist will always attribute more or less slowed-down times to the systems that he will have gradually abandoned and that he will have set in motion at more or less considerable speeds. Which, translated into Bergson's language, means that

the physicist, feeling free of the theory of reciprocity once he has done it homage by freely choosing his system of reference, surrenders it to the philosopher and hence forward expresses himself in the language of the privileged system. Paul will enter the projectile, believing in this physics. He will come to realise on the way that philosophy was right (Bergson 1965, 78).

## II The False Name of ‘Relativity’

### 1 A Masked Absolutism

The great thesis of *DS*, it cannot be stressed enough, is that SR succeeds in affirming the unity of real Time better than Newtonian mechanics. This can be surprising, says Bergson, but it is the simple truth: ‘the idea of a real Time common to two systems, identical for S and S’, asserts itself with greater force in the hypothesis of the plurality of mathematical times than it asserts itself in the commonly accepted hypothesis of a unique and universal mathematical time’ (Bergson 1965, 80), because, as long as S and S’ are taken into consideration, SR invites us to consider them as ‘strictly interchangeable’ (Bergson 1965, 80). Newton’s mechanics, instead, suggested we treat them as different systems in relation to an absolutely privileged system. And, as a consequence of this, although each one was attributed the same mathematical time, it was impossible to demonstrate that the observers placed respectively in the different systems lived the same inner durations and had the same real Time. Only SR is allowed to do so, even though, for Bergson, Einstein failed in his own intuition leaving his theory of Relativity half finished.

What should distinguish SR from Newton’s physics is the suppression of any privileged reference system. But, in Einstein’s theory, this suppression is not fully achieved. In spite of the fact that SR provides for complete reciprocity or interchangeability between reference systems, it always introduces a dissymmetry. Thus, although Bergson believes that only Einstein had definitively demonstrated the modern idea *par excellence*, that is, the Cartesian idea of the reciprocity of motion (Bergson 1965, 35–38), he argues that there is a difference between the philosopher and the physicist: a difference which consists exactly in the greater allegiance of the former to the hypothesis of a universe in which the privileged reference system has, so to speak, lost all of its privileges. A complete Relativity, in fact, is a Relativity that takes on the full reciprocity of all observers without privileging any of them. Bergson presents this as a radical thought about ‘whatever’ in which, as the Copernican Giordano Bruno intuited before him, *nothing is centre, everything is centre*: the idea of a complete reciprocity asks to us

going unceasingly from Peter to Paul and from Paul to Peter, considering them interchangeable, immobilizing them by turns [...] for only an instant, thanks to a rapid oscillation of the attention that does not wish to give up anything of the thesis of relativity (Bergson 1965, 75).



Hence, if SR is partial, it is to the extent that, while admitting *de jure* the reciprocity of all observers, it privileges *de facto* only one of them, thus attesting to itself as a false thought about whatever: a non-Copernican thought in which only a single reference system is at the centre, albeit temporarily. Indeed, once the ether has vanished with the privileged system and the fixed points, all that remains, says Bergson, are the relative motions of the objects in relation to each other. But, since one cannot move with respect to oneself, immobile will be ‘that system which we enter mentally. A *living, conscious* physicist then exists in it by hypothesis’ (Bergson 1965, 168) because when we assume that every motion is relative, immobility ‘is of our decreeing’ (Bergson 1965, 168).

It will be the state of the system of reference, the system in which the physicist *imagines* himself located, inside which *he is seen* taking measurements and to which he relates every point in the universe [...] the physicist-builder of Science, is motionless by definition, once the theory of Relativity is accepted. It unquestionably occurs to the relativist physicist, as to any other physicist, to set in motion the system of reference in which he had at first installed himself; but then [...] he adopts another one [...] which thus becomes motionless [...]; and it is then no more than an *image* of himself that he mentally perceives what was just now, in what will in a moment again become, his system of reference (Bergson 1965, 167, our italics)

However, in this way, the difference between Einstein’s SR and Newton’s classical mechanics ends up having, at most, the breadth of an adverb: whereas the Newtonian physicist could count on a reference system that was *absolutely* and *definitively* privileged, inasmuch as the universe had, in itself, a concrete configuration independent from the physicist’s point of view, the physicist of SR can, on the contrary, only choose from time to time a reference system that, consequently, is only *relatively* and *temporarily* privileged. Yet, for the philosopher this variation does not translate into a real difference because, although there is nothing that forbids one from supposing – as SR regularly does – that, at any given moment, one’s own reference system is also in motion, as soon as the physicist advances this supposition he immediately chooses another reference system, which then inevitably loses its mobility and become motionless. And, even if this second system may, in turn, be thought of as being in motion, in this very thought, a third reference system is chosen and immediately immobilised, and so on and so forth, indefinitely.

Einstein’s universe, therefore, is a universe as real, as independent from our mind and exists in the same absolute sense as Newton’s universe. The difference is that if, for Newton, this universe is a set of things, for Einstein, on the other hand, it is a set of relations: those invariant elements ‘held constitutive of the reality’ (Bergson 1946, 304). The method of SR consists in seeking a mathemat-

ical representation of things that is independent from the observer's point of view, but such a representation is a representation that constitutes 'a whole of *absolute* relations' (Bergson 1946, 300). Nothing more contrary, Bergson says, 'to relativity as philosophers understand it when they treat as relative our knowledge of the external world' (Bergson 1946, 300). The essence of SR

precisely guarantees that the mathematical expression of the world which emerges from this arbitrarily chosen point of view will be identical, if we conform with each other in the rules that are laid down, with that which we will find when we situate ourselves at any other point of view. Hold on only to this mathematical expression, and there is no more time than there is anything else. If you restore the time, you restore things (Bergson 1999, 189–190).

According to Bergson, SR is *restricted* because it expresses a single point of view: that of the privileged reference system and of the physicist attached to it. If it is restricted, then, it is only to the extent that it is partial and unilateral, i. e., to the extent that it is a masked absolutism. While abandoning the old absolute, bearing the good name of 'Relativity', Einstein's theory adopts a new absolute: space-time as a formal substitute for the ether.<sup>12</sup> Such that, says Bergson, if SR qualifies as 'relative' the simultaneity is only because it has made an absolute of the relative<sup>13</sup> by swapping the part (space-time) for the whole (duration), the effect (invariance) for the cause (reciprocity) or, again, the datum (the measure) for the process (the thing) that generated it.

## 2 The Fallacy of the Physicist

For Bergson, measuring is the opposite of intuiting and it is only by intuiting that it is possible to see everything simultaneously observing. In physics, by contrast, this contemporaneity is inadmissible: measuring means choosing and choosing in the sense of determining. Then, everything which is measured is a logical

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<sup>12</sup> 'In brief, absolute rest, expelled by the understanding, is reinstated by the imagination' (Bergson 1965, 31).

<sup>13</sup> 'All is relative and only that is absolute' (Nordmann 1924, 195). Lévy-Leblond argues, 'c'est d'ailleurs pour cette raison que la terminologie de "relativité" est d'une certaine façon fort mal venue, parce que le but de la théorie de la relativité [...] c'est précisément de s'occuper de ce qui n'est pas relatif, c'est d'arriver à accéder à ce qui est absolu, à ce qui est invariant, à ce qui ne dépend pas du point de vue; ce qui est relatif, ce ne sont finalement que les apparences, qui nous permettent d'accéder à ce qui est plus profond, plus essentiel, plus intrinsèque – les grandeurs invariantes, les absolus' (Alegria, Noël and Minot 1983, 64).

thing compatible with the principle of non-contradiction, because, by anticipating some of the insights of Quantum Mechanics,<sup>14</sup> Bergson looks at this choice as a division of the indivisible, a localization of the non-localisable. In brief: as a division of what is by nature overlapping. Yet, the choice implied by SR is not, in Bergson's eyes, a free choice but rather an obligation masquerading as freedom. In fact, one must necessarily choose a privileged configuration if one wants to measure, since absolute space and time are no longer at play. In the SR, moreover, the possibility of choosing any reference system in the absence of a fixed framework is based on the fact that the same laws apply in any reference system, i. e., on something that is reliable, inasmuch as it is objective and impartial: the invariance of principles. Thus, although there is consubstantial risk in arbitrarily considering oneself the centre of the world while trying to build a universally valid science,

the physicist can rest easy from now on; he knows that the laws he formulates will be confirmed, no matter from what vantage point we view nature. For the phantasmal image of his experiment, an image which shows him how this experiment would look, if the experimental device were in motion, to a motionless observer provided with a new system of reference, is no doubt a temporal and spatial distortion of the first image, but a distortion that leaves the relations among the parts of the framework intact, keeps its connections just as they are, and lets the experiment go on confirming the same law, these connections and relations being precisely what we call the laws of nature (Bergson 1965, 112).

The equivalence postulated by SR – thanks to the introduction of invariant elements and the constitution of a formal system that can be used to 'express every event as geometry does for space' (Bergson 1946, 302) – is not the privileged expression of a modal monism, such as the Bergsonian metaphysics of creative duration in which a single real Time is rhythmized in different ways (Bergson 1965, 47), but bears the mark of a substantial dualism: one whose foundation Bergson attributes to the Greek spirit that also permeates modern scientific thinking. In SR, time is opposed to eternity as its lack, because here equivalence is marked by false relativity: an absolutism that is disguised as modern relativism. In SR there is a fictitious plurality of interpretations with respect to the universal and eternal metric of space-time assumed apodictically as a given totality: a fully completed science which is *quelque part* (*quelque part = somewhere = transcendence*). For Bergson, this proves that complete Relativity and incomplete Relativity conceive the ground in a very different way: for the former, it is a living and concrete unity which asserts itself through single differences; for the latter, it

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<sup>14</sup> Among those who have provided different arguments for the proximity of Bergsonian theses to QM see, e. g., De Broglie (1941); Costa de Beauregard (1947); Gunter (1969).

is a ready-made unity that only awaits discovery: a unity which is given at a stroke in eternity as an abstract identity.

The equivalence postulated by SR and, more generally, by science, both ancient and modern, has the value of an analytical identity (Bergson 1946, 304) between all that temporally exists and the only essence which, transcending it, governs it as a remote rather than immanent cause: the laws of nature as an absolute *fact* of which every single reference system will be, from time to time, an *interpretation*. Einstein's SR, in fact, obtains a homogeneous symbolic expression only by neglecting the difference between the time of a reference system, the one which is real and ascertainable, and the time of all the others, i.e., by an undue *reductio ad unum* whose result is given a priori although, in reality, it comes out *ex post* (invariance is the effect of reciprocity) and that is considered primary although, in reality, it is secondary (invariance is the reciprocity represented). In other words, it is only on the basis of that fallacy, which Bergson calls the 'retrograde movement of the true', that we can choose any reference system by arbitrarily modifying the dimensions of all things. Whether it is a fallacy, then, does not only depend on the fact that all reference systems have been already equalised, because the mathematics has already reduced the dimensions of all things to those relations which will be then preserved during the ghostly becoming of things. For Bergson, the physicist deceives himself also because the relations that he supposes to be eternal are temporary, even though the natural infirmity of our intelligence leads us to believe that they have always been there, and therefore, that they are *given* more than *found*.<sup>15</sup>

While it is thought to be invariance, equivalence is a freeze frame, rather than a continuity of creation. It translates the fact that two or more representations are representations of a one and same thing, that is, of a universe which is independent of our representation. Indeed, if Peter is forced to attribute observations to Paul, it is because he seeks a representation of the world which is independent of any reference system and 'independent', here, means 'a priori identical for all'. For Bergson the only way to satisfy the physicist's desire to be *everywhere and nowhere* is to make all the other reference systems equal to

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<sup>15</sup> Our discursive intelligence perceives time timelessly interpreting what is *happening* starting from what has *happened*. It looks at the whole as something that is done or given and not as something that is in-the-making because, due to the retrograde motion of the true, the essence of the so-called "cinematographic mechanism of thought", what comes later seems to be eternally present. That is why physics always swaps the concrete for the abstract, the fact or datum for the event or process that generated it. But, for Bergson, the physicist's mistake is a natural one: our intelligence usually takes the dead past (the '*ed-form*') for the living present (the '*ing-form*') thanks to a retrospective look mistaken for a flyover gaze.

his own and equal on the basis of the only ‘difference’: that invariance which, although it is derived from a single case, is nevertheless extended to all cases. The research method and the recording procedures of SR, he explains, ‘guarantee to the physicist an equivalence between all the representations of the universe assumed from all points of view’ (Bergson 1965, 78). And thus, the profession of modernity made by its physicist sounds inauthentic. The physicist of SR certainly has an ‘absolute right’ (Bergson 1965, 67; 79) to stick to his own point of view, relating everything to his reference system – a right which the old physicist did not fully enjoy. But then he cannot forget that this point of view is his own. Moreover, according to Bergson, he also cannot inflate his chest reflecting on the courage with which he made his decision: by arbitrarily choosing a reference system, the physicist did not run any risk. And, what is more, he has not even chosen: all configurations are equivalent and what they are equivalent to has already been decided once and for all.

### 3 The Golden Proportion

Invariance is the new form of the old absolute stillness: a relative stillness not so much in the sense of provisional, but rather in the sense of *relative to relations*. It is the latter that are supposed to be eternal by modern science, and the equally supposed eternity of their validity is the reason why, in Bergson’s eyes, one never finds a real alternative but, as we have said, always and only a fatal consequence: the decrease of time to a spectral ‘moving image of eternity’ (Plato, *Timaeus* 37 c-d). After all, that the secret face of relative motion is stillness, that the condition of variation is invariance and, last but not least, that *the true name of relativity is absoluteness*, means that, in SR, time is only thought *sub specie aeternitatis* – but as an eternity ‘of death’ (Bergson 1946, 220) instead ‘of life’ (Bergson 1946, 185): an eternity with respect to which the real living duration is only the seal affixed to the creature’s deficiency.

For Bergson the incompleteness of Einstein’s Relativity depends on the removal of duration, because only its inclusion would prevent the physicist from privileging one reference system over the others, that is from assuming one configuration as the centre for the others. *Sub specie durationis*, reciprocity is granted, because every duration, as an eternity of life, is the connection of all things as living and conscious: of all as reference systems. This avoids the spectral plot of a ‘world suspended in the air’ (Bergson 1946, 52), which Bergson, with a beautiful image, compares to ‘an infinity of crystallised needles’ (Bergson 1946, 219): as a continuity of heterogeneity, duration is pure *unitas multiplex* and, consequently, tuning into one’s own real Time means tuning immediately into that

of all the others. According to Bergson, all durations, despite their different rhythms, coexist in the sense that they co-act or co-evolve together. Each one differs from the other in being more or less compressed, but all together they compose that non-spatial coexistence which is the unique real Time: Bergson's name for contemporaneity as the uninterrupted togetherness of independent durations.

On this basis, we think, one can better understand why it is only by relinquishing his concrete status as a living being, who shares his time with others, that the physicist objectifies and privatises time. The moment he chooses a reference system, he gives up his own concreteness and interiority (becoming oblivious to his own real Time), the concreteness and interiority of others (becoming oblivious to their real Time), and his bond with them (becoming oblivious to the unique real Time). Yet, explains Bergson, there is no physicist who does not promptly heal the loss that this removal entails by recovering in effigy what he has so sacrificed. Neglected *in se*, duration is promptly recovered *in alio*: an image which, by inaugurating an 'artificial diplopia' (Bergson 1965, 111), protects the physicist against the danger of idealism (Carr 1920), which he believes he will incur if he absolutises his own point of view.

However, to recover in effigy, and therefore as a ghost, what the real Time of a real observer must be, is not the same as to move oneself there 'in order to compute it in actuality' (Bergson 1965, 180). 'To measure Paul's time as it is measured by Paul it would be necessary to be in his place' (Bergson 1965, 215). and then, for Bergson, despite believing the opposite, the physicist never comes out of himself.<sup>16</sup> He does, it is true, try to remedy the impossibility of being the other while remaining himself, that is, the impossibility of moving even with respect to himself, thanks to the representation of another self, which is other, mind you, because essentially in motion whereas he, on the contrary, remains motionless. But, since Peter tries to address the impossibility of being Paul while remaining Peter by representing Paul only because of the impossibility of translating their differences in mathematics, Bergson argues that such a trick proves, once again, the partial character of SR.

The physicist, in sum, is not at all out of danger: we can well understand the phantasmatic character even of that vision that he treats as real by the fact that 'there is no way mathematically to express the difference between the two' (Bergson 1965, 127). If Peter did not abstract from himself being a man to become a

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<sup>16</sup> 'The conception of the relativist physicist is an egocentric conception [...] He multiplies the successive egocentric views rather than bringing about the philosophical coexistence of the times of the different observers. By the bias of equations, he attains a multifaceted solipsism' (Merleau-Ponty 2003, 109).

physicist, he could not even paint Paul instead of tuning into him. Paul, in fact, is similar to Peter ('as a species to a genus' – Bergson 1965, 135) to the extent that both have been made identical a priori, as a species, according to their true common genus: the laws of nature. And it is no coincidence, therefore, that in *DS* Peter is presented as a painter who has to portray 'two subjects' (Bergson 1965, 73): himself as a physicist and Paul as an observer. The true proportion that regulates this projection is not the one between Peter as a painter and Paul as painted.

Peter must have already become a ghost himself in order to have made Paul in imago. Peter must first represent himself as a reference system by abstracting from his real Time. But to the extent that Peter as a painter or physicist is a ghost compared to Peter as a living being or as a man, in the Baroque theatre of SR one finds that, in the end, all observers are ghosts: the painted Paul is a ghost compared to the painter Peter because the living Peter is a ghost compared to the painter Peter. But the living Peter, in turn, is a ghost compared to the painter Peter because his concrete time is a ghost compared to the abstract eternity of the laws with which he decides to measure it, i.e., to paint it. So that, finally, all plural times supposed by SR are ghosts compared to the reality of the laws by which they are generated; all reference systems – concludes Bergson – assume the same value in relation 'to an entity comparable to the Platonic Idea' (Bergson 1965, 183).

### III Complete Relativity

#### 1 Spooky Universality

Intelligence comes after, being indeed itself an *after* compared to the strange *before* of contemporaneity in which intuition places us and of which twinship offers such a powerful image. And when it comes, it does so as a rarefaction of that state of primitive commonality that Bergson calls 'simultaneity of flow' – one of *DS*'s great conceptual inventions – and Whitehead, roughly in the same years, calls 'causal efficacy'. For both the basis of experience is sympathy – that 'feeling the feeling *in* another and feeling conformally *with* another' (Whitehead 1978, 162). Thus, what Einstein isolated as *the privilege of the present reference system* and Santayana, albeit in another context, as *the solipsism of the present moment* (Santayana 1923), is only an illusion connected to another way of perceiving: Bergson's 'simultaneity of the instant' or, to again use Whitehead's terms, 'presentational immediacy'. For both Whitehead and Bergson, the latter

corresponds to ordinary sensory perception and consists in the discrimination of forms that express external natural facts in relation to our body. Not, therefore, to an experience *of* the body and *with* the body. This kind of perception overturns all the characteristics of that embodied perception from which derives (presentational immediacy is a development, in the sense of a thinning, of the complex and dense datum procured by causal efficacy in the same way in which the simultaneity of the instant is a development, in the sense of a spatialization, of the complex and dense datum produced by the simultaneity of flow). Its objects are the forms, or qualities, which are clear, distinct, and indifferent, i. e., sensory data, but so to speak abstract from the senses and in solidarity with each other only 'because of their participation in the impartial system of spatial extension' (Whitehead 1927, 23).

Thus, although more sophisticated, presentational immediacy is more fallacious and, although it is more precise, Whitehead claims that it is more sterile: it is always 'confined to the illustration of the geometrical perspective relatedness, of a certain contemporary spatial *region*, to the percipient' (Whitehead 1978, 121). Yet, for the physicist intent on representing 'the whole universe schematically on a sheet of paper' (Bergson 1965, 56) according to the mathematical laws of perspective, presentational immediacy will always be more advantageous. The physicist, in fact, must calculate, where 'to calculate' means 'to count instants by squeezing the intervals at the extremities' (Bergson 1965, 57–58). Working on measurements, then, science records only simultaneities and nevertheless, if we can count simultaneities by synchronizing clocks, i. e., by projecting duration onto space, it is only to the extent that there is a simultaneity which is prior to all of these instantaneities. Bergson qualifies it as 'natural' (Bergson 1965, 89), 'intuitive' (Bergson 1965, 82), 'lived' (Bergson 1965, 82), clarifying that

simultaneity of the instant and simultaneity of flow are therefore distinct but complementary things. Without simultaneity of flow [...] Real duration and spatialized time would not then be equivalent, and consequently time in general would no longer exist for us (Bergson 1965, 54).

For Bergson if we measure real Time thanks to the simultaneity of the instant, each of these measurements is a measurement of real Time (Bergson 1965, 54–57) thanks to the simultaneity of flow: the transcendental condition for the possibility of each measurement. Only this simultaneity of flow allows us to transpose duration onto a linear time and then, without its continuous unfolding, there would only be 'a space that, no longer subtending a duration, would no longer represent time' (Bergson 1965, 51). To put it differently, if there were not a contemporaneity of the stream of consciousness with the move-



ment of the clock with which the single moments are recorded, ‘we would have no particular measurement, we would end up with a figure not representing anything at all’ (Bergson 1965, 54), but we would not have measured time. A physicist, for Bergson, does not measure time thanks to space but thanks to time (Bergson 1965, 70), and that is why, ultimately, every physicist insists on calling ‘time’ the space he quantifies: ‘his consciousness is there’ (Bergson 1965, 60) and can, if necessary, ‘infuse living duration into a time dried up as space’ (Bergson 1965, 60).

This, for Bergson, proves that the immediate datum of experience is ‘a continual flow from which we simultaneously derive both terms and relations and which is, over and above all that, fluidity’ (Bergson 1965, 63, our italics). The physicist, however, ‘accepts the testimony of the senses, that is, of consciousness, in order to obtain terms among which to establish relations, then retains only the relations and regards the terms as non-existent’ (Bergson 1965, 63). And, unaware of the difference in nature that separates them, he nevertheless will agree that, by extracting the former, he has measured the latter too. In this he is deceived: the physicist, Bergson says, only believes in what he measures. Yet, it is precisely for this reason, that he can never know *what* he measures *while* he measures it: forgetting that every measurement of time takes time (Bergson 1965, 19; 71), the physicist also denies himself the chance of finding time behind space, with the result that, to his eyes, what comes first will also be prior. Indeed, when they are disengaged from dimensions, spatial relations become absolute, and then previous not only in the temporal sense.

For a physicist the primacy of relations is also axiological, because their greater dignity, Bergson suggests, is of a moral order. Thanks to the objectivity and the necessity of relations – all that everyone can know, and know in the same way – intelligence can successfully plan action in the world, because relations, using Husserl’s language, are what allow us to feel as if we are on earth even if we are on the moon: even on the moon, after all, we *land* (Husserl 1940). Yet, given that in the perfectly determined whole they describe, the happening of things is reduced to a formality that ‘has no longer significance’ (Edgington 1920, 51), Bergson puts forward the suspicion that their axiomatic universality is no less spectral than the one codified by Kant, in the form of an empty ‘consciousness in general’, for his beloved Newtonian mechanics. But then, maybe the task assigned by Bergson to the philosopher – a task, as we shall see, which is very different from the one faced by the physicist – matched a need that was maturing with the rising ‘physics of young people’,<sup>17</sup> i.e., Quan-

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17 Heisenberg defined Quantum Mechanics in this way.

tum Mechanics, to prove that events really happen – and really happen to us instead of, as is the case with the classical framework of SR, thinking that ‘they are just there and we come across them’ (Eddington 1920, 51) within the limits of the speed of light?

## 2 The Task of the Philosopher

For Bergson, SR affirms the unity of real Time more rigorously than either Newtonian mechanics or common sense. And yet, as we have seen, both *time* and *unity* are terms that describe different realities in the metaphysics of Einstein’s SR and the metaphysics of Bergson’s philosophy of creative duration. The time SR adopts as the fourth dimension of space is, in fact, only a mobile image of eternity; the unity it preaches is, consequently, an abstract unity, synonymous with mathematical invariance, which sacrifices dimensions to relations. This is why Bergson dismisses the attempt to base oneself on a common formal expression in order to put all systems on the same level and declare that their times are equivalent as a *petitio principii*. That equivalence, he says, is assumed dogmatically because the unity of time validated by Einstein’s SR is an immediate fact of science instead of being a *donné immediate de la conscience*. That is, a datum of Kantian ‘consciousness in general’ by virtue of which, science can maintain firm confidence in itself because

the more it deepens the nature of things, [...], the more it will find a perfectly mathematical order. This is for the very simple reason that it is the intellect that deepens nature, and the intellect cannot deepen nature without illuminating it with its natural light [...]. In this sense science is absolutely sure to find, to the extent that it will extend, the ever more complete confirmation of the a priori principles that constitute it. Only that this science is entirely relative to our intelligence, relative to our faculty of perceiving and thinking (Bergson 2017, 320 – our English translation).

As long as by ‘nature’ we mean the laws that provide the scaffolding for phenomena, science and nature can only be ‘the same thing’. If so, the possibility of transporting oneself in thought to every place on this luminous canvas, will make transporting oneself along with one’s body a vain, if not useless, project (presentational immediacy, for Whitehead, is the way of perceiving without the ‘witness of the body’ – Whitehead 1978, 118). However, to mentally transport oneself to Paul is not in itself sufficient for measuring Paul’s time as Paul measures it. It is also necessary to ‘be in his place’ (Bergson 1965, 215), i.e., to be, in some way, in the same body as well as the same mind: only in this way will the same time Peter will find there be real rather than abstract. A journey

of our body, after all, 'is always there, and could have been for us the unfolding of time' (Bergson 1965, 51).<sup>18</sup> But how can somebody be in the place of the other while remaining himself? How is it possible to be in two different places at the same time? How, to take up the language of *DS*, can attention be divided without splitting? And in what sense can such *double single movement* be worth measuring if 'there is nothing to change in the mathematical expression of the theory of Relativity' (Bergson 1965, 185)? Can, finally, sympathy be a candidate for the role of *organum scientiae*?

For Bergson, it is true, there is nothing to change in SR, but this does not mean that the philosopher can do nothing in the face of such an admirable and innovative theory. As far as SR is concerned, the philosopher must instead establish what is real and what is not, what is spooky and what is not, distinguishing between what is or could be a lived time and what, on the other hand, is a time that is simply represented by thought: 'a time which would vanish at the very instant that a flesh-and-blood observer would betake himself to the spot in order to compute it in actuality' (Bergson 1965, 180). There are in fact two times, according to Bergson, the philosophical and the scientific, and only the former is real. The time of science, vice versa, is spectral, and spectral in an eminent sense: its reality is purely mathematical. Then, 'one could not raise it to a metaphysical reality, or simply to "reality" without assigning to this last word a new meaning' (Bergson 1946, 300). Indeed, if what is real is only what is given in an experience, i.e., what is ascertained or ascertainable, how can we conclude that the space-time of SR is real since even Kant, in the first *Critique* (*KrV*, B 207), has recognised that space and time are neither perceived nor perceptible, but rather the pure and a priori forms of all perception?

In his work, nonetheless, Bergson has devoted considerable energy to denouncing the imposture of the a priori: the science that is constructed on it, SR included, is no longer a physics but a metaphysics which 'raises into reality – into things perceived or perceivable and existing before and after the calculation – a fusion of Space and Time which exists only in the calculation and which, outside it, renounces its essence the very moment existence is claimed for it' (Bergson 1946, 301). Metaphysics always 'takes the concept for the percept' (Bergson 1946, 155), forgetting the distinction between what is real, i.e., actually perceived, and what is only represented, i.e., virtually conceived. Yet, after having transformed the difference in kind between them into a simpler difference of degree, in this way it inevitably ends up explaining the real only as a 'case of the

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<sup>18</sup> According to Bergson we cannot be displaced in relation to our self because it is as conscious bodies that we ground an 'absolute'. See Merleau-Ponty 2003, 111.

virtual' (Bergson 1965, 152). The essence of metaphysics is precisely to 'rank the real vision with the virtual visions. [...] Mathematician and physicist certainly have the right to express themselves in this way. But the philosopher, who must distinguish between the real and the symbolic, will speak differently' (Bergson 1965, 152–153).

A philosopher who philosophises *with* science and not *against* it, will ask himself what is real, i.e., what is actually observed and observed (Bergson 1965, 94), inquiring, in the case of SR, whether

it would be necessary to begin by seeing clearly why it is impossible to attach at the same time to several different systems "living and conscious" observers, why one single system—that which is effectively adopted as system of reference contains real physicists, and why the distinction between real physicists and physicists presumed real takes on a capital importance in the philosophic interpretation of this theory, when up to now philosophy had not had to concern itself with this theory in the interpretation of physics (Bergson 1946, 301).

### 3 The Precision of the Nuance

To provide an adequate interpretation of SR means, for Bergson, to be 'more Einsteinian than Einstein' (Bergson 1965, 56). And yet, if philosophy has not achieved this *surplus of precision*, it is because it has not made intuition its own method. Philosophy has not taken advantage of the fact that, thanks to intuition, it can place itself, at the same time, on the platform and on the train of another famous Einsteinian experiment – since its freedom is a freedom *from* measurement and not *of* measurement. Therefore, Bergson says, what it has lacked most is precision (Bergson 1946, 7), because precision cannot be obtained by any other method than intuition. In other words, while it is true that intuition is the opposite of measuring, it must be added that intuition is the opposite only of *a certain way* of measuring. Intuition too, in fact, offers us an exact measure of the thing. It does so, says Bergson, by comparing 'the real exclusively with the real and the imagined exclusively with the imagined' (Bergson 1965, 181), i.e., by shaping concepts that fit the thing of which they are concepts (Bergson 1946, 5).

For Bergson, intuition sees 'a perfect reciprocity' (Bergson 1965, 180) whereas SR sees a dissymmetry which is at the origin of its paradoxes. These last are merely effects of perspective that derive precisely from the exchange of the perceived with the conceived, of the real with the virtual, of time with space, of the cause with the effect. They are caused by the metaphysical fallacy which, according to Bergson, characterises science. It consists in the inclusion of a thing in a

genre or a concept that is too vast in the sense of ‘pre-existing’ (Bergson 1946, 30) and only intuition, in Bergson’s opinion, is able to avoid this inclusion by discarding the ready-made concepts in favour of ‘a direct vision of reality’ (Bergson 1946, 30). Intuition cuts the concepts ‘to the exact measure of the object’ (Bergson 1946, 31) and, by doing so, also re-establishes the rights of nuance. This is the very nuance which metaphysics as presupposed by both ancient and modern science has sworn to deny since its very first steps, that is, since the Greeks invented that other kind of precision which has sacrificed everything that is movement on the altar of the *logos*.

According to Bergson, modern scientific thought is the continuation, by new means, of the Greek ontology. Relations are these *new* means, although they are only used to communicate an *old* message: knowledge is relative to the absolute and eternal truth of ideas given once and for all. The case of our twins is, in this respect, exemplary. Their twinship, as we were saying, puts us in front of a strange 1 that is 2 and a not less strange 2 that is 1, that is in front of a kind of *imprecision* or *nuance* of nature such as that of a couple of people who are *not really two* although they are more than one. To this vagueness, however, SR relates in accordance with the principle of non-contradiction, i. e., by introducing order into what affects our thought, forcing it to go in two directions at the same time without splitting. For Bergson, vice versa, the hypothesis of twinning is precious precisely because, already at an immediately intuitive level (the uncanniness produced by twins), it forces thought to stand between two opposite drives and to equip itself with a vision that is blurred only to the extent that it is diplopic. A vision that is radically different from the orthogonal vision of science.

Science is constituted precisely by restoring monocular vision: a sort of *orthodoxy of vision* that introduces a distinction into what is undivided. It promptly replaces the natural reciprocity between Peter and Paul that, for Bergson, constitutes the immediate datum – ‘given as a real datum there is only a reciprocity of displacement’ (Bergson 1965, 33) – with an abstract identity and, in this way, hopes to bring back what appears to be an intolerable exception to the norm. Then, if we want to take up the formulas used at the beginning of the essay, we could say that, for Bergson, there is science every time the comic is made serious and the uncanny is made harmless, that is, every time the anomaly of twinning is corrected through a work of disambiguation by which, *arbitrarily*, that umbilical cord which *necessarily* ties the known and the unknown together, Peter and Paul, is severed. So, even if it is to some extent true that science exorcises ghosts, it must be recognised that it does not do so in the same way that philosophy does. Science, for Bergson, fights *ghosts with ghosts* and *illusions*

with *illusions* because calculating, after all, means reassuring oneself thanks to a precision which, in reality, is the source of a more serious imprecision.

Philosophy, on the other hand, exorcises ghosts with something that is not a ghost: it exorcises the spectral metaphysics which haunts the dwelling of the physicist by aiming at the *more than human precision of the nuance*. In a certain sense, hence, philosophy exorcises what is spectral with what is real, welcoming *as real* what the scientist usually exorcises *as a ghost*: duration. Indeed, if duration is ousted from a science that is based on something inessential – ‘precision is an historical accident’ – and that, moreover, ‘gives us the promise of well-being, or at most, of pleasure’ (Bergson 1946, 151) but not joy, there is no reason not to try to grasp the duration in itself in spite of the difficulties that its expression involves (During 2018). How, in fact, would the duration appear to a consciousness which desired only to see it without measuring it, which would then grasp it without stopping it, which in short would take itself as object, and which, spectator and actor alike, at once spontaneous and reflective, would bring ever closer together – to the point where they would coincide – the attention which is fixed, and time which passes? (Bergson 1946, 8).

Probably, as it appears from that ‘barely conscious reasoning’ (Bergson 1965, 81) from which intuition is inspired by and according to which

We perceive the physical world and this perception appears, rightly or wrongly, to be inside and outside us at one and the same time; in one way, it is a state of consciousness; in another, a surface film of matter in which perceiver and perceived *coincide*. To each moment of our inner life there thus corresponds a moment of our body and of all environing matter that is “simultaneous” with it; this matter then seems to participate in our conscious duration. Gradually, we extend this duration to the whole physical world [...]. Thus, is born the idea of a duration of the universe (Bergson 1965, 45 – our italic)

## Conclusion: What is Real?

In *DS* there is a handover, with regard to SR’s main hypothesis – the reciprocity of motion – from the physicist to the philosopher. The physicist, to the extent that he has to refer his measurements to a privileged system, refuses the idea of absolute reciprocity although, as we saw, for Bergson he has an ‘absolute right’ to do so (Bergson 1965, 67; 79).<sup>19</sup> The philosopher, on the other hand, is

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<sup>19</sup> The physicist, for Bergson, ‘forgets that he is a man before he is a physicist’ (Bergson 1965, 79), that is, he forgets the moment in which he finds himself. Yet, it is only in this way that he can *be everywhere* and build a *universal physics*. Then the physicist is not wrong when he transcends himself. His fault is ‘only’ to forget he has transcended himself.

a philosopher exactly because he does not have to mathematically translate the universe on a piece of paper following the laws of linear perspective. The philosopher does not have to choose. By refusing ‘to simply turn into a physicist’ (Bergson 1965, 96), he instead only has to intuit, that is grasp real Time both in its nature as well as its difference in kind from virtual time. And yet, as a philosopher, he should never forget that the train and the track are in a state of reciprocal motion. Moreover: ‘he will place a conscious observer in both and will seek out the lived time of each. [...] What he will discover is that, what is simultaneity in relation to the track is, simultaneity in relation to the train, that is, that Peter and Paul share the same time’ (Bergson 1965, 94).

For Bergson, as we have seen, SR invites us to consider S and S’ as ‘strictly interchangeable’, with the consequence that our thought can make the two people in S and S’ coincide together, as if they were two equal figures that overlap and that they coincide, mind you, ‘not only with respect to the different modes of quantity but even in respect to quality [...] for their inner lives have become indistinguishable quite like their measurable features’ (Bergson 1965, 80–81). In fact, the comings and goings of consciousnesses only begin with the assumption of a reference system. By not assuming it, the philosopher can move, ‘thanks to a rapid oscillation of the attention’ (Bergson 1965, 75), uninterruptedly from Peter to Paul and from Paul to Peter – both alive. When we do not deal with physics, men remain what they are, conscious of one another and equally conscious of the other, real to one another and equally real to the other, because the real, in itself, is not asymmetrical: there is not a single man who only lives time (Bergson 1965, 79) and many ghosts that stir in eternity, but a unique real Time lived by many men.

In this unique real Time, a philosophy that stands for both points of view, stands in its entirety because here one no longer has to choose. When the idea of the reciprocity of motion is fully assumed, there is only the live interaction between Peter and Paul both living, i.e., the non-stop *intuiting* of Peter by Paul and the non-stop *intuiting* of Paul by Peter. Not, then, a mere exchange in which Peter is alive *and* Paul is dead, nor one in which Paul is alive *instead of* Peter being dead. The act at the core of DS is not a painting with two subjects, but a double, unique, act: the non-stop *feeling* of Paul by Peter and, reciprocally, the not-stop *feeling* of Peter by Paul, in which both are alive. For Bergson their communication is real because what exists as an immediate datum is only the reciprocity between Peter and Paul and between Paul and Peter. Proof of this is the fact that not even intuition differs from this datum. If to intuit means ‘to be completely in the real’ (Bergson 1965, 97), then there is no distinction between what *intuition* is and the real that *intuition* *intuits*: both the real and the intuition that grasps it are communication, because intuition too is an act or

birth that has no other existence than in its products or births, which, in turn, do not exist as products or births, that is, as extremities, if not abstractly. What exists, and exists in a primary way, is, rather, their relationship, that is that uninterrupted reciprocal detection of which twinning is perhaps one of the best images.

As a ‘sounding’ (Bergson 1946, 227) into the real, intuition is intuition of this reciprocal sensing and, at the same time, this same reciprocal sensing in action, because the fact that the real is only the live interaction between Peter and Paul, who are both living, means that real is only that ‘third’ which, as an instantaneous *koinonia*, making them more than one without ever making them two, also makes them indistinguishable, mitigating their respective identities (a fact that explains the anxiety that many cultures feel when faced with homozygotes). Peter and Paul are *neither two nor one* but two in function of a third who is their immanent one.<sup>20</sup> It is impossible, then, to divide them, but it is equally impossible to identify them. *Twinning means contemporaneity* and therefore, as soon as Peter reintroduces duration in his calculations, he discovers he coincides with Paul not only with regard to the different ways of quantity. Peter, says Bergson, finds that his twin has the same age and is of his own size, meaning that what Peter finds is that twins’ concepts are cut to the measure of twins’ things. Yet, if their inner lives can become indiscernible, just like what is measurable of them, it only is because for Bergson ‘contemporaries’ are, properly speaking,

two flows when they are equally one or two for my consciousness: the latter perceiving them together as a single flowing if it sees fit to engage in an undivided act of attention, and, on the other hand, separating them throughout if it prefers to divide its attention between them, even doing both at one and the same time if it decides to divide its attention and yet not cut it in two (Bergson 1965, 52)

Intuition is that kind of attention which is, at the same time, one and many: the privilege of our consciousness. Thanks to this quality, the richness of the nuance is enhanced rather than dissipated because here, unlike what happens with intelligence, the vagueness or indeterminacy of sensory data guarantees their full concreteness instead of their inessentiality. Unlike Rovelli’s blurring – the one that determines time<sup>21</sup> – intuition grants an enhanced and not a degraded

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<sup>20</sup> Rovelli, not by chance, presents entanglement as a triangular and not dual phenomenon. See Rovelli 2020, 106–109.

<sup>21</sup> ‘A macroscopic state (which ignores the details) chooses a particular variable that has some of the characteristics of time. In other words, a time becomes determined simply as an effect of blurring [...] But something further is also true: the blurring itself determines a particular vari-



vision: a vision which is very similar to that gained by painters who can turn a visual defect into a resource (see, for example, El Greco's exaptation of his astigmatism). Thanks to the blur we see more rather than less because, to intuit, for Bergson, means to expand perception by extending it to what normally, i. e. pragmatically, escapes it: the 'interval' (Bergson 1965, 57) between those extremities on which our perception is usually fixed.

For Bergson the interval is the unique real Time. But real Time either does something or is nothing. So, what does real Time do? Real Time makes the contours of all things indeterminate by making their essences vague, because if 'time is the stuff of every being' (Bergson 1965, 62), it is so only to the extent that the implication between consciousness and duration is reciprocal (Bergson 1965, 49). 'We place – Bergson says – consciousness at the heart of things for the very reason that we credit them with a time that endures' (Bergson 1965, 49). Yet, to credit things with a time that endures means to grant them a certain, constitutive nuance or interval. It is clear, once again, in our ghost story: that if what is real is the interval<sup>22</sup> between Peter and Paul, this means that real is the *more than one-less than two*. What is real is the nuance and, since 'nuance' is also a name for real Time, even the nuance either does something or is nothing. Now, what does the nuance do if not nuancing? And then, what is ultimately real if not the same process of nuancing as that movement of mutual fading between Peter and Paul?

For Bergson intuition is real inasmuch as it is this movement: nothing but the interval, as imprecision or nuance at work; nothing but the interval as absolute, i. e., more real than the polarities in which, in the form of two reference systems or two twins, our intelligence tends to reify it. According to Bergson the interval is the contemporaneity of what cannot be together by virtue of being

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able – time [...] it is not the evolution of time that determines the state, it is the state – the blurring – that determines a time' (Rovelli 2019, 84–85).

**22** This interval can be looked at as 'une poche de present' (Čapek 1980), which expresses the qualitative identity 'within' which metric disparities arise. Bergson, as we have seen, considers these disparities to be merely perspectival effects. Yet, even when one admits the asymmetry between the times of the twins, i. e., one stops taking into account only uniform relative motion and introduces acceleration, one must acknowledge that this asymmetry occurs within the 'same amount of time' (During 2007, 81). Indeed, twins may age differently, but they age differently *together* (During 2009, 242). According to During, therefore, these different processes of ageing correspond to a different measure of the same time-interval rather than to an actual slowing down of time. "Slowing down" is a shorthand for "measuring shorter intervals of proper time". Clocks sometimes run late; they do not run slow' (During 2007, 97).

distant<sup>23</sup> and which, nevertheless, communicates as originally undivided. A strange ‘distance’, therefore, since it looms exactly in the place where Peter and Paul meet. Yet it is a distance as real as their proximity because, as soon as the interval is grasped in its absoluteness, indiscernibility appears as an extended present that keeps every surgical attempt at Whiteheadian ‘simple location’ in check. In fact, where can we say that Paul begins and Peter ends? At what point, Bergson asks himself, does the *real* upheaval caused by the *experience* of the twins’ unity stop and the *fictitious* certainty produced by the *hypothesis* of their division begin? A new physics, in Bergson’s opinion, should answer these questions by really thinking about what happens in the interval. And ‘really’, for Bergson, means without relativizing its motion to something at rest, i. e., to the extremities.

A new physics, then, should be a *physics that does not choose*: a physics that, so to speak, calculates at a speed greater than the speed of light. Indeed, if the idea of the reciprocity of motion becomes a philosophical one (Bergson 1965, 96) as soon as it becomes a token of its extreme consequences, it is precisely to the extent that it shows us a world in which motion, i. e., interchanging, is no longer relative to something else but absolute. And yet, is it possible, for physics, to be physics, i. e., to be the act of measuring, without subordinating itself in this act, to that absolute constraint which is the value of  $c$ ? The question is extremely complex and remains an open one. However, there is a branch of physics that has taken charge of the interval. In our opinion, Quantum Mechanics – the very Stone Guest of DS<sup>24</sup> – could in fact claim to be that *science of twinning* which, as soon as we stop considering only two reference systems, becomes *ipso facto* the science of the togetherness of all things and their supra-luminal communications or influences.<sup>25</sup> Whether it is quantum rather than classical depends on the fact that, in the classical framework of SR, the so-called ‘*actio in distans*’ has no place. Einstein rejected it as ‘spooky’, as is well known, in order

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**23** Whitehead interprets this distance as causal independence (see, e. g., Whitehead 1978, 123). For him, contemporaneous events are not causally linked. In this sense, contemporaneity implies disconnection or separation. ‘It is as if a certain measure of disconnection (in space?) was dialectically intertwined with connection (in time?), as if absence was dialectically incorporated within the overall sense of copresence shared by the two observers’ (During 2016, 18–19). On the goodness of this thesis for the interpretation of the twin paradox see also During 2008, 274–275.

**24** Of course, from a chronological perspective, QM was not even constituted as such in 1922. Yet, we believe the time is ripe to attempt a comparison between some Bergsonian insights and some experimental results of QM.

**25** Rovelli presents the world of Quantum Mechanics as a world of mutual influences. See, again, Rovelli 2020, 84–86.

not to reject the relativistic version of the principle of non-contradiction: the principle of locality. But this means that he rejected it, above all, because he believed it was something logically contradictory.

Yet, by doing so, in the sign of that new absolute which is the constancy of the speed of light,<sup>26</sup> Einstein also deprived his Relativity of the opportunity to encounter any form of temporal coexistence which, by definition, would have violated its absoluteness. And, what is maybe worse, by excluding such ‘spooky’ action, Einstein has excluded what, by making the relative a reciprocal, would have also made SR a complete theory rather than a partial one, that is, a real theory rather than a spooky one. Indeed, if in order to measure Paul’s time as it is measured by Paul, it is necessary to be in Paul’s place, the phantomatic *actio in distans* is paradoxically credited as the only real way to measure. Bergson intuited this when, with his own intuition, he transported himself into a radically relativistic universe (a very Baroque one) where observer and observed are strongly co-implicated; that is when, even before Quantum Mechanics named it ‘entanglement’, although it is action ‘at a distance’, he christened the reciprocal surveillance between different durations ‘sympathy’ (Bergson 1946, 72; 189; 304). No doubt this interplay can perturb, since it is an action at a distance which, in reality, denies any distance. Yet, given that it is said to be ‘at a distance’ only as long as something like ‘a distance’ – that is the ‘impossibility of touching’ – exists and is elevated to the norm, a physicist need only to renounce the privileges of this privileged reference system to discover that, in the end, only sympathy affords ‘the joy’ (Bergson 1946, 151) of seeing Peter and Paul, together with all that exists, entangled in an indecomposable embrace that cannot be simply located in space-time because of the space-time is, rather, the real *locating*.

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<sup>26</sup> ‘Light is for Einstein the new and only absolute in a world where all else is relative’ (Montague 1924, 146).

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