

History and Contingency: A Transcendental-Materialist Approach

M.D. Collett, St. Peter's College, University of Oxford, UK

Abstract: How ought the historian to reconcile themselves philosophically with the fact of eventual contingency and of its relationship to structural determination? Does the existence of contingent causation undermine the very concept of historical necessity, or do the two instead in dialectical entanglement? In this essay, I engage with the problem of historical contingency from a transcendental-materialist perspective informed by the work of Slavoj Žižek, tendering a philosophically serious response to the famous Pascalian conundrum of Cleopatra's nose and its challenge to structuralist accounts of historical causation. The position associated with Laplace – that is to say, that the course of history would be entirely predictable were one provided with a complete account of initial conditions – is firmly rejected. Instead, I revive Althusser's attempt to craft a theory of 'aleatory materialism', in which the determinative power of structural forces nevertheless leave space for the radical and unpredictable transformation of a situation by the chance crystallisation of events and encounters. In this effort, I recruit conceptual architecture not only from the fields of historiography and philosophy, but also quantum physics, psychoanalysis, and mathematics.

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When I was in school I studied biology. I learned that in making their experiments scientists will take some group – bacteria, mice, people – and subject that group to certain conditions. They compare the results with a second group which has not been disturbed. The second group is called the control group. It is the control group which enables the scientist to gauge the effect of his experiment. To judge the significance of what has occurred. In history there are no control groups. There is no one to tell us what might have been. We weep over what might have been, but there is not might have been. There never was. It is supposed to be true that those who do not know history are condemned to repeat it. I don't believe knowing can save us. (McCarthy 2010 [1992]: 244-5)

The cascading ramifications of eventual contingency in human affairs pose profound questions for the philosophically-minded historian. The troubling observation that, for all the overdeterminative *puissance* of structural forces, an irruption of chance can – through its occurrence at a particular causal node within the Totality of situations – divert the course of history was given its most famous expression by the early modern polymath Blaise Pascal (1623-62):

He who will know fully the vanity of man has only to consider the causes and effects of love. The cause is a *je ne sais quoi*, and the effects are dreadful. This *je ne sais quoi*, so small an object that we cannot recognise it, agitates a whole country, princes, armies, the entire world. Cleopatra's nose: had it been shorter, the whole aspect of the world would have been altered. (Pascal 1900 [1670]: 125)

In all historical epochs and human societies, we may observe the Pascalian avalanche at work. Tiny moments of uncontrollable and unpredictable contingency

precipitate the rise and fall of empires, whether manifested through the descent of an arrow in the turning winds above a battlefield, the success or failure of a given spermatozoa in a dynastically-significant womb, or the unpredictable decay of fissile material in a reactor core. Such is the general familiarity of the concept of aleatory ramification in its basic form that it has attained proverbial status:

For want of a nail the shoe was lost,
For want of a shoe the horse was lost,
For want of a horse the knight was lost,
For want of a knight the battle was lost,
For want of a battle the kingdom was lost.
So a kingdom was lost—all for want of a nail.

Yet there must be something more philosophically concrete we can say about the role of the contingent in within historical structures, beyond the merely aphoristic. The fact that the future can, under certain circumstances, turn dramatically on the die of coincidence must be regarded not as a curiosity but as one of the constituent axioms of Being-in-time – in other words, of humanity’s capacity for immanent self-comprehension in historico-narratological form. As Maurice Merleau Ponty once wrote:

If this world is a poem, it is not because we see the meaning of it at first but on the strength of its chance occurrences and paradoxes.
(Merleau-Ponty 1964 [1960]: 317)

In the discussion which follows, I will attempt to demonstrate the sources of history’s essential unpredictability from a Žižekian transcendental-materialist position, understood in terms of the indivisible nexus by which Being is constituted: *substance* (matter and the physical laws which govern its behaviour); the supermaterial *subject* which both emerges from and transcends it; and the infinitely complex *structuration* of the two in their arrangement in particular historical situations. In so doing, we must resuscitate the project of ‘aleatory materialism’ as propounded in the late work of Louis Althusser, forced as he was to grapple with the

clinamina of historical affairs, which fatally undermine any serene vulgar-Marxist faith in history's inevitable dialectical ascent towards the Absolute:

History... is nothing but the permanent revocation of the accomplished fact by another undecipherable fact to be accomplished, without our knowing in advance whether, or when, or how the event that revokes it will come about. Simply, one day new hands will have to be dealt out, and the dice thrown again on to the empty table. (Althusser 2006 [1982]: 174)

I intend to ground Althusser's fundamental insight into the progress of historically situated situations through time by reference to three of the great intellectual breakthroughs of the High Modern: quantum physics, psychoanalysis, and chaos theory. Each of these approaches will, in turn, provide a base of operations for establishing the presence of contingency in one of the mutually-constituted characteristics of humanity's historical Being outlined above. The tripartite argument thus forms an explanatory Matryoshka, as each layer encapsulates and expands upon the preceding: the subject is endowed with aleatory qualities by the behaviour of matter, while the stochasticity of a historical structure is in turn derived in significant part from human unpredictability, as well as from its own inherently chaotic dynamics in its processive unfolding.

One's principal adversary in the endeavour to demonstrate the reality of contingency in history is the early modern French mathematician Pierre-Simon Laplace – or, more specifically, his demonic familiar. Laplace famously outlined a radical causal-determinist position, according to which humans would be able to make infallible predictions about the future provided we were furnished with absolute information about a given situation:

We ought then to regard the present state of the universe as the effect of its anterior state and as the cause of the one which is to follow. Given for one instant an intelligence which could comprehend all the forces by which nature is animated and the respective situation of the

beings who compose it – an intelligence sufficiently vast to submit these data to analysis – it would embrace in the same formula the movements of the greatest bodies of the universe and those of the lightest atom; for it, nothing would be uncertain and the future, as the past, would be present to its eyes. (Laplace 1951 [1825]: 4)

This position was later psychologised by Walter Benjamin, as Laplace statement regarding substance became (*mutatis mutandis*) a hypothesis of the subject and its behaviour in the World:

If, on the one hand, the character of a person, the way in which he reacts, were known in all its details, and if, on the other, all the events in the areas entered by the character were known, both what would happen to him and what he would accomplish could be exactly predicted – that is, his fate would be known. (Benjamin 1978 [1919]: 304)

The existence of this putative supreme predictive intellect, often gothically embellished as ‘Laplace’s Demon’, might at some future point become non-hypothetical (or so the techno-optimists argue), owing to the exponential engorgement of human calculative power bequeathed us by the computer revolution. (Pitowsky 1996; Copeland 2002; Korolev 2007). It follows, then, that if the Laplacean postulate is correct, and such predictions could in principle be carried out by some theoretical hypercomputer, then the universe itself must be understood to be *metaphysically closed* on a fundamental level: what *has* happened could not have happened any other way, and what *will* happen in the future is already encoded into present conditions in such a precise and immutable fashion that we might choose to speak of such events as possessing a *concrete reality* of the same order as the present. The unfolding of all history, in such a telling, was inscribed indelibly in time’s ledger at the dawn of existence itself.

Before we can attempt to advance a countercase for the existence of metaphysical openness, we must lay some philosophical undergirding and more

precisely define the terms and stakes of the debate. The first nettle to grasp here is the question of what precisely 'contingency' might be understood to mean within a dialectical, transcendental-materialist setting, and thence how a philosophical investigation of that definition might hope to successfully exorcise Laplace's demon from the realm of the historical. As Quentin Meillassoux argues forcefully in his critical assessment of Hegel:

Hegelian metaphysics maintains the necessity of a moment of irremediable contingency in the unfolding of the absolute; a moment that occurs in the midst of nature as the pure contingency... But this contingency is deduced from the unfolding of the absolute, which in itself, qua rational totality, is devoid of contingency. Thus, in Hegel, the necessity of contingency is not derived from contingency as such and contingency alone, but from a Whole that is ontologically superior to the latter. (Meillassoux 2008 [2006]: 80)

For Meillassoux, it seems, any Hegelian attempt to integrate an account of contingency within itself will ultimately founder on the cession of ontological primacy to the Totality, the Absolute object which (as the sum of all contingent events) must itself be *ineluctably determinate by definition*. To respond to the paradox which Meillassoux appears to outline, in which contingency must impossibly emerge from the absolute predetermination of the philosophically-prior Whole, we must in turn clarify our understanding of the idea of Totality itself in our framework.

I propose that Meillassoux's misstep here is in according the Totality a unity (and thus a self-contained determination) which it does not in fact possess. Meillassoux seems to perceive in the Hegelian Totality the kind of temporal holism and fixity associated with a Christian understanding of Creation, one in which the past and the future possess the same ontological status in the mind of God (or perhaps a Demon) because of the absolute fixity of the causal chain from the moment of universal origination, as in T.S. Eliot's 'Burnt Norton' (1935):

Time present and time past

Are both perhaps present in time future,
And time future contained in time past.

...

What might have been and what has been
Point to one end, which is always present.

(Eliot 1974 [1935]: 189)

Such a concrete cosmology appeals to a significant subsection of physicists as well as Anglo-Catholic poets, but my quibbles with that Einsteinian position are laid out in the discussion of quantum mechanics below. What Meillassoux himself seems to miss in this criticism, however, is the crucial role played by the subject's relationship to the arrow of time in Hegelian ontology. For Hegel, the Totality is not all of Being *as it will be throughout infinity* – that is, the attained Absolute – but rather Being *as it unfolds in history*, in the concrete reality of time's development. The Totality therefore lacks the completion-in-itself which it is here attributed; indeed, it is non-identical with itself from moment to moment, as the future emerges through time into Being:

There is not a dialectical unfolding towards an absolute; rather the absolute is the dialectical unfolding itself. (Daly 2014: 13)

Thus, to conceive of the Totality as an *object* and not as the class of *unfolding processes-in-time*, a time which remains *infinitely unfinished*, is to misunderstand a crucial building block of Hegelian metaphysics. As Žižek writes:

The Hegelian dialectical process is not this 'saturated', self-contained, necessary Whole, but an *open and contingent process through which such a Whole forms itself*. (Žižek 2012: 227)

In Žižek's reading of Hegel, there can be no *unity* to the Totality. Being is understood as infinitely *multiplicitous*, with existants related to each other only by being possessed of the common quality of *emergent existence-in-time*. The Totality may be all that is not the Void, but this Whole, this Absolute, is not in itself unitary, or

even possessed of positive reality, except as the zone of *processive occurrence*. Therefore, although the historian must direct their efforts towards comprehending any given situation by mapping its relational position within the Totality, that coordinate must be understood as a location within an infinite multiplicity rather than a dissolutive, self-causing singularity: an endless forest, not an ocean.

This proposition regarding the multiplicity of Being and the unfinished processionalism of history has important implications for an understanding of the place of contingency within the Totality. In the Hegelian view, causation within the Totality operates through the process of *sublation* (*Aufheben*), the dialectical conflict and contradiction between forces which produces motion and progress. As Raymond Williams argues,

We have to think of determination not as a single force, or a single abstraction of forces, but as a process in which real determining factors – the distribution of power or of capital, social and physical inheritance, relations of scale and size between groups – set limits and exert pressures, but neither wholly control nor wholly predict the outcome of complex activity within or at these limits, and under or against these pressures. (Williams 2003 [1974]: 133)

Such a dialectical view allows us to approach the seemingly contradictory Hegelian concept of ‘contingent necessity’, one which draws the correlate conclusions from the Humean postulate that causation is a quality of Being and therefore of the subject-in-time (Hume 1975 [1748]: 56-9). As Nietzsche observed astutely, ‘a specific sensation... has a cause foisted onto it after the event’ by the subject in a ‘reversal of time’ (Nietzsche 2008 [1889]: 28-9). Necessity is thus not something which proceeds deterministically forward from the mechanical motion of substance but rather something which is *retrospectively posited* by the subject *after* the phenomenal experience of an effect. Žižek’s is the most satisfying explication of this strange quality of historicity:

The process of becoming is not in itself necessary, but is the *becoming* (the gradual contingent emergence) *of necessity itself*... Every dialectical passage or reversal is a passage in which the new figure emerges *ex nihilo* and retroactively posits or creates its necessity (Žižek 2012: 231).

In other words,

It's not that a deeper necessity realises itself through a complex set of contingent circumstances, it's that contingent circumstances decide the fate of necessity itself: once a thing (contingently) happens, its occurrence retroactively becomes necessary. (Žižek 2019: 5)

Necessity and contingency are thus not opposed, but rather mutually constitutive; situations become what they *must be* only through the contingent sublation of an infinity of forces. Effects, as encountered in Being, are in a real sense the *causes of causes*. In Hegel's words,

The cause does not just *have* an effect, but in the effect refers *as cause* back to itself. (Hegel 2010 [1812], 504)

This principle of the reciprocity of actions is thus intimately related to the Hegelian-Freudian concept of *retroactivity* so crucial to Žižekian ontology. The logic of retroactivity asserts that things are only revealed for what they truly are *ex post facto*, a quality of subjective experience resulting from our backwards-facing position relative to the trajectory of the arrow of time. Because of our lack of knowledge of the future and our ineluctable forward motion at a continuous speed through Minkowski space (that is to say, four-dimension spacetime), intersubjective historical objects necessarily transform as the Totality unfurls through Being. Thus, retroactivity illuminates the fundamental *historicity* of the transcendental-materialist approach. Put bluntly, events in history *are what they are and nothing other*. They must not – indeed, cannot – be analysed from a putative metainterpretative position according

to which an outcome is weighed against the potentiality of alternative states of affairs which might have developed from initial conditions. Instead, any interpretation of history must take place *within* history's merciless laboratory itself. Historical events are contingent as they are happening in time but become necessary *once they have occurred*. All subsequent developments, in turn, unfold with that absolute fixity of fossilised contingency as their determinate prior.

Let us take the outbreak of a financial crisis as an example of this approach to historicity. The economist Paul Samuelson once quipped that Wall Street had predicted nine out of the last five recessions (Samuelson 1966). It's a good joke, meant to poke fun at the arrogance of financial analysts and the inability of the market to fulfil the promise of perfect actuarial rationality which it asserts. But there is a deeper truth about historical causality being expressed here. In each of these nine exemplary cases, highly skilled economists identified that concrete economic circumstances were adequate to produce a catastrophic outcome and acted accordingly. Yet outside of the abstract realm of probabilistic prediction, in the concrete-immanent realm of Being, sufficiency only becomes actuality *some* of the time. If these sufficient conditions nevertheless *do not suffice* to produce an event (in this instance, a market crash), from the point of view of observers further removed in time, then retroactively *of course* that event was never going to transpire, *could* never have done, and the bearish doomsayers are rightfully mocked by the likes of Samuelson. On the other hand, in the cases where prediction and occurrence line up, then *of course* there was going to be a crash – indeed, it was so structurally over-determined that it seems implausible any intelligent observer could have argued otherwise. The crux of the point here is that in each of the nine cases, the possibility of a crisis was *open*, dependent upon the unpredictable and unknowable working of contingent factors within the Totality's movement through unidirectional time. This is a concept which we might make sense of by reference to the Heideggerian term *onceness* (*Einmaligkeit*) (see Ziarek 2016). The contingent present becomes the necessary past, assimilated within structural determination through the sublative

process. Once a situation has developed or an event has occurred, no matter how wildly unlikely or contingently generated, it becomes retroactively *necessary*. Contingency and necessity are thus not irreconcilable qualities of historical events, but rather *mutually generative* by definition.

This discussion of historicity brings us to a second point which must be made in order to escape Meillassoux's trap. We must clearly differentiate between two different forms of putative contingency in Being, and identify which is being asserted in a given argument. The first is that which we might call 'hard contingency'. This is the position which asserts genuine metaphysical openness and ontological indeterminacy. The future is not *real* yet, only the present and the past; as the Totality unfolds itself in the direction of the arrow of time, some combination of uncaused or probabilistic physical phenomena and human free will so operate as to open the possibility of authentic difference in futurity. In what follows, I will make a case (one well within the orthodoxy of contemporary scientific opinion) for the existence of genuine openness at the level of *substance*, deriving from the elementary principles of quantum mechanics. I will then use this assertion of quantum contingency as a platform from which to mount a more speculative case for the possibility of genuine *subjective* free will, deduced from the behaviour of subatomic particles and their relationship to the brain. Thus, the case for metaphysical openness will posit contingency cascading like a mountain stream from its deep source in quantum probabilism through the subject and into the structured lattice which we call the World.

The other form of the contingent, what we might call 'soft contingency', is one which simultaneously concedes Meillassoux's point regarding determination but shrugs its shoulders as to its meaningfulness as critique. Soft contingency – or *epistemic* contingency, as opposed to ontological – accepts that events may well be determinate, but posits that the impossible infinity of information which would be required in order to make accurate predictions about the motions of history renders such a state of affairs phenomenologically indistinguishable from hard contingency.

The crucial point here is that, from the perspective of Being (which is, of course, the perspective of the historical subject), *there is no distinction whatsoever between these two forms*. As Hume once declared:

Though there be no such thing as *Chance* in the world, our ignorance of the real cause of any event has the same influence on the understanding, and begets a like species of belief or opinion. (Hume 1975 [1748]: 56)

Soft contingency is thus a postulate which admits causal determinism but which nevertheless asserts the *absolute unpredictability* of history from an immanent position; Laplace's demon is not slain but nevertheless banished from the realm of human Being. If the reader rejects my speculative case for hard contingency, we remain equipped with a compatibilist ontology which is, I contend, indistinguishable from metaphysical openness for actors-in-time. *Qua* Wittgenstein, 'the freedom of the will consists in the impossibility of knowing actions that still lie in the future'. (Wittgenstein 2001 [1921]: 46)

Quantum indeterminacy is the most philosophically convincing of the proposed sources of *hard* metaphysical contingency. The project of mapping the mysteries of the quantum realm was first set in motion by Albert Einstein, though the great physicist would later disavow the implications of physical probabilism which followed logically from his findings: 'God does not play dice', and so on. What so disturbed Einstein about the quantum was the seeming inconsistency of the behaviour of subatomic particles with the strict causal laws of Newton's clockwork universe. Whilst it was possible to calculate the *relative probability* of, say, an electron being in one place rather than another at a given time, it was impossible to predict with *absolute certainty* where it would be found, even with perfect information of its past behaviour. This unknowability therefore derived not from the failures of experimental method, but from *an aleatory quality of material substance itself*:

Reality is a network of granular events; the dynamic which connects them is probabilistic; between one event and another, space, time, matter and energy melt in a cloud of probability. (Rovelli 2017 [2014]: xii)

The disconcerting implications of stochastic quantum behaviour shook Werner Heisenberg's certainty in the mechanical operation of causality, leading to his famous declaration of uncertainty as an ontological fact:

'When we know the present precisely, we can predict the future' is not the conclusion but the assumption. Even in principle we cannot know the present in all detail. For that reason everything observed is a selection from a plenitude of possibilities and a limitation on what is possible in the future... Quantum mechanics [has] established the failure of causality (Heisenberg 1983 [1927]: 83).

It is this shadow cast over the commonsense model of the cause-effect relationship by the wavefunction's probabilism that marks the essential relevance of the quantum for our argument here. For, as the philosopher of science Alistair Wilson writes:

Quantum theories are best understood as theories about the space of possibilities... As electromagnetism revealed the nature of light, as acoustics revealed the nature of sound, as statistical mechanics revealed the nature of heat, so quantum physics reveals the nature of *contingency*. (Wilson 2020: 1)

If quantum particles truly do behave in the aleatory manner which the orthodox school of physics asserts, there necessarily follows the cosmically significant conclusion that the present is decided moment-to-moment by the contingency of substance. The cosmos is an unfinished artefact; history remains open.

Many scientists working after the opening of the subatomic *pithos* have attempted to resuscitate the reassuring determinism of Newton and Laplace (see Crisp 2007). Einstein himself would come to formulate a cosmology (sometimes called the 'block universe') which would occlude the random behaviour of quantum

particles by positing the symmetrical reversibility of time (Bouton 2017). This is an ontological claim of the kind discussed above in relation to Meillassoux and Eliot – one which asserts the *literal existence* of the future because of the absolute holistic determination of spacetime in all dimensions:

People like us, who believe in physics, know that the distinction between past, present and future is only a stubbornly persistent illusion (Einstein 1972 [1955]).

The principal counterclaim to Einstein's fiercely deterministic block universe model of reality is the so-called 'expanding block universe', as first proposed by C.D. Broad (1887-1971) in 1923:

Such a theory as this accepts the reality of the present and the past but holds that the future is simply nothing at all. Nothing has happened to the present by becoming past except that fresh slices of existence have been added to the total history of the world. The past is thus as real as the present. On the other hand, the essence of a present event is not that it precedes future events, but that there is quite literally *nothing* to which it has the relation of precedence. The sum total of existence is always increasing, and it is this which gives the time-series a sense as well as an order. A moment t is later than a moment t' if the sum total of existence at t includes the sum total of existence at t' together with something more (Broad 2000 [1923]: 66-7).

In the expanding block hypothesis, the fundamental ontological meaningfulness of time's arrow is maintained. The universe expands in a fashion which is broadly determined by the regularity of physical laws, but which nevertheless accommodates quantum contingency within the bounds of special relativity theory. We retain Einstein's great leap forward with regards to the holistic relationality of Minkowski space, without stumbling into the slough of determinism. Time instead *emerges* from time, space from space, history from history (see Ellis & Drossel 2020).

A very different set of conclusions *vis-à-vis* historical contingency are set before us, however, if we reject the orthodox interpretation of probabilistic quantum indeterminacy in favour of the Many Worlds Interpretation (MWI) first laid out by Hugh Everett III (1930-82) (Everett 1957). Under the auspices of the Everettian heresy, a novel solution is proposed to the observation problem (that is, the problem of quantum indeterminacy) which is both Gordian in its simplicity and transcendental in its ramifications. Rather than supposing that the behaviour of a particle is indeterminate until its entanglement in a quantum system which collapses the wavefunction and fixes it in spacetime at a stochastically determined point within a range of potentialities, MWI proposes that the universal wavefunction is instead *objectively real*, and thus that all possible states of quantum superposition *actually occur*, with each resolution asserted in a different universe within an infinitely branching *multiverse*. Under the auspices of the Everettian model, Schrödinger's cat would emerge from its box alive in one universe and dead in another, each instance being quite as 'real' as the other from the perspective of the cosmic Absolute. Such a division, it is proposed, occurs in every instance of quantum entanglement, producing a vast infinity of distinct, non-communicating monoverses which encompass every possible location for every given instance of quantum 'indeterminacy'.

What are the implications of Many Worlds for historical contingency? On the one hand, MWI restores absolute Laplacean determinism to existence. If every possible outcome of particulate behaviour *literally exists* in one universe or another, then any discussion of quantum indeterminacy is evacuated of meaning; from the point of view of the multiversal Totality, anything that can happen does happen, and we find ourselves locked once more within the Meillassouxian cage. Yet here I must refer back to my earlier propositions regarding the rootedness of history within Being – in other words, within subjective experience-in-time. If there is no immanent method of predicting which universe within the total structure consciousness will retroactively discover itself to inhabit following a multiversal split, then the subject will necessarily experience the branching determinism of MWI as *purest aleation*. In

Everett's cosmos, therefore, we sacrifice the hard contingency of the mainstream interpretation for a *metaphysically insuperable* form of soft contingency. Wilson explicates this position in greater detail:

How can genuine contingency be reconciled with the deterministic Everettian multiverse? The answer, implicit in Everettian Quantum Mechanics since the very beginning but rarely adequately emphasized, is that contingency relates only to location within the multiverse. *What* the multiverse is like is non-contingent, but *where* we are in the multiverse is contingent (Wilson 2020: 2).

The scientific truth-status of the multiverse remains unestablished, of course, with the MWI merely one particularly charismatic alternative to the still-troubling probabilism of orthodox quantum mechanics. What we should take from it for our purposes is an understanding that even the restoration of multiversal determinism nevertheless preserves contingency from the perspective of Being, in the form of the necessarily *retroactive* revelation of our place within the crystalline labyrinth of infinite possibility. The modality of the multiverse, observed from our position within a microcosmic fragment, would manifest in the intersubjective realm as what we call luck.

Taking our leave from quantum physics and the realm of substance, let us now turn to the argument for contingency which emerges from the study of subjective experience. The contingent element in the behaviour of the subject, inexplicable purely by reference to the rational-decisional *cogito*, is the revelation at the heart of psychoanalytic theory; Freud's work demonstrated nothing less than the non-identity of the subject with itself. We discovered to our horror that the lantern of the *cogito* is borne atop the seething mass of the unconscious like the *esca* of an anglerfish. This train of thought, of course, runs headlong into conflict with classical behaviourism, which presupposes a fully deterministic model of human psychology. As Ivan Pavlov saw it, the task of the behaviourist was to complete the task of Descartes in explicating a mechanistic neurophysiology:

Three hundred years ago Descartes evolved the idea of the reflex. Starting from the assumption that animals behaved simply as machines, he regarded every activity of the organism as a *necessary* reaction to some external stimulus... (Pavlov 1927: 4)

Behaviourism, in its contemporary evolutionary-functionalist form as articulated by the likes of Steven Pinker and Daniel Dennett, updates this same poetic metaphorisation of human decision-making as akin to a machine, though this time portraying willed choice as a form of *mathematisable computation*, in which behavioural outputs result rationally from psychological inputs (Dennett 1991; Pinker 1997. Cf. Gigerenzer 1996). Yet as we know from Roger Penrose, perhaps the greatest living mathematician, the human mind behaves nothing like a classical Turing computer, with capacities which far transcend the algorithmic – specifically the emotional-affective and the symbolic-linguistic (Penrose 1989). The behaviourist mind-computer analogy breaks down upon contact with (*inter alia*) contemporary neurological research, close study of computational logic itself, and our everyday phenomenological experience of Being-in-the-World, as a plethora of distinguished critics from within the analytic tradition itself have articulated (Lucas 1961; Searle 1990; Fodor 2000; Glimcher 2005).

Let us therefore abandon naïve behavioural determinism and instead take seriously the model of human subjectivity which psychoanalysis bequeaths us, as well as its repercussions for the conceptualisation of historical contingency. Nietzsche once wrote that:

Randomness, the law of meaningless in the overall economy of mankind, is seem at its most terrible in its destructive effect on higher individuals, whose needs in life are subtle, manifold, and difficult to calculate. (Nietzsche 1998 [1886]: 56)

As is often the case with the eloquent old reactionary, there is something true going on here, but it needs to be universalised. Contrary to Nietzsche's aristocratic impulse, psychoanalysis teaches us that the desires of *all* subjects are 'subtle,

manifold, and difficult to calculate'; the *cogito* always dances upon the lips of the unconscious volcano, whose magmatic throbs pulse in time with deep and hidden rhythms. *Qua* Mallarmé, 'every thought emits a throw of the dice' – because, from the psychoanalytic perspective, the hiddenness of the unconscious and its movements adumbrates the precise causal patterning of psychic processes, leading to behaviour which is frequently incomprehensible, self-sabotaging, or entirely inappropriate to a situation-at-hand from a rational-decisionist perspective. This theoretical disunity of the subject posited by Freud and Lacan is also observed in the phenomenological tradition. Merleau-Ponty, in his description of the decision-moment, expresses the alienation of the *cogito* from its own choices, a necessary by-product of both the intersubjective constitution of Being and the *puissance* of the Freudian unconscious – and thus of the impossibility of bounding a discrete, monadic self:

Nothing determines me from outside, not because nothing acts upon me, but, on the contrary, because I am from the start outside myself and open to the world. (Merleau-Ponty 2002 [1945]: 530)

The consequence of this state of affairs is that, as Nietzsche writes, 'a thought comes when "it" wants to, and not when "I" want it to' (Nietzsche 1998 [1886]: 17). The self, we must conclude, is not identical with itself but in fact continually *alien* to itself in its procession through time. We might more clearly elucidate what Merleau-Ponty and Nietzsche mean here regarding the externality of the self with reference to Badiou's conception of the love-event: the cataclysm which immerses the subject into a new reality in an instant, but which can only retroactively posit the specific empirical reasons why that fall occurred (her lips, his eyes, *etc.* – and here we have come full circle to Cleopatra and her nose) (Badiou 2012 [2009]). Indeed, love can very well endure despite the active *non-consent* of the *cogito*, a phenomenon evoked in the final line of Proust's *Swann in Love* (1913):

To think that I wasted years of my life, that I wanted to die, that I felt my deepest love, for a woman who did not appeal to me, who was not my type! (Proust 2003 [1919], 383)

Assuredly, this is an anticipable quality of Being itself, in which subjectification is always already *intersubjective* in its becoming: the very core of ourselves is given to us by our relationships with others. The *cogito* here is not so much the king of the psychic realm as its traffic warden, attempting to order the presentation of phenomena with a self-importance which belies its lack of control.

We might advance this point somewhat further, and express with Lacan a view of the subject as constituted by *a discontinuity in Being itself*, by the minimal gap between a perceptual phenomenon and the causes with which it is subsequently invested:

The Freudian unconscious is situated at this point, where, between cause and that which it effects, there is always something wrong... Discontinuity, then, is the essential form in which the unconscious first appears to us as a phenomenon – discontinuity, in which something is manifested as a vacillation (Lacan 1979 [1973]: 21-2).

Žižek helps to elucidate this gnarly bit of Lacanese:

The Freudian unconscious emerges precisely in the discontinuities and gaps of phenomenal causality: an eccentric absent *X* intervenes and disturbs the flow of causality, introducing discontinuity... A cause is not in direct continuous contact with the effect, it generates effects at a distance, after a temporal gap. (Žižek 2014: 207-8)

The freedom of the subject, Kant once argued, arises from a gap between the natural causality of phenomenological reality and its incomplete relationship of identity with the transcendental (Kant 1900 [1766], 117). Psychoanalysis, in its own correlationist fashion, urges us to recognise causality *itself* as an aspect of transcendental experience by which phenomenal discontinuity is smoothed into

sensemaking, a quality of Being inseparable from the subjective *Verstand*. It is therefore meaningless to speak of causes independent of subsequent effects; rather, what we encounter are *nachträglich* effect-causes as constructions of the psyche when confronted with a situation:

Causality is merely the way in which each instance of freedom takes into account the previous instances, as each of our experiences refers back through memory to our own past and through perceptions to the world's past. (Hartshome 1977: 188)

Causality, therefore, is for us an aspect of the *World*, not the Earth (to deploy a Heideggerian distinction), and its verifiability is inseparable from the shape of the subject. This is an essential point for the historian: a historical object is defined intersubjectively, and as such emerges in aleatory and contested fashion as an effect of retrospectively posited causes. Thus, the contingent ascription of causality to events *retroactively defines and modifies those events*, owing to history's ontological status as a collective psychic process continually redefined through its narratological reiteration in the present of human intersubjectivity.

It is worth reiterating here that all of these philosophical approaches nevertheless only bring us to the threshold of *soft* contingency and the absolute unpredictability of human Being. Is there a way in which we can open our hypothesis beyond the compatibilist horizon and make a case for authentic free will? Such a proposal can only hope at present to be speculative, but I believe it is entirely possible to mount the argument provided we take seriously the question of quantum indeterminacy. Since the Einsteinian breakthrough, scientists and philosophers have attempted to ascertain whether the seemingly probabilistic acausality of subatomic behaviour is implicated in brain matter, and thus in human consciousness (Filk & von Müller 2009; Stapp 2009; Gullatz & Hildersleeve 2018; de Caro & Putnam 2020). Penrose and Stuart Hameroff, for instance, have advanced the thesis that consciousness itself emerges *in prima instantia* from the orchestrated objective reduction of tubulin molecules within neural microtubular polymers (Hameroff &

Penrose 1996). John Eccles proposes an even more philosophically radical theory of the role of quantum indeterminacy in bringing about the subject. Physical causality, Eccles proposes, is incomplete in the brain's dendrons before the resolution of the circuit by quantum 'psychons' emanating from the mind (Beck & Eccles 1992; Eccles 1995). In such a dialectical model of substance and subject, behavioural causation is the product of holistic mind-body interaction, rather than simple body \rightarrow mind determination (as in Pinker and Dennett). The space of indeterminacy opened by quantum acausality in the Penrose-Eccles model allows us, *contra* the behaviourists, to assert a limited but irreducible space for human free will – and, therefore, for the existence of hard contingency in historical affairs. Both Penrose and Eccles acknowledge that the degree of causal indeterminacy in the functioning of human brain matter in their theories is minute. However, they make the case that the introduction of a tiny spark of aleation into the initial conditions of a determinate system will, in turn, render the outcome of the Totality fundamentally indeterminable. To do this, they and other theorists of free will as a derivative of quantum stochasticity refer to a potential third source of contingency in Being, one to which we will soon make our own appeal: chaos theory (King 1991; Hong 2012; Jedlicka 2014). Yet whether or not we see hard contingency cascading outwards into human behaviour from quantum indeterminacy in the brain, the question of subjective *soft* contingency is settled by reference to psychoanalysis' demonstration of the opacity of the unconscious. Thought does not proceed in a computational fashion, with discretely explicable causal chains, but rather operates within a symbolic field determined by the shape of our own inscrutable depths – and therefore evades human predictive capacity .

Chaos theory is a branch of physico-mathematical study which illustrates how even minute changes in initial systemic conditions can lead to wild and unpredictable variations in outcome. By ramifying through sensitive complex systems, microcosmic contingencies can radically alter the outcome of events. The most famous illustration of this thesis, from the mathematician Edward Lorenz, is the curious case of the butterfly which flutters its wings in Place A and causes a hurricane in Place B, owing

to the chaotic dynamics of the atmospheric system in which the sowing of tiny disturbances may germinate into whirlwinds (Lorenz 1972). Yet the incursion of chaos into the ordered realm of mathematics began almost a century before Lorenz with the work of Henri Poincaré, and in particular with his study of the so-called 'Three Body Problem' – the interactive dynamics of three masses in motion around each other (Barrow-Green 1997). While the movements of two bodies in space (say, the Earth and the Moon) may be straightforwardly calculated through the application of Newtonian laws, the addition of a third entity (so Poincaré demonstrated) rendered the behaviour of the entire system insuperably chaotic, and thus unpredictable barring infinitely precise information regarding initial conditions. Once unveiled, the workings of chaos became mathematically visible in all manner of processes. Poincaré, like Lorenz, recognised in the processional hypercomplexity of meteorology the perfect exhibit for demonstrating the futility of prediction:

Why have meteorologists such difficulty in predicting the weather with any certainty? Why is it that shower and even storms seem to come by chance, so that many people think it quite natural to pray for rain or shine when they would think it ridiculous to pray for an eclipse?... The meteorologists see very well that a cyclone will be formed somewhere, but exactly where they are not in a position to say: one-tenth of a degree at any point, and the cyclone bursts here and not there, and spreads its ravages over countries it would have spared. If they had been aware of this tenth of a degree, they could have known it beforehand, but the observations were neither sufficiently comprehensive nor sufficiently precise, and that is the reason why it all seems due to the intervention of chance. (Poincaré 1914 [1908]: 64-90, 68-9)

Yet the educated observer c.1900 did not have to look to the heavens to observe chaotic phenomena at work. Darwinian evolution, the greatest scientific breakthrough of the nineteenth century, evidenced the workings of biological contingency writ on an unimaginably vast scale and with incomprehensibly complex

granularity. The emergence of humanity itself was revealed to be the product of a Pascalian avalanche, not divinely ordained teleology (see Gould 1989)

When grounded thus in chaos, the concepts of contingency and necessity emerge once more not as opposed forces but rather dialectically-definitive *Gegenbegriffe* for the description of probabilistic phenomena:

Contingency (necessity) varies in magnitude: the greater (smaller) the sensitivity to initial conditions, the greater the degree of contingency (necessity). (Ben-Menahem 1997: 102)

Complex systems sublimate chance and determinism into a single respiring probability map, as chaos drives towards eventual entropy while necessity drags disparity into probabilistic order. Contingency and necessity become refigured as opposites united in dialectical relationship:

The core of the dialectic of contingency and necessity lies in revealing not a deeper notional necessity expressing itself through contingent empirical reality, but the contingency at the very heart of necessity – not only the necessity of contingency, but the contingency of necessity itself. (Žižek 2014: 26)

The profound relevance of this model of contingency to the study of history becomes apparent if we accept Immanuel Wallerstein's equation of historical situations with complex mathematical-mechanical systems:

Everything that is historic is systemic, and everything that is systemic is historic. All complex phenomena have their rules, their constraints, their trends or vectors, that is, their structures... The problem is not to state this as some metaphysical truth, but to manipulate this truth in the study of any real complex phenomenon. (Wallerstein 1987: 201)

Chaos provides a core insight into the study of such systems – namely, that the more complex and deeply granulated a *dispositif*, the greater the number of

independently motive variables are in play, and thus the closer that system edges towards a state of total predictive unknowability:

Events at local or microcosmic level may have unpredictable and far-reaching effects at global or macrocosmic level – and vice versa. A minor event at a personal level may assert a major influence upon events at a political level, no less than the reverse. (Lively 2002: 30)

Therefore, as Poincaré himself explained,

The historian is obliged to make a selection of the events in the period he is studying, and he only recounts those that seem to him the most important. Thus he contents himself with relating the most considerable events of the 16th century, for instance, and similarly the most remarkable facts of the 17th century. If the former are sufficient to explain the latter, we say that these latter conform to the laws of history. But if a great event of the 17th century owes its cause to a small fact of the 16th century that no history reports and that everyone has neglected, then we say that this event is due to chance, and so the word has the same sense as in the physical sciences; it means that small causes have produced great effects. (Poincaré 1914 [1908]: 86-7)

Nevertheless, in a dialectical conception of causation-necessity, we still possess the ability to speak meaningfully in the *Marxist* language of *structural determination* (equatable, perhaps, with Poincaré's 'laws of history') by understanding necessity as simply reversion to the mean: a filtrative probability matrix which processes contingent phenomena towards an overwhelmingly likely outcome. States of affairs may necessarily contain contingency within themselves, but the odds of an eventual break are always stacked in favour of structural continuity. Overdetermination is thus the precise mirror of chaos, collapsing a multiplicity of situations into a stasis which appears determinate but which nevertheless emerges probabilistically through an infinity of weighted coin tosses, in a precisely similar fashion to the emergence of

thermal equilibrium from stochastic Brownian motion – and, thus, of the entropic transit of the arrow of time itself. Being strictly deterministic, chaos theory does not slay Laplace’s demon from an ontological perspective. It does, however, exorcise it from the realm of immanent human possibility. Though chaotic phenomena are precisely not *uncaused*, their behaviour is acutely dependent upon the minutest details of the initial conditions from which they develop:

In order to make reliable predictions about the likely behaviour of a complex system it is first necessary to know the initial starting conditions of that system with total and infinite precision. Given the exact initial conditions and an intelligence large enough to perform the calculations, one *could* make accurate predictions about the world. The new paradigm of chaos, however, admits that this is an epistemic impossibility. (Lively 2002: 31)

While we are able to retroactively ascribe causes to the effects we encounter through the study of the motion of forces, the bottomless complexity of a historical system which in turns refuses to remain fixed in spacetime like a dead butterfly on a mounting board makes a nonsense of the idea of a precise rendition of ‘initial conditions’. The Totality resists the very possibility of computation, no matter the advances made in human predictive capacity.

Let us conclude, then, by tendering the *maximalist* case for contingency in Being, assuming that the above propositions are valid. The physical universe is unfinished: its frontiers are continually expanding in space and time, and will continue to do so for the (un)foreseeable future. Within this universe, substance behaves probabilistically. The fundamental quanta of matter are *clinamenic*, settling into definitive position only with the collapse of the wavefunction. Such stochasticity in substance is the direct source of contingency in the subject. Thought, best understood as a quantum field emanating from base neural materiality, is imbricated with contingency by the physical conditions of its emergence (Grosvenor & Jefferson 2022). What’s more, the relationship between fluctuant brain behaviour

and the decision-making of the *cogito* is vastly and unknowably mediated by the seething oceans of the unconscious – an entity which operates according to its own occult logic, rendering behaviour innately unpredictable. This anti-Laplaceanism is infinitely magnified by the hypercomplex interstructuration of Beings in the intersubjective World. Although the course of human events proceeds within bounds set by structural necessity, the chaotic ramifications of chance within the total system provide for the possibility of vast overdetermination being overthrown by a moment of luminous contingency – what Badiou calls *secular grace* (Karlsen 2010).

What if these propositions are mistaken? What if, for instance, the Everettian model of quantum physics holds, and matter (as Einstein always believed) cannot escape rigid causality? My point here is that, in existential terms, *it makes no difference*. Being is backwards; it unfolds in time and therefore cannot understand itself in terms of a progressive causal chain to its final end. If the future resists predictability (as chaos theory says it must), then acausality and invisible determinism are phenomenologically indistinguishable. This is a Cartesian-Kierkegaardian point taken up by Žižek:

The terrifying situation in which we have to decide what to do, knowing that our decision is decided in advance, is perhaps the only case of real freedom, of the unbearable burden of a really free choice – we know that what we will do is predestined, but we still have to take a risk and *subjectively choose* what is predestined. (Žižek 2014: 68)

The subject of history cannot escape the inherent qualities of its own existence. Even if the future is written into initial conditions, *it can never appear that way to us*. An unknowable future whose torsions may hinge on the smallest of things, such that no authentic laws can ever possibly propounded for the *Aufhebung* of historical forces and no demonic supercomputer can predict the outcome: such would remain a *World of insuperable subjective contingency*.

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