Ariadne's Thread: Temporality, Modality, and Individuation in Deleuze's Metaphysics

By his own admission, Gilles Deleuze is a *pure metaphysician*. Of course, his thought is broader than this. He made interesting and potentially lasting contributions to social theory, ethics, politics, and aesthetics, to name but a few other philosophical fields. However, it's important to understand that not only do his deepest and most significant insights come from his work on metaphysics, but also that most of his insights in other domains flow from these metaphysical innovations. If we wish to understand the real import of Deleuze's work, then we must be willing to plough the depths of his metaphysical system. Moreover, we must be willing to approach Deleuze's metaphysics *as* a system. It's all too easy to focus on one thread of his innovative metaphysical tapestry to the exclusion of others, thereby isolating it from the complex interweaving themes that determine its true significance. This means that we have to be willing to take the road less travelled, and to approach Deleuze's metaphysics **holistically**, to tackle his system *qua* system.

This is a tall order for a single paper. I'm simply not able to present the whole of Deleuze's metaphysics in the present context. However, it is possible to pick out certain fundamental structural features that tie the whole together – the skeleton of the system, as it were. This is the goal of this paper then: to trace the metaphysical bones from which the meat of Deleuze's philosophy hangs.

The principal difficulty we face in taking this holistic approach to Deleuze's metaphysics is that for all Deleuze's work is systematic in **content**, it is not necessarily systematic in **form**. Deleuze has a metaphysical system, but it is not clear that he has a **systematic methodology** for either expositing or justifying it. Once one is inside Deleuze's system, the landscape is beautiful, but there's no clear point of entrance by which to bring others in to enjoy the view. The solution here can only be to provide our own methodological supplement: to devise some **expressive** and **explanatory** principles by means of which to **reconstruct** the key features of his metaphysics. Put differently, a *holistic* approach demands a *reconstructive* approach. We must treat Deleuze in the same way he treated Spinoza, Kant, Nietzsche and especially Bergson: we must aim to present him in a more **accessible** and **consistent** fashion than he himself ever managed.

The Problems of Metaphysics

Bearing this injunction in mind then, we should begin by addressing the question of precisely *what*

metaphysics is. Once more, this question is too big a topic to be adequately tackled in this essay, but it will be useful to present a provisional answer to it in order to organise our approach to Deleuze's metaphysics. We must be able to say something *general* about the nature of metaphysical **problems**, if we are to say anything *specific* about those problems that Deleuze takes up and the **solutions** he proposes to them.

So, let's make a few sweeping claims that can be marshalled into the form of an argument:-

1. The aim of metaphysics is to describe **the fundamental structure of nature** (or **Being**).

2. This is essentially continuous with **natural science**, even if it can be methodologically distinguished from the vast part of the practice of natural science.

3. Although the fundamental structure of nature is **unitary**, this does not prevent us from distinguishing its different **aspects**, and thus articulating distinct metaphysical problems.

4. These are distinguished by examining the **logic** of our pre-theoretical grasp of the structure of nature (or **pre-ontological understanding** of Being).

5. Therefore, we understand **metaphysical categories** in terms of **logical categories** and thus the **methodology of metaphysics** by way of the **architectonic of reason**.

This is the condensed version of a much larger story about the history of metaphysics that I have told elsewhere, focusing on the relationship between *logic* – as the study of the structure of **thought** – and *metaphysics* – as the study of the structure of **Being**. The moral of this story is that although there is certainly more to metaphysics than logic, there is an important sense in which logic **constrains** metaphysics.

Metaphysics seeks to understand what nature *is*, whereas logic seeks to understand what 'nature' *means*. This extends to the discussion of particular categories and the problems that correspond to them: **identity**, **difference**, **individuality**, **universality**, **quantity**, **quality**, **relation**, **essence**, **space**, **time**, **causation**, etc. Each of these corresponds to a metaphysical problem, but the scope of this problem is determined by the logical analysis of the relevant category in each case. For

instance, if we wish to understand the metaphysics of *causation*, we better start with the logic of *causal reasoning*, because it is only by understanding the latter that we can understand *what it would be* to understand the former. To put this in different terms: metaphysics must be accompanied by a **critique of metaphysics**, through which the distribution of problems and the constraints upon potential solutions are understood.

I will not defend this view any further, but will instead attempt to demonstrate its expressive and explanatory power in the course of reconstructing a number of classical metaphysical problematics to which Deleuze makes decisive contributions. I'm going to explain three long running problems from the metaphysical tradition in the terms just provided: the problem of **universals**, the problem of **possibilia**, and the problem of **time**. The problem in each case is essentially how we are to understand the relevant phenomena as aspects of a unitary nature, or how we are understand their **reality**.

The Existence of Universals

The problem of universals has the most noble heritage. It has motivated countless philosophical debates and caused untold confusion since the time of Plato, whose theory of **Ideas** is the exemplar against which all alternative solutions to the problem are judged. The problem has traditionally been framed in terms of whether or not universals **exist**, e.g., does the **universal** *doghood* exist in an analogous sense to the way **particular** *dogs* exist? There are many different answers to this question, but they all turn on precisely what we mean by 'existence' here.

The *affirmative* answers are traditionally grouped under the heading of **Platonism**, and they differ insofar as they offer distinct accounts of the special sense of 'existence' unique to universals. The core issue that each account has to address is the nature of the **relation** between the existent universal and its existent instances. Plato famously locates universals within an independent **intelligible realm**. They exist as **archetypes** that individuals may **participate** in. Aristotle famously tries to *invert* this picture, by eliminating the intelligible realm in favour of the **sensible realm**. The universals are thus supposed to be **immanent** to the individuals that **instantiate** them. The success of this original inversion of Platonism is debatable, but there is another important contribution Aristotle makes here, in the form of his distinction between **substance** and **accident**, e.g., between a dog and the unique red shade of its fur. This combines with the distinction between universal and singular to produce a fourfold schema:-

	Substance	Accident
Universal	**Sortals**	**Qualities**
Singular	**Individuals**	**Tropes**

The real contribution here is the distinction between types of universals this produces, i.e., between **sortals** such as *doghood* and **qualities** such as *redness*. This distinction is based upon the role they play in **individuating** their instances. What we mean by 'individuation' here is a logical matter of distinguishing an individual from *all* other individuals, or a matter of settling the conditions which *uniquely* identify it. The difference between sortal properties and qualitative properties is that although both can be used to distinguish between distinct individuals (e.g., if this dog is naturally red and that dog is naturally brown, then they cannot be the same dog), only sortal properties can be used to determine quantities of distinct individuals, or to **count** instances of the property (e.g., there are a determinate number of dogs in Manchester, but not a determinate number of coloured instances).

It's important to note that there is more to the category of quantity than provided by sortal individuation. There are all sorts of quantities that aren't reducible to sets of distinct individuals, such as quantities of mass, energy, distance, and even *particles* in the framework of quantum theory. However, we're going stick to sortal individuation for the moment, because it touches on another important historical debate: that between Leibniz and Kant over the **principle of the identity of indiscernibles (PII)**.

This is a disagreement over the nature of **sufficient conditions** for **complete individuation**. Leibniz holds that every individual thing (or **monad**) has a corresponding **individual concept** that is *sufficient* to completely individuate it, and that this concept incorporates all the determinations of the thing, as if it were an infinite list of its universal properties. Leibniz's really challenging claim is that the thing's spatio-temporal **location** is *unnecessary* for individuating it, and that it can be deduced entirely from the list of its non-spatio-temporal properties. By contrast, Kant holds that some grasp of spatio-temporal location is *necessary* to completely individuate a thing, but that this is nevertheless *insufficient* without the addition of a **general concept**. This ties back to the distinction between sortals and qualities insofar as not just any general concept will do here. Sortal concepts are just those general concepts whose combination with some grasp of location is sufficient to completely individuate something. This is precisely because they are tied to procedures for counting the number of instances of a universal in a given location (i.e., what Kant would call

schemata). All you need to completely individuate a thing is enough information about its location to get the relevant counting procedure to give you the answer '1'. This idea is developed by Frege, Russell, and Quine as the claim that there is nothing more to existence than instantiating such a sortal concept.

Returning to the question of whether universals exist, the *negative* answers are usually grouped under the heading of **nominalism**, and they differ insofar as they offer different accounts of the sense in which there is a 'relation' between universals and individuals without the former term existing in *any* sense. Now we've addressed the relationship between universals and individuation, we can precisely specify the issue that motivates nominalism: the problem of **universal individuation**. This problem is actually at least as old as Platonism, insofar as it is posed in Plato's own work (the *Sophist* and the *Parmenides*, specifically). It is the issue of how we distinguish between universals so that we can determine precisely which universals exist, what features they have, and what relations they stand in to one another, in order that we can stop appealing to non-existent universals (e.g., *sophism*) and mischaracterising those that do exist (e.g., misunderstanding the relationship between *truth* and *beauty*).

Plato and Aristotle give us different accounts of where existent universals are located: in either a distinct intelligible space, or somehow in the same sensible space that ordinary individuals are located in. Their accounts are unsatisfactory insofar as they fail to provide us with a good account of the **meta-sortals** we would need to adequately count and thereby differentiate between the various located universals. The common strategy of most nominalisms is that they overcome this problem by retreating to the problem of **concept individuation**, as opposed to worrying about whatever it is these concepts are traditionally supposed to grasp. They treat the problem of universals as one of how *we* articulate the world into different groups of things, rather than as a problem of how the world is articulated *in itself*. This strategy produces all sorts of problems of its own, usually epistemological problems regarding how we are supposed to judge whether the way we articulate the world is any good. However, I'm not going to go into these in any further detail.

Instead, I'm going to briefly address the nominalist aspect of DeLanda's interpretation of Deleuze, as it will be a useful contrast both to traditional nominalism and to the account of Deleuze's solution to the problem of universals I will present later on. DeLanda's nominalism is to be found in his doctrine of **flat ontology**, or the idea that the **species** to which individuals belong are themselves individuals, rather than universals (e.g., that the species *lion* is nothing more than the **population** of individual lions understood as a higher scale ecological process composed out of lower scale

biological processes). I'm not going to assess this view as much as call attention to its nominalist pedigree. It eliminates universals as **transcendent** things by insisting that if they exist, then they must exist in the same sense that other spatio-temporally located individuals do. This naturally collapses into the idea that whatever it is we're talking about in talking about universals must simply be individuals themselves. This avoids many of the problems of traditional nominalism by refusing to see the individuation of species as a matter of our concepts of them, while still refusing to acknowledge special existent universals.

The Possible and the Probable

The problem of possibilia has almost as noble a heritage as the problem of universals. It goes back at least as far as Aristotle's discussion of the relation between **potentiality** and **actuality**, but it really came into its own with the debate between Spinoza and Leibniz regarding the interpretation of the **principle of sufficient reason** (**PSR**) and the debate between Hume and Kant regarding the nature of **causal necessity**. This positively exploded in the 20th century following Russell's debate with Meinong over the reality of **possible individuals**, along with Kripke and Lewis' rigorous formalisation of the Leibnizian notion of **possible worlds**. All of these debates are facets of the problem of how to make sense of what we're talking about when we use **modal** language (e.g., 'that's *impossible*', 'I *could* have had a sister', 'A *always* follows B', etc.).

The Aristotelian solution is that modality is an intrinsic feature of things, such that *specific* possibilities (e.g., the possibility that I stop writing this essay) inhere in the form of given individuals as **capacities** to produce effects (e.g., my capacity to stop writing). This means that *general* possibilities (e.g., the possibility that humans can write or not write essays) inhere in the form of the universals that these individuals instantiate (e.g., the universal *human*). A similar account of **intrinsic modality** is defended by Spinoza. The problem for this position is that it has difficulties dealing with possibilities involving non-actual individuals (e.g., the possibility that I might have been inspired to write a better essay by a non-existent associate, if they had existed).

Leibniz overcomes this problem by providing an account of **extrinsic modality**, in which we focus on **states of affairs** rather than the individuals that compose them. He subordinates the distinction between possible and actual individuals to the distinction between possible and actual states. The consequence of this is that the reality of possible states is understood by analogy with the reality of actual states, much in the way that the reality of universals is traditionally understood by analogy with the reality of individuals. The actuality of the actual is equally understood by analogy to the

existence of the existent. Possible states and individuals are those which do not exist. Leibniz combines this with his commitment to PSR by making each possible state **maximally determinate**, such that the only true possible *states* are possible *worlds* (i.e., if I were to have stopped writing already, then the whole history of the entire world would have had to have been different). Leibniz thus pictures reality as if it were a die, with as many sides as there are fully formed possible worlds. Only the side which turns up when it is thrown will be actualised, but luckily, the dice is weighted by God's benevolence, so that the **best** side always faces upward. If God plays dice, he **cheats**.

This brings us to the dark side of modality, the problem of **probabilities**. As the example of Leibniz's divine die indicates, the problem of the reality of probabilities emerges out of the problem of the reality of possibilities. The latter is the condition of the former. However, the historical genesis of this problem occurs much later than the corresponding problem of possibility, along with the rigorous mathematical study of probability. We have obviously engaged in probabilistic reasoning for a lot longer than this, but the ever increasing success of statistical methods for regimenting this sort of reasoning (e.g., the ongoing Bayesian revolution) has brought the question of just what aspects of reality we're talking about in using this language to the for. This question has received a lot of sustained attention in the 20th century from thinkers such as Keynes, Popper, and even more recently Quentin Meillassoux.

The mathematical understanding of probability has always been linked with the history of **games**. This is because games offer idealised sets of rules which determine fixed sets of possible states between which the total sum of all probabilities, the number **1** as the correlate of **certainty**, can be divided. This is most obvious in games of chance, for instance, where a die has six possible and roughly equally probable outcomes, dividing certainty 6 ways. However, we can imagine games that are not immediately based on chance, such as chess, wherein there are a fixed number of possible first moves for either side, and as such a fixed number of possible second moves, etc. creating a space of all possible games within which only certain possible states can follow from certain others. Here, the probability of a given state is not determined purely on the basis of the distribution of possible states, but also on the players' skill in choosing between moves. Nevertheless, the rules prevent the players from deviating from the fixed distribution of possibilities, say by moving a rook diagonally or shooting the other player through the chest.

In all such games chance only enters at predetermined points, and at these points finite sets of possible states branch out, between which probabilities, or shares of chance, are apportioned. So a game of dice may involve three distinct throws, with the probability of the overall result as a

function of the probabilities of each taken separately, but this always excludes 'outside chances' which interfere with the ideal distribution at the points in between throws. The understanding of any system on the basis of probability involves this kind of **idealisation**, through which it is broken down into strict causal regularities, providing the **necessity** the transitions between the fixed points of chance, and the eruptions of contingency which these chances represent. Once these points are isolated the total set of all possible outcomes is *delimited* as the product of the sets of outcomes of each fixed point of decision.

The real measure of probability is introduced by the constraints placed upon these fixed points, understood as extrinsic to the possibilities themselves. In reality, the die as a whole is constituted by billions of molecules, each with its own motion and its own possibilities, all feeding back into the whole. At each moment all of the interactions of the die with the molecules of air, and each bump on the rough surface of the table upon which it is rolled, introduce **contingencies** into the throw. Of course, it is correct to say that no system at all can be modelled on the basis of the totality of such constraints. If chance were to be introduced at every point there could be no calculation of probability, because there could not even be the delimitation of the set of possible outcomes. As such, probabilistic models of phenomena always involve **restrictions** of relevant factors and **estimations** of their effects and interactions. We must give our dice a determinate number of sides, and even though we may weight them to some extent, by reapportioning chance between outcomes as we see fit, this will always be based on a sort of **retrojection** of actual statistics.

The metaphysical debate regarding the nature of probability tends to focus upon whether or not it is reducible to our **ignorance** of the totality of causal constraints, or whether there is something like **real chance** over and above this ignorance. The core issue here is the question of whether every determinate state has a **sufficient reason** (PSR). If one accepts PSR, then it is much easier to maintain that chance is purely **epistemic**, even if it is based upon an ignorance that only an infinite intellect could overcome (e.g., Spinoza's Substance or Leibniz's God), but this threatens to collapse into and undermine the metaphysics of possibility on which it is founded. Once one acknowledges that there is always a reason why the actual world is in one state rather than another, it is becomes hard to defend the thesis that possible states are any more real than probable ones. This is the fine line across which Spinoza and Hume stare at one another. If one denies PSR, then it is much easier to maintain that chance is properly **metaphysical**, even if it something extrinsic to possible states that selects which ones to actualise, but this threatens to collapse the various local points of chance into a single global chaos which determines everything. One risks trading an epistemology of ignorance for a **theology of contingency**. This is the slippery slope at the top of which sits Leibniz's

cheating benevolent God (Yahweh), and at the bottom of which sits Meillassoux's mad indifferent Hyperchaos (Azathoth).

The Temporal Trinity

The problem of time is at once impressively ancient and strikingly contemporary. On the one hand, it goes back to some of the earliest recognisably metaphysical speculations by Presocratic philosophers such as Heraclitus, Parmenides, and Zeno, and passes through many of the great thinkers of the tradition, such as Aristotle, Aquinas, Leibniz, Kant, Hegel, Schelling, and Heidegger, before reaching the present day. On the other, it is one of the most pressing theoretical concerns of physics in the present age, pervading everything from thermodynamics and complexity theory to the tortuous interface between general relativity and quantum mechanics. One cannot take a view on either traditional metaphysics or cutting-edge physics (not to mention their intersection) without coming face to face with questions regarding the reality of time.

There is so much to these various debates that I have no choice but to be merciless in boiling them down to a few simple features. I'm going to focus on the holy trinity of **temporal phenomena**: **dimensionality**, **directionality**, and **flow**. The important metaphysical options regarding the nature of time will then be differentiated first by which of these they think these are **temporal epiphenomena**, and secondly by how they aim to explain those they take to be genuine phenomena. I will not examine all possible positions that one can occupy here, but merely to sketch the rough outline of the historical dialectic of temporality.

Temporal dimensionality is the idea that individuals are located in time as well as in space. This is incredibly intuitive to us, if only insofar as we use **tense operators** to locate both individuals and the states of affairs they compose in the **past**, **present** and **future** (e.g., 'I *am* here *now*', 'You *were* there *before*', 'She *will be* coming round the mountain *when she comes*'). Nevertheless, some have tried to claim that dimensionality is epiphenomenal. Parmenides defended this thesis by holding that individuality is itself an epiphenomena, and his disciple Zeno tried to back this up with his ingenious paradoxes. This is not the only way to go about this though. We have already explained that the most radical champion of individuality in the history of metaphysics, namely, Leibniz, took both space and time to be epiphenomenal. The real difficulty for these thinkers is it is hard to reconcile them with the sheer explosive progress in physics since Galileo popularised the mathematisation of the temporal dimension. There are many contemporary physicists who are willing to give up direction and flow as temporal epiphenomena, but I am unaware of *any* who are

willing to give up dimensionality.

Temporal directionality is famously referred to as **the arrow of time**. It is also incredibly intuitive to us insofar as there is a notable **asymmetry** in the way we talk about the things we locate on either side of the now: the past is **closed**, but the future is **open**. There are various ways to account for this asymmetry, but once one acknowledges the dimensionality of time, they inevitably collapse into distinguishing the temporal dimension (or dimensions) from spatial dimensions by placing restrictions on the way things may be located along it. This is where physics takes charge of the debate. For example, thermodynamics is usually interpreted as placing a constraint upon the way in which ordered states may be situated in relation to one another, namely, **entropy**. The more ordered states must be put before the less ordered ones, and this seems to require that we ascribe metaphysical reality to directional notions such as *before* and *after*. However, this example is complicated by the fact that the even if the basic equations of general relativity and quantum mechanics don't agree with one another, they at least seem to agree that time is **reversible**. The equations can be run in either direction just fine, and this seems to indicate that any thermodynamic directionality that emerges out of the interactions they describe must be epiphenomenal.

Temporal flow is the *holy spirit* of the trinity: even those who believe in it usually have difficulty explaining *just what* it is. The difficulty here is that whereas dimensionality and directionality are **global** phenomena, flow is usually described in **local** terms. This means that whereas dimensionality and directionality are understood as **universal conditions** of individuation, flow is usually understood as a **particular condition** of individuation, namely, as a condition which applies to the individuation of those things located in the present. Far worse, this particularity is usually not even discussed in terms of individuation at all, but in terms of the **phenomenology** of those specific individuals who can describe their experience of the present and its passing (i.e., philosophers). This is obviously the perspective from which Husserl and Heidegger address the question of flow, and it is often the way that Kant and Bergson are interpreted as addressing the issue. This interpretation is not without support, but it misses importantly non-phenomenological aspects of their positions. The insurmountable problem for those who approach the metaphysics of flow in phenomenological terms is that their concerns can be easily dismissed as **epiphenomenology** by physicists. The **reality of flow** can only be addressed as something other than the **experience of flow**.

We can draw three questions from these debates, corresponding to each member of the temporal trinity in turn:-

1. <u>Dimensionality:</u> Is time a **necessary condition** of individuation?

2. <u>Directionality:</u> Is time a **unique condition** of individuation?

3. <u>Flow:</u> Is the **interface** between the past and future also a unique condition of individuation?

We can separate the important insights of Kant and Bergson from their phenomenological trappings if we consider how they would respond to these questions. It seems to me that they would answer each question in the affirmative, but that the reasons they would offer for these answers would be importantly different.

The support for a phenomenological reading of Kant's theory of time comes from the fact that he is concerned with individuation from the **perspective** of finite subjects who are themselves located within time. However, this is not a *phenomenology* of time so much as a *logic* of time. It is simply that this logic is one of **intra-temporal** individuation, rather than **extra-temporal** individuation. This becomes clear when we consider that Kant's account of individuation in terms of sortal concepts is essentially an account of **procedures** for counting individuals. These procedures take place *within* time, and as such they must comprehensively distinguish a thing from all other things using *spatial* and *qualitative* data whose temporal extent is **necessarily limited**. Put differently, sortal concepts are tied to procedures to completely individuate things on the basis of limited information about their past, and absolutely no information about their future. This is what it means to say that the heart of Kant's theory of time is the **schematism**. What makes time unique as a condition of individuation is that it is the dimension along which the steps of a procedure are mapped, making it **finite** in the sense that it must be able to operate under the condition of an **open future**. If we take Kant's transcendental psychology seriously, then we must conclude that the proper study of what 'time' means is carried out by the mathematical study of time bound procedures. To cash this out in a neat formula: Kant's **pure and empty form of time** is the time of **computation**.

The support for a phenomenological reading of Bergson is very similar, and bolstered by Bergson's explicit reliance on introspective methods (which he names **intuition**). However, Bergson's real metaphysical insight can be freed from this by building upon Kant's procedural logic of individuation. The point is essentially that **digital computation** based upon procedures that can be broken down into discrete steps is always grounded in **analog computation** based upon dynamic information processing systems. The informational inputs we receive from our environment needn't

be conceived as discrete **data** – divided into quantitative differences in **degree** and qualitative differences in **kind** – but can *at least* also include **signals** that continuously vary in their qualitative character. This modifies the Kantian picture in an important way. To cash it out by modifying our Kantian formula: the pure and empty form of time is not the **discrete** time of procedural processing, but the **continuous** time of dynamic processing.

The Origins and Ends of Deleuze's System

We are now on the cusp of examining Deleuze's contribution to these three metaphysical problematics. By examining the nature and history of metaphysics, we have developed the *explanatory* side of our reconstructive methodology. However, we must still develop the *expressive* side of this methodology, by providing ourselves with some further reconstructive principles. To this end, I'm going to suggest two ways of framing Deleuze's work that will guide the way we present it: a narrow, albeit rough interpretation of its **historical origins**, and a broad, yet more precise interpretation of the **theoretical ends** that motivate it.

Deleuze's relation to the history of philosophy is notoriously complicated. There is almost no thinker he has touched upon from whom he has not drawn something important to integrate into his own system (e.g., Plato, Spinoza, Leibniz, Kant, Nietzsche, Bergson, etc.). The minor tradition of philosophy from which he draws his central concepts is built with exceptional exegetical skill, and it is so broad that to choose any one thinker as a lens through which to view his work risks eliding important details. However, in presenting the history of metaphysics through the explanatory filters already developed, we've inoculated ourselves against this risk to some extent. What we require is a narrative that lets us unite the various concerns already presented in the right way. My suggestion is that we do this by seeing Deleuze's system as an attempt to rewrite Spinoza's metaphysics after Heidegger's critique of **onto-theology**. The are a number of good exegetical reasons for doing this, ranging from Deleuze's persistent obsession *with* and fidelity *to* Spinoza, to the various cryptic remarks he makes about overcoming Spinoza in the direction of a *more* univocal account of Being than Spinoza himself provided.

I will address the latter point shortly, but it's first important to grasp the upshot of this way of framing his work: it lets us ask to what extent any given metaphysical innovation builds upon or revises existing elements of Spinoza's project. This gives us direct purchase upon the motivations guiding the construction of Deleuze's system, insofar as they are an evolutionary adaptation of Spinoza's own motivations. I'm going to propose three principle motivations that build upon one

another: the **principle of sufficient reason** (PSR), the **principle of the univocity of Being** (PUB), and the **principle of immanence** (PIM).

Sufficient reason is at the core of both Spinoza and Leibniz's **rationalism**, and it is no exaggeration to say that Deleuze takes his philosophical task to be to make this principle compatible with **atheism**. Although we have already indicated that Spinoza's interpretation of the principle is preferable to Leibniz's, insofar as the **pure actuality** of Spinoza's Substance is preferable to the **cheated possibility** of Leibniz's God, this does not get Spinoza off the hook. He still interprets Substance as analogous to individuals (or **modes**) insofar as he uses a single category of **causation** to describe both: Substance is still a **ground**, even if it is a self-grounding ground. The reason for this is that Spinoza makes the same mistake as Leibniz in interpreting the regress of reasons implied by PSR as an **actual infinity**.

This mistake forces both of them to posit some ultimate ground at the beginning of the chain, and some infinite intellect capable of thinking the whole of it, in order to make the principle consistent. They each thus posit an absolutely unique thinking entity as the dual ground of the **existence** and **intelligibility** of everything. This is the metaphysical essence of **theism** and thus what Heidegger would call onto-theology. By contrast, Deleuze aims to make PSR compatible with atheism by interpreting the regress of reasons as a **potential infinity**. This means that, on the one hand, although there is a reason for *every specific* determination, there is no single reason for *all* determinations, and also that, although we can never run out of reasons, this is not guaranteed by the ability of some superior thinker to grasp the whole chain of reasons *at once*.

The principle of univocity is at minimum the idea that every entity is said 'to be' in the same sense. This idea originated with Duns Scotus, was taken up by Spinoza, and pushed even further by Deleuze. The crucial point to understand here is that there are at least two ways of interpreting the principle: as the **univocity of predication** (e.g., that the property of *intelligence* is ascribed to God in the same way it is ascribed to humans) and the **univocity of existence** (e.g., that God is said to *exist* in the same sense as humans are said to exist). Each of these is opposed to an **analogical** conception of Being, in which we take some things 'to be' in a sense which is merely analogous to the sense in which a privileged category (e.g., the *divine*) is said to be. As we should be able to see, Spinoza follows Duns Scotus in restricting univocity to predication. He takes Substance to share the same **attributes** as its modes in a non-analogical way. However, this is founded upon viewing Substance and modes as distinct **types of existent** to which other logical categories apply analogically: as supranumenary and enumerable (**quantity**), self-grounded and other-grounded

(**causation**), atemporal and temporal (**time**), etc. Deleuze's atheism demands that this deeper equivocity must be eliminated, along with the residual privileging of Substance it represents. In order to champion the univocity of existence Deleuze must ensure that his own equivalent of Substance cannot under any circumstances be said to exist.

Finally, we can see that Deleuze's insistence upon immanence follows naturally from his insistence on sufficient reason and univocity. The principle of immanence is the idea that there is a **unitary space** of individuation in which all things are located. There is one and only one **whole**. This means that all individuals, relations, and the states of affairs these things compose, are to be understood in terms of their situation on this unitary **plane of immanence**. The principle is violated when we aim to explain things within the immanent sphere by appeal to things that *cannot* be located within it, with the sole exception of the conditions of location itself. The fact that space is not located *within* itself insofar as it is *extensive* with itself is no obstacle here. We thus call such violations appeals to **transcendent principles** the character of which is entirely independent of either **contents** or the **structure** of the plane. This plane of immanence is Deleuze's post-Heideggerian transformation of Spinoza's Substance. It is his attempt to make Substance turn around the modes, by conceiving it not as **analogous** to individual modes, but as the **condition** under which modes can be individuated. We will now see the extent to which this transformation of analogical relations into relations of conditioning is at the heart of Deleuze's metaphysical innovations.

The Space of Universals

Let us begin then by seeing how Deleuze applies this transformation to the problem of universals. Put simply, his aim is to successfully invert Platonism where Aristotle failed, by reframing the terms of the dispute between Platonism and nominalism. His key insight is that we should not be asking whether universals exist in some sense analogous to the sense in which individuals exist, because this regresses to the problem of how these universals are themselves individuated, but rather that we should be asking whether universals are conditions of individuation in a way similar to space. His answer is that they are indeed such conditions, and that their relation to space and time as the fundamental conditions of individuation can be specified in a precise and non-analogical way. This is without doubt the single greatest contribution to the metaphysics of universality since Plato. However, it is not an insight that is entirely without precedent. To understand this, we must quickly return to Leibniz's picture of individuation, and describe what is so unique about it.

The crucial point here is that there are fundamentally two different types of spatial individuation:

occupying a location in a space, and **being a location** in a space. The best way to demonstrate the latter is to look at the primordial example of individuation: the **natural numbers**. These are an **infinite series** of perfectly distinct objects, standing in precise relations of **succession** to one another, that tails off into infinity. The crucial thing to see here is that the numbers do not occupy points along the line of succession, as if their mathematical properties could somehow be pulled apart from their location. They simply *are* the points along the line of succession, and nothing more. The link between their location and their properties is purely **necessary**. It is not as if there is a *specific* procedure for counting them, as much as that they are the immanent condition of *every* such counting procedure. By contrast, we normally think of physical objects as standing in **contingent** relations of occupation to their locations, and that they have at least *some* properties that are not dependent upon their location. It is precisely this contingency that demands intra-temporal procedures for individuating them in the face of the open future: we only see things as **occupying space** insofar as we take them to be **unfixed in time**.

Leibniz's ambition is encapsulated in the idea that he thinks the subjects of our propositions (monads) may be individuated in precisely the same way that numbers are, and that this may be done without appeal to either space or time as they are traditionally understood. The best way to demonstrate this is by showing how it is possible to **graph** the propositions expressing the properties individuals possess, and showing how Leibniz transforms this into a **qualitative space** capable of individuating monads.

	F	G	H
a	Fa	<u>Ga</u>	Ha
b	<u>Fb</u>	Gb	<u>Hb</u>
c	<u>Fc</u>	Gc	Hc

This table lists pre-individuated subjects down one side, and the predicates which express the properties these individuals possess across the top. These two discrete dimensions produce a **propositional manifold** containing all possible combinations of subject and predicate. Such manifolds are the spaces that traditionally condition our individuation of **actual** states of affairs by delimiting all **possible** states of affairs. We treat these propositions as locations (or *possibilities*) that can be occupied (or *actualised*) insofar as it is contingent whether they are true or false. This information can be incorporated into the manifold itself by transforming it into a **surface** that curves through a **binary dimension** of truth and falsity (0, 1 : underlined). This is a rigorous procedure for converting any form of propositionally articulated information into a graph.

Leibniz transforms this propositional manifold into a **qualitative manifold** by removing the dimension along which the pre-individuated subjects are arrayed, and turning each predicate into its own binary dimension (0, 1). We can display this in an incredibly simplified form by assuming there are only two such predicates.

	F	~F
G	a	<u>b</u>
~G	<u>c</u>	d

This table represents the four place qualitative manifold one gets from combining only two predicates. Leibniz's **spatio-temporal epiphenomenalism** boils down to the idea that each location in such a manifold (corresponding to a series of predicates, e.g., F & ~G, ~F and G, etc.) corresponds to a completely individuated **possible monad** (e.g., c and b, respectively). Leibniz simply thinks that the number of predicates is **infinite**, making for an infinite numbers of monads. **Possible worlds** are nothing but infinite sets of such monads that are **compossible** with one another. The **actual world** is thus a surface composed out of this space by curving it through a binary dimension of existence (0, 1 : underlined). This curvature selects one set of compossible points as that set which is actualised. This is the basis of Leibniz's idea that the best possible world is the most **continuous** world: the principle of selection is a principle of ideal curvature. God cheats using differential calculus.

What Deleuze realises is that this way of understanding the actual world in graph form can be pulled apart from understanding it in propositional terms. The procedure for graphing propositional information makes it very clear that it is convertible into **digital information**, and, following Bergson, Deleuze is very aware of the fact that there are forms of **analog information** that cannot be convertible in this way. Our linguistic ability to **represent** the actual world using propositions has been exceeded by our mathematical ability to **model** it using graphs. This is what motivates Deleuze to develop a metaphysics of the **subrepresentational**.

The principal consequence of this shift in perspective is that Deleuze allows for more than just binary qualitative dimensions. He allows us to incorporate all of the myriad qualities and quantities that would be used in the most outlandish graphs we could possibly dream up. This gives the qualitative space much more interesting structure, and, insofar as it allows the incorporation of **continuous variation** in quality and quantity, it escapes the possibility of lossless conversion into

digital information. The other consequence of this is that Deleuze breaks with Leibniz in rejecting his epiphenomenalism. Deleuze takes seriously the progress that the sciences have made in modelling the world using these mathematical techniques, and the fact that these models deploy space and time in complex ways from which it is impossible to separate the quantities and qualities that they deal with. The interaction of space, time, and quality is something that can only be understood by providing a metaphysics for **contemporary** mathematical science, as opposed to Leibniz's **fantasy** mathematical science. We already have a *mathesis universalis*, it's just not anything like what Leibniz imagined it would be.

Nevertheless, this gives us the outline of Deleuze's strategy in dealing with the problem of universals: universals are constituted by the dimensions through which the actual world curves *qua* **informational surface**. When Deleuze says that the Idea of *Fire* is present wherever there is fire, he is deadly serious. At this location the world expresses the complex mix of qualitative and quantitative determinations constitutive of fire, insofar as the surface of the actual world curves through the appropriate dimensions.

Regional Possibilities

We can now turn to the way Deleuze transforms the problem of possibilia. His aim here is to make Spinoza's account of intrinsic modality consistent, allowing us to affirm the reality of *both* the possible and the probable without having to appeal to any transcendent principles. He does this by combining these two aspects of modality in his theory of the **virtual**. This is meant to account for the inherent **capacities** (Spinoza) and **tendencies** (Bergson) of individuals which our talk of possibilities and probabilities attempts to grasp, respectively. The innovation is that it is supposed to do this without understanding virtual states by analogy with our retrojective ways of representing them through **recombining** propositions about actual states. Ultimately, the virtual should be immanent to the actual insofar as it requires no transcendent supplement to actualise itself. The modal features of the world should be woven together like a complex mathematical tapestry upon the plane of immanence.

Deleuze draws his theory of the virtual from the structure of **dynamic systems theory** (**DST**), which is the principal tool used by the sciences to extract information about the tendencies of individual systems from graphs of their actual states. This is what enables him to convert Leibniz's theory of monads into his own theory of **nomads**. The important thing to understand is that DST does this by taking a graph of the actual history of a system and collapsing the time dimension. It

uses a series of complex mathematical techniques to retain relevant information about how the various variables the different dimensions represent tend to interact with one another, while losing the irrelevant information about how they actually interacted in particular cases. Here's an example of this being done with a pendulum. What this produces is a surface with one less dimension than the graph, whose curvature nevertheless describes the tendencies of this system in the form of the differential relations between the various variables that draw it. The **topologically significant** features of this surface are called **attractors**, and they are often drawn as points or lines on a flattened version of the surface, in order to capture the most important tendencies of the system in a simplified format.
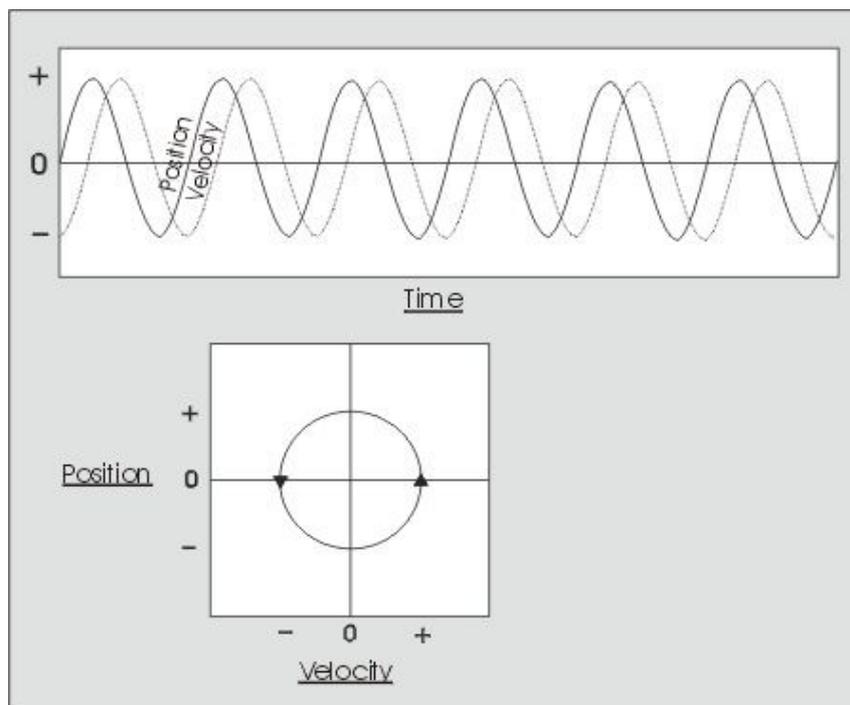
The crucial point to appreciate here is that the **virtual surface** is not the **actual surface**. The actual could only be said to **traverse** the virtual surface in real time. If we think of a **universal Idea** as the set of qualitative and quantitative dimensions that are relevant to capture the modal features of a given **type** of individual, and if we think of these dimensions as real features of nature, rather than merely as convenient ways of modelling nature, then the Idea is a virtual surface swarming with points, corresponding to all the individual instances of its type. Deleuze calls these nomads, because they traverse the space in real time, guided by the tendencies encoded in the curvature of the virtual surface. If one was to reintroduce the temporal dimension here, one would simply see these points drawing the **actual trajectories** of the graphs from which we extract our dynamic models of the virtual. This is the basis of the immanent actualisation of the virtual.

However, to view Ideas this way is still to view them as **abstract universals**. This is to say that they are still **insufficient** to individuate their individual instances. This becomes clear when we realise that any number of nomads could occupy the same position on the virtual surface at once. This means that although their position on the surface provides important information about their present state, this information must be supplemented if it is to completely individuate them. This is where Deleuze sides with Kant over Leibniz. The information required to turn an abstract universal into a **concrete universal** capable of completely individuating its instances is **spatial information**. We must add **extensive** spatial dimensions to the Idea and in doing so encode information about the spatial relations between the various instances in the ways the nomads move. What this does is effectively to turn the disparate set of points traversing the virtual surface into an actual surface in its own right. The way this actual surface curves as it traverses the higher dimensional virtual surface thereby encodes the relevant information about the spatial relations between the points that compose it. This has the added effect of meaning that each and every individual has its own unique Idea encoding its own modal features, insofar as this is simply a **region** of the concrete universal.

Nevertheless, Leibniz has his revenge, insofar as there is no single system of spatial dimensions common to all concrete universals. Deleuze sides with Leibniz insofar as he thinks that extensive spatial dimensions are inseparable from the qualities and quantities that are expressed within them. They are not exactly epiphenomenal, but they emerge simultaneously with systems of quantitative and qualitative dimensions. The importance of this becomes clear when one realises that individuated quantities can themselves be collapsed and transformed into further dimensions, as we find in the classic DST graph of an ecosystem containing a population of foxes and rabbits, whose numbers tend to vary in relation to one another in a regular way.

Evolution of fox and rabbit populations
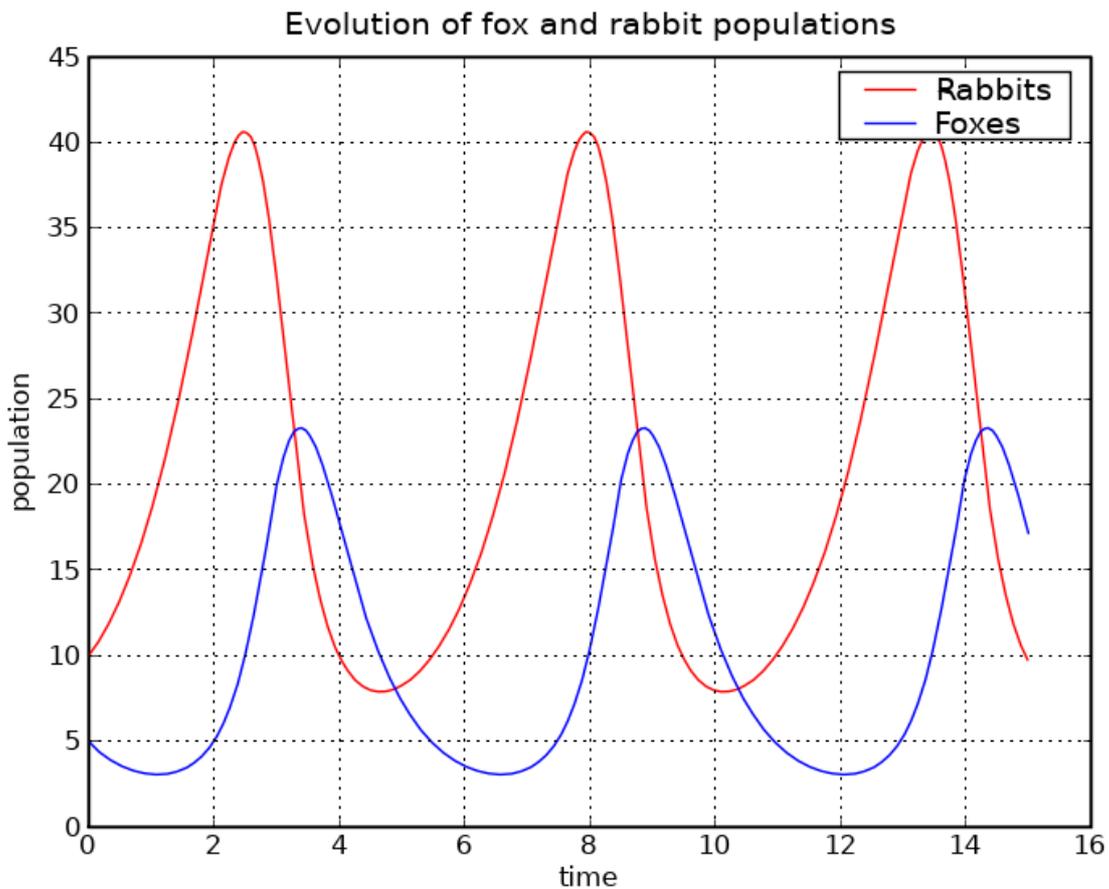
The complex interplay between different qualities, quantities, and extensities is the reason Deleuze is fond of suggesting that Leibniz's plurality of possible worlds all exist at once, unhinged from God's unsporting obsession with continuity. In truth, there is a multiplicity of divergent **worlds of possibility**, or a plurality of **perspectives** from which to divide the continuous informational surface of the world into discrete individuals.

The Unity of Time

Finally, we come to the title of the paper – **Ariadne's thread** – the tortuous line that leads us through the labyrinth. Deleuze's Spinozism gives us good reason to think that this picture of disparate disconnected Ideas is not the whole picture. The principle of immanence demands that these all be brought together and flattened to constitute a single **plane of immanence**, or perplicated to create a single **intensive spatium**. The divergent worlds must somehow be contained within a single **universe**. This is indeed the case, and it is where Kant gets the last laugh. What breaks the analogy between time and space is that whereas there are **many spaces**, there is a **unitary time** common to them all. No Idea contains a time dimension, because it could not transforming the virtual back into the actual. DST shows us that we can only think the real modal features of things

by collapsing the time dimension. Time becomes **coiled up** on the virtual surface, in the erratic yet continuous movement of the actual surface. What makes all these spaces **attributes** of the same world, or perspectives upon the same immanent informational surface, is thus that they share the same coil of time. This is what Deleuze calls the pure and empty form of time, **Aion**, or **the eternal return**. It is the **univocal** metaphysics of time underlying the **plurivocal** metaphysics of space. This is Ariadne's thread: a single temporal line leading us through the labyrinth of overlapping qualitative, quantitative and extensive spaces.