Anna Longo

Virtual Times and Possible Worlds:
the Madness of the Real

Both Gilles Deleuze's and Quentin Meillassoux's philosophies aim to show that things can happen which are completely unpredictable not because of the limits of our understanding, but because of the power of the virtual. Although both of them consider the virtual as a sort of absolute time, *Aîon* and *Hyperchaos* are so different that we feel compelled to make a choice and to agree with the one to refuse the other: is this really the case? To answer this question, I am going to start by introducing Meillassoux's philosophy of becoming as it is explained in the paper "Potentiality and Virtuality"[1]. For Meillassoux becoming must be purely contingent and, for this reason, it must be contrasted with other forms of becoming that, like Deleuze's, are necessary processes during which the elements of one and the same world pass through a given range of possible states. In these necessarily becoming worlds, everything changes continuously and things never stay the same, although any singular change is part of a set of potentialities and the possibility of any fact depends on a specific rule (which could be also a rule which changes according to a superior law). In short, the canonical philosophies of becoming conceive change as a necessity and any fact as being part of a totality of potentialities. This entails that the probability of any particular fact can be calculated in the same way that one can estimate the chance of winning a game of dice. The notion of becoming that Meillassoux wants to present is different from this canonical one in this: that the probability of a possible fact cannot be calculated. Meillassoux's becoming is not limited to the series of facts that can happen in one and the same world, but concerns the series of different worlds that can be actualized according to all thinkable laws. Therefore, the notion of virtuality, as it is opposed to potentiality, addresses the non-totalizable set of all possibly thinkable becomings: this is why the chance of a fact's happening cannot be calculated. This crazy

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[1] Quentin Meillassoux, "Potentiality and Virtuality, in *Collapse II*, 2007, pp. 55-81.

contingent becoming needs a new notion of time. We said that for classical becomings, a world is a process during which things pass from one possible state to another possible one; thus time is the measure of necessary change. In contrast, according to Meillassoux's notion of becoming, time is the virtual dimension within which one world after another is contingently actualized: it is not the measure of a lawful change but the dimension occupied by the series of contingent actualizations of different worlds, each of them being characterized by a particular temporal becoming. Hyperchaos is another name for the virtual: it is a time that does not measure a particular becoming but within which any possible becoming can come to existence. In the paper "Potentiality and Virtuality" we can read a clarifying example:

> Thus, for 'potentialism' (the doctrine that sees in each possibility only a potentiality), time can only be the medium by which what was already a possible case, becomes a real case. Time, then, is the throw with which the die offers us one of its faces: but in order for the faces to be presented to us, it must be the case that they preexisted the throw. According to our perspective, on the contrary, time is not the putting-in-movement of possibles, as the throw is the putting-in-movement of the faces of the die: time creates the possible at the very moment it makes it come to pass, it brings forth the possible as it does the real, it inserts itself in the very throw of the die, to bring forth a seventh case, in principle unforeseeable, which breaks with the fixity of potentialities. Time throws the die, but only to shatter it, to multiply its faces, beyond any calculus of possibilities.[2]

The virtual is the time within which all thinkable dice can be created as possible worlds, whereas potentiality implies the time which is needed for one and the same die to reveal all its given faces within a necessary process. This virtual or *Hyperchaotic*[3] time is not submitted to any previous law, reason or necessity (it is not the time of a lawful process of becoming); it is the time which allows for different possible becomings to come to existence without owing their being to any metaphysical cause or sufficient reason. The virtual is the time of a series of pure contingencies rather than the time of a necessary chain of facts. As we can read in *Potentiality and Virtuality*: "In every radical novelty, time makes manifest that it does not actualize a germ of the past, but that it brings forth a virtuality which did not pre-exist in any way its own advent"[4]. It is then clear that, instead of being the time of a process (where future events are in some way conditioned by past events), the virtual is the crazy time

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[2] Q. Meillassoux, "Potentiality and Virtuality", cit., p. 233.
[3] Hyperchaos is the name that Meillassoux gave to his virtual time.
[4] Q. Meillassoux, "Potentiality and Virtuality", cit., p. 235.

where creation ex-nihilo is possible and absolutely contingent facts happen without any reason. The virtual, as time, is the mere order of a series of facts which are totally independent one with respect to the other and that just happen to occur one after the other (without this order being in any way necessary). Thus, in order to overcome the Kantian limitation of experience to the closed set of the events that are possible according to given necessary laws, Meillassoux claims that, on the one hand, it is rational to assume the contingency of the laws and, on the other, that is rational to dismiss the principle of sufficient reason. It is only by admitting what seemed to be completely unreasonable, which is the idea that physical laws can change without any cause, that we can be lead to the only absolute truth: the real is so mad that without any reason any single thinkable and non-contradictory fact can come into existence. However, it is important to notice that the dismissal of the principle of reason does not imply abandoning rationality, but rather brings liberation from the dogmatic belief in sufficient reason, in fact "the notion of virtuality, supported by the rationality of the Cantorian decision of intotalising the thinkable, makes of irruption ex nihilo the central concept of an immanent, non-metaphysical rationality"[5]. What appeared as the madness of the real, then, is not real madness but the superior form of rationality which is expressed by the axioms of Cantor's set theory according to which, for example, there is no set of all possible sets since absolute totality is not thinkable without contradiction. Therefore, it is absolutely rational to abandon the principle of reason in order to embrace non-contradiction and to follow all its logical consequences. From this standpoint, many philosophers like Heraclitus, Nietzsche and Deleuze, who are usually considered as antimetaphysicians, must be considered dogmatic since their becomings depend on sufficient reason and this makes them unable to think of the real novelty or event. As we read in the paper "Time without becoming":

Thinkers of becoming such as Heraclitus, Nietzsche, or Deleuze, are often considered as antimetaphysicians, as metaphysics is considered as the philosophy of fixed principles, such as substances and Ideas. But metaphysics is in fact defined by its belief in the determinate necessity of entities or of processes: things must be what they are, or must become what they become because there is a reason for this (for example the Idea, or the Creativity of the Universe)[6].

Thus, Meillassoux's notion of the virtual, as a mad time which is responsible for the creation of the new, can be considered as a non-meta-

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[5] Q. Meillassoux, "Potentiality and Virtuality", cit., p. 233.
[6] Q. Meillassoux, "Time without becoming", in A. Longo (dir.), Mimesis International, Milano 2014, p. 26.

physical and non-dogmatic response to Deleuze's virtual time, which is Aîon. The Deleuzian virtual, as Aîon, would be the immanent idea determining the necessary becoming of one and the same world, a becoming ruled by chance rather than by contingency. In the paper "Soustraction et Contraction"[7], Meillassoux agrees with Badiou about Deleuze's submission to the law of the One and his consequential incapacity to think of the real event, which is something whose conditions do not exist before its actualization. I am now going to show that this is not the case.

We said that Meillassoux's and Deleuze's common problem consists in overcoming Kant's a priori limitation of possible experience. We saw that Meillassoux's strategy consists in considering the order of nature as supported by a set of mathematical functions that, without any reason or cause, can be substituted by another equally thinkable set. Accordingly, the concepts which are needed to provide a mathematical description of reality are considered as given and there is no meaning in looking for their genesis or history: they just happened to be, in a contingent way. Differently, Deleuze's strategy consists in showing the real conditions of the genesis and creation of concepts in order to justify the becoming of the history of philosophy and the becoming of the knower within the activity of knowing. It is precisely this question that, according to Meillassoux, implies the dogmatic principle of reason, a principle that Deleuze actually respects. However, we will see that the deleuzian notion of sufficient reason is quite different from the dogmatic one: it is the notion which is implied by the modern development of differential calculus which allows us to dismiss contradiction as a primary principle. As we can read in Difference and Repetition:

> Just as we oppose difference in itself to negativity, so we oppose dx to not-A, the symbol of difference to that of contradiction. The symbol dx appears as simultaneously undetermined, determinable and determination. Three principles which together form a sufficient reason correspond to these three aspects. In short, dx is the Idea – the Platonic, Leibnizian or Kantian Idea, the 'problem' and its being.[8]

It is in following Salomon Maimon that Deleuze considers the Idea as the differential of thought, and the differential as a pure ratio. A clarifying example is that of the straight line: for Kant, that a straight line is

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[7] Q. Meillassoux, "Soustraction et contraction : à propos d'une remarque de Deleuze sur Matière et Mémoire", in *Philosophie* 2008/1 (n° 96), pp. 67-93.
[8] Gilles Deleuze, *Difference and Repetition*, P. Patton tr., New York, Columbia University Press, 1994, p. 170

the shortest path between two points is an a priori synthetic judgement which depends on the application of a concept (shortest path) over an intuition of space (a line). According to Maimon⁹, such a judgment cannot be considered apodictically true because of the heterogeneity of intuition and understanding. So, in order to overcome this heterogeneity, Maimon considers the Idea as the differential of thought, and imagination as constructing objects by integration. Now, to go back to our example, the Idea, as differential, is the pure ratio or difference expressed by "the shortest" which allows to consider the straight line as the limit of a curve (a straight line is a line which is curved at the minimum degree, or non-curved). This entails that we do not have to consider a line to be either straight or curved, nor to consider that it is not possible that a line can be straight and curved at the same time since any line is defined by its degree of "curvedness" (the straight line being curved at a minimal degree). The concepts of straight line and curve, then, are genetically produced as reciprocally determined starting from the differential which is the Idea as pure difference: the Idea of the shortest path between two points. Therefore, it is by positing an ideal problem, which in this example concerns the production of the shortest path between two points, that the experience of any line becomes possible within intuition and that the concepts of curved and straight can be produced as reciprocally determined, rather than as excluding each other. Accordingly, contradiction does not determine a priori the possibility of existence of an object (for Meillassoux contradictory things cannot exist), but the logical possibility of contradiction depends on a differential idea allowing for the genesis of intuitions and concepts like, for example, curved and straight. To put it otherwise, something must be possible as being straight or curved before the concepts of straight and curved can be considered as correctly applicable. Thus the Idea, as the differential of thought, is the point of indifference that allows for a becoming more or less determined in one sense or the other: it is in this way that we have to understand the neutrality of sense in Deleuze's The Logic of Sense. This point of indifference $(dx/dy=0/0)$ is, according to Maimon and to Deleuze, the sufficient reason or the condition that we have to suppose for something to come into existence, to pass from virtuality to actuality. As we read in Difference and Repetition:

> Maimon's genius lies in showing how inadequate the point of view of conditioning is for a transcendental philosophy: both terms of the difference must equally be thought – in other words, determinability must itself be con-

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⁹ Cfr. Salomon Maimon, *Essay on Transcendental Philosophy*, London, Continuum, 2010, Chapter 1.

ceived as pointing towards a principle of reciprocal determination. The recip-
rocal synthesis of differential relations as the source of the production of real
objects – this is the substance of Ideas in so far as they bathe in the thought-
element of qualitability.[10]

However, we could keep on thinking that this notion of sufficient rea-
son, as differential, would determine a necessary becoming and that it
would prevent us from thinking of a true novelty or a real contingency.
To show why this is not the case, we have to enlarge the picture and
introduce the work of Albert Lautman, the French philosopher of math-
ematics who suggested that Ideas are not given eternal and transcendent
entities but problems which are immanent to their solutions. The kind of
problems Lautman and Deleuze are interested in are outlined in a quote
from The Logic of sense:

> For example, in the theory of differential equations the existence and dis-
> tribution of singularities are relative to a problematic field defined by the
> equation as such. As for the solution, it appears only with the integral curves
> and the forms they take in the vicinity of singularities inside the field of vec-
> tors. It seems therefore that a problem always finds the solutions it merits
> according to the conditions which determine it as a problem. In fact the sin-
> gularities preside over the genesis of the solution of the equation.[11]

In this passage Deleuze is referring to Lautman's explication of Wei-
erstrass's theory of analytic continuity. According to this method, the
problem consists in finding the integral curve starting from singularities,
which are non differentiable points where the behaviour of the curve
changes in a way which is impossible to be correctly approximated. Wei-
erstrass's method consists in using power series to get closer to the sin-
gular points by specifying a vector field. Thus, according to Lautman's
interpretation, the integral function can be genetically produced by the
specific distributions of the singularities which can be seen as the specific
conditions of the problem. Singularities, as the conditions of an ideal
problem, allow the integral function to be genetically produced in the
same way as ideas, for Maimon, imply the construction and the determi-
nations of real objects. So these problems, where the differentials are the
genetic conditions for real determined objects, are the sort of mathemati-
cal problems Deleuze is interested in. Accordingly, Ideal problems can
be considered as the conditions for the creation of real novelties rather
than of platonic copies. In this regard, it is important to take into account

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[10] G. Deleuze, *Difference and Repetition*, *Op.cit.*, p. 173.
[11] G. Deleuze, *The Logic of Sense*, C. Stivale tr., London, The Athlone Press, 1990, p. 54

Lautman's definition of an ideal problem, to which Deleuze refers in Difference and Repetition:

> Following Lautman's general theses, a problem has three aspects: its difference in kind from solutions; its transcendence in relation to the solutions that it engenders on the basis of its own determinant conditions; and its immanence in the solutions which cover it, the problem being the better resolved the more it is determined.[12]

Thus the problem can be considered as the virtual set of conditions which are immanent to the solutions that actualise it: the actual, as the integral function, incarnates the virtual problem whose conditions are determined by the distribution of the singularities. In this way, contrary to the platonic perspective, there is no resemblance between the Ideas and the sensible objects, rather they are different in kind; moreover, a problem does not pre-exist its solutions, although it can be said to enjoy a full reality (a problem does not exist outside its solutions). Thus, the virtual, as a problem, is real without being actual and, even if a problem is the sufficient reason for the existence of the solution, it cannot be considered as a dogmatic external cause nor as a given set of potentiality. However, it is still possible to consider, as Meillassoux does, that Deleuze's ideas determine the solution preventing real events from happening. With this in mind, we have now to look more closely at Deleuze's theory of the event and his notion of time.

According to Deleuze, the difference between the ideal problem and the solution concerns time, as we read in The Logic of Sense: "The instance problem and the instance solution differ in nature as they represent respectively the ideal event and its spatio-temporal realization".

This leads us to address the difference between Chronos and Aîon: Chronos is the time of actuality whereas Aîon is the temporality of the virtual. To clarify this point we have to take into account that, for Deleuze, events do not happen in actuality: the event is an ideal category. So, Aîon is the time of the real events, it is within Aîon that something is produced whose conditions were not given before. Aîon is the time of the formulation of problems, of the becoming of ideal problems, which allows for the spatio-temporal, or Chronological, incarnation of the solutions.

We can now give the following definitions: an event is the creation of a new problem; a problem is the idea which implies the actualization of a particular objective existence as its solution; singularities are the

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[12] G. Deleuze, *Difference and Repetition*, cit., p. 178.

conditions of differential problems, and their distribution is nomadic; the nomadic distribution of singularities determines the event of the formulation of new problems and it happens within Eternal Recurrence. Eternal Recurrence is what Lautman calls the "drama" which is played out within ideas and what Deleuze calls the time of the "adventurous life of ideas".

As we read in The Logic of Sense:

> Events are ideal singularities which communicate in one and the same event. They have therefore an eternal truth and their time is never the present which realizes them and that makes them exist. Rather it is the unlimited Aîon the infinitive in which they insist and subsist. Events are the only idealities. To reverse Platonism is first and foremost to remove essences and substitute events in their place as jets of singularities.[13]

It is important to notice that, since Aîon is a continuous line (we know that in analysis we deal with continuity instead of with singular discrete elements like in set theory), points can be specified in unaccountably infinite ways: the continuum is not a given totality and its points cannot be counted. Thus the possibilities of the nomadic distribution of singularities which is repeated within Aîon, as a continuum, cannot be exhausted as if it was a discrete totality. Thus, Aîon cannot be considered as a given die, rather any throw of the die, as a brand new and ideal event, consists in the selection of some of the more-than-infinite points of the continuum. Aîon is eternal and unitary as the continuum is eternal and unitary, but this does not mean that it is a given totality: its eternity is the eternity of the problem which subsists independently from its solutions (as incarnated spatio-temporal objects). The temporality of Aîon is not chronological but is the temporality of the eternal recurrence wherein only the ideal events are preserved as valid problems. So as we read in Difference and Repetition, Aîon can be compared to a Riemannian multiplicity which is neither a unity nor plurality of countable elements:

> Ideas are multiplicities: every idea is a multiplicity or a variety. In this Riemannian usage of the word 'multiplicity' the utmost importance must be attached to the substantive form: multiplicity must not designate a combination of the many and the one, but rather an organisation belonging to the many as such, which has no need whatsoever of unity in order to form a system.[14]

Aîon is then a becoming multiplicity as an ideal differential structure

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[13] Deleuze, *The Logic of Sense*, cit., p. 53.
[14] Deleuze, *Difference and Repetition*, cit., p. 182.

that assures the genesis of the actualized series; it can be considered as what provides the sense which guarantees the production and the reciprocal determination of concepts. This topological surface, where nomadic preindividual singularities are repeatedly distributed is, in fact, the real transcendental field, as we read at the beginning of the sixteenth series of The Logic of Sense which concerns the ontological genesis of the individual and its world. Deleuze explains that:

> A singular point is extended analytically over a series of ordinary points up to the vicinity of another singularity. A world, therefore, is constituted on the condition that series converge. Another world would begin at the vicinity of whose points at which the resulting series would diverge. Within this world, however, individuals are constituted which select and envelop a finite number of singularities of the system.[15]

Thus, in Leibnizian terms, we could say that an individual, as a monad, expresses a world as a circle of convergence, so that, for example, the world in which Adam is a sinner diverges from the world in which Adam is not a sinner. Thus, to be a sinner, as an ideal problem, is the differential or the singularity determining the two world-series in which Adam is a sinner or not. For Leibniz, therefore, a God was needed in order to ensure the selection of compossible series. This is what Deleuze calls a "static genesis", where to be actualized means "to extend over a series of ordinary points, to be selected according to a rule of convergence, to be incarnated in a body, to become the state of a body"[16]. Now, Deleuze cannot accept the restriction of Leibniz's metaphysics and his dogmatic notion of sufficient reason as the deliberate choice of the best possible world. As we read in the Logic of Sense: "Leibniz did not attain the free character of this game since he neither wanted nor knew how to breath enough chance into it, or to make of the divergence an object of affirmation as such". So Deleuze's goal is to affirm divergence as such: in this way Aîon can be seen as the time of the interconnected becoming of incompossible worlds, rather than as the duration of one and the same world.

It was Poincaré who taught Deleuze how to infuse more chance into the game and how to affirm the divergence of the series as such. As Simon Duffy explains in his book on Deleuze's mathematics[17], Poincaré applied a qualitative geometrical interpretation to composite functions and found a new kind of singularity that he called an essential singular-

[15] Deleuze, *The Logic of Sense*, cit., p. 109.
[16] Deleuze, *The Logic of Sense*, cit., p. 110.
[17] Simon B. Duffy, *Deleuze and the History of Mathematics*, Londres, Bloomsbury, 2013.

ity. Observing that the values of a composite function very close to an essential singularity fluctuate through a range of different possibilities without stabilizing, Poincaré distinguished four types of essential singularity: nodes, saddle points, points of focus and centers. This taxonomy of singularities occurs more than once in both Difference and Repetition and The Logic of Sense. So, when Deleuze announces that "the differential relation thus acquires a new meaning, since it expresses the analytical extension of one series into another, and no more the unity of converging series that would not diverge in the least from each other"[18], he is celebrating Poincare's results and the possibility that he offers him to deal with divergent series – that is, to overcome the limits of Leibniz's metaphysics and dismiss its god. Thus, in the same way as Cantor's set theory offers to Meillassoux a way of accessing absolute contingency, Poincare's qualitative theory of differential equations offers to Deleuze the possibility of dealing with the problematic structure allowing for affirming the compossibility and the resonance of divergent series or worlds (disjunctive synthesis). Within Deleuze's ideal structure, essential singularities play the role of the object=X which affirms the communication of the disjointed series within a superior game, the game which is played on Aîon, where no exterior necessity or transcendent cause determines the becoming. Accordingly, the virtual is the problem of the problems, the time of the becoming of problems or the time of the adventures of the ideas. Aîon is the time of real events, of distributions of singularities that do not have to conform to any previous necessity or cause: a problem must only have a sense. From this point of view, Aîon, as continuum, has the same power of creating the new as the Cantorian transfinite.

Assuming Deleuze's perspective then, Meillassoux's hyperchaos would appear to be submitted to the law of convergence and it could seem to operate, like the leibnizian God, by selecting one world after the other in order to respect non-contradiction. However, I do not mean to claim that if Deleuze's philosophy allows us to think the real event, then Meillassoux's system necessarily fails. I want to affirm that Deleuze and Meillassoux show us two different ways or strategies for actually thinking the event and the real novelty: the perspective of differential geometry and that of set theory. My goal here is to affirm that Aîon and Hyperchaos are equally powerful and my question is the following : is a synthesis of the two perspectives possible by the means of contemporary mathematics?

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[18] Gilles Deleuze, *The Fold: Leibniz and the Baroque*, T. Conley tr., Minneapolis, Minnesota UP, p. 8.

Tempi virtuali e parole possibili: la follia del reale

Questo articolo mette in confronto le strategie elaborate da Gilles Deleuze e Quentin Meillassoux al fine di superare i limiti imposti da Kant all'esperienza possibile, la quale sarebbe determinata a priori. Mentre il primo abborda la questione dal punto di vista del processo di genesi di nuovi concetti, il secondo parte dall'impossibilità di considerare il trascendentale come prodotto da una qualche causa. Come vedremo, la differenza degli approcci dipende dalla diversità delle teorie matematiche alle quali i due filosofi fanno riferimento e dalle quali dipendono le due versioni del virtuale, ovvero la geometria differenziale e la teoria degli insiemi.

PAROLE CHIAVE: virtuale, divenire, evento, possibile, matematica.

Virtual Times and Possible Worlds: the Madness of the Real

This paper compares Gilles Deleuze's and Quentin Meillassoux's strategies for overcoming Kant's a priori limitation of possible experience. The former aims to account for the genesis of new concepts, while the latter aims to account for the impossibility of grounding them on any efficient cause. We will see that these two strategies depend on different mathematical backgrounds – analytical geometry and set theory – and that each of them implies a particular notion of the virtual.

KEYWORDS: virtual, becoming, event, possible, mathematics.