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Thinking as Folding: Deleuze's Leibnizian Nomadology as a Non-ontological Approach to

Posthumanist Subjectivity

ABSTRACT: Rosi Braidotti has recently argued that the emerging scholarship on posthumanism should employ that she calls nomadic thinking. Braidotti identifies Deleuze's work on Spinoza as the genesis of posthumanist ontology, yet Deleuze's claims about nomadic thinking or nomadology come from his work on Leibniz. I argue that for posthumanist thought to theorize subjectivity beyond the human, it must use nomadology to overcome ontology itself. To make my argument, I demonstrate that while Braidotti is correct about Spinoza's influence on Deleuze, his work on Leibniz is necessary to adequately conceptualize nomadology. I employ Deleuze and Guattari's figure of the Thought-brain as a model for subjectivity that they claim goes beyond the subject itself. Accordingly, I also look at some of the recent scholarship on Deleuze and the brain to illustrate what Deleuze and Guattari mean by the Thought-brain and how it could be used for conceptualizing posthuman subjectivity.

KEY WORDS: nomadology, folding, non-ontology, posthumanism, Thought-brain, Spinoza, Leibniz, Deleuze, Guattari, Braidotti

Introduction

Gilles Deleuze concludes his final monograph, TF, with a call for philosophers to adopt what he calls a *nomadology*: a play on Gottfried Leibniz's monadology which—in very broad terms—aims to emphasize the continuous change and movement involved in the processes of the world and thinking itself.[1] Nomadology has recently been the subject of focus for a number of Deleuze scholars, especially in relation to critical posthumanism and the areas of New Materialism related to Deleuze studies. Notably, Rosi Braidotti has recently advocated for nomadic thinking as a method by which the humanities might create new nomadic ontologies suitable for posthumanist studies. The calls for nomadic ontologies echo those readings of Deleuze as a process or differential ontologist. However, writing on Deleuze's work on the brain in relation to the neurosciences, David R. Gruber has recently suggested that nomadic theories suitable for posthumanism might be understood in terms of (de)ontology rather than ontology (Gruber 2019: 57,80).

Using Gruber's suggestion as a cue, my central argument here is that we can read Deleuze's call for nomadology as a call for a non-ontological philosophy which is needed for posthumanism to overcome the figure of the human. In the first section I show where posthumanism figures into the broader post-Nietzschean philosophical tradition of challenging the traditionally fundamental philosophical concepts and argue that the task of overcoming the human entails overcoming ontology. In the second section I establish the connection between posthumanism and embodiment to show how Deleuze's work on Benedict Spinoza and Leibniz leads him to a problem of the body which prefigures the need for a nomadology. Following that, I explain how Deleuze develops nomadology through calculus, functions, and folding as an

approach to philosophy which I argue is non-ontological. Finally, I return to the question of subjectivity and show how Deleuze's nomadology leads him (and Guattari) to the posthumanist figure of the Thought-brain.

The Place for Non-ontological Philosophy in Critical Posthumanism

The term "posthumanism" is one that evades a simple definition due to both its popularity and affiliation with varying intellectual trends. One of the most popular iterations of posthumanism—and the one that draws most clearly from Deleuze's work—has been termed critical posthumanism. Rosi Braidotti, one of its leading proponents, has recently published a theoretical framework for critical posthumanism where she defines the term as "the critique of the humanist ideal of 'Man' as the allegedly universal measure of all things…." (Braidotti 2018: 23). As Braidotti explains with reference to ATP, Man refers to the ideal humanist subject as one that is "male/white/heterosexual/owning wives and children/urbanized/speaking a standard language" etc. Man is not a figure of simple inclusion/exclusion but represents the ideal of the figure of Anthropos (the human) where every individual is more or less human to the degree that they align with the ideal (Braidotti 2018: 36).

The challenges that have been made to the ideal of Man have elicited a range of responses. On the one hand, Braidotti points out that thinkers like Jürgen Habermas, Francis Fukuyama, Peter Sloterdijk, and even Jacques Derrida have all expressed "intense anxiety bordering on moral panic about the future of the human and humanist legacy in our advanced technological times" (Braidotti 2018: 35). For the defenders of liberal humanism, the most appropriate path would be to retain humanist values while making the figure of the human more inclusive by expanding a notion of personhood to include not only humans, but other forms of life through measures such as animal rights. For some, an anxiety about new technologies stems

from a fear that the challenges of those technologies and the threats of relativism, nihilism, and despotism might lead to a loss of Enlightenment values. On the other hand, there are the "transhumanists" who are unconcerned about the human subject as such and uncritically embrace the belief that the full integration of biology with technology will usher in a new utopian age in humanity's evolution (Herbrechter 2013: viii). Critical posthumanism takes a middle ground by regarding technological innovation itself as neutral while celebrating the possibilities for new subject formations beyond the ideal of Man, figure of the human, or values of humanism.

Braidotti argues that bringing about those subject formations will require the humanities to embrace posthuman scholarship. To do this, she recommends working with a "conceptual frame of nomadic becoming" which is grounded in what she calls the "neo-Spinozist vital ontologies" that are found in Deleuze's *Expressionism in Philosophy: Spinoza* (1968) and *Spinoza: Practical Philosophy* (1981) (Braidotti 2018: 33). Braidotti follows Deleuze by suggesting that his work can help us to create *cartographies* for ourselves that can tell us where we have been—like Friedrich Nietzsche and Michel Foucault's genealogy—and which also articulate possibilities for becoming (virtualities) whereby the actualization of those virtualities could help us build a better future (Braidotti 2018: 37). The creation of those cartographies requires us "to provide an *adequate* expression of what bodies—as both embodied and embrained—can do and think and enact" (Braidotti 2018: 49). The reason for this, Braidotti explains, is that the human itself is only one possible vector of becoming, so the creation of cartographies can help us uncover or create new vectors. The uncovering of these vectors which emphasize the movement and becomings of various individuals and groups of people leads us to a "nomadic critical posthumanities." For Braidotti, the nomadic approach to the humanities which is grounded in neo-Spinozist and neo-materialist ontology presents the greatest

opportunity for resisting a sedentary vision of the posthuman which is hegemonic, capitalist, and meta-rationalist (Braidotti 2018: 48).

While Braidotti emphasizes looking forward to use nomadic critical posthumanism to work toward a brighter future, I think that conceptual clarity can be gained by looking backward at the larger tradition and spirit of which posthumanism is only a part and ask: what is the philosophical justification behind the effort to theorize subjectivity as posthuman subjectivity? In other words, what is the purpose of the term "posthuman" when we could retain the well-established term "human" for describing any actual and possible subject formations for *homo sapiens*? To answer these questions we can recall Martin Heidegger's "Letter on Humanism" (1947) where—in opposition to Jean-Paul Sartre's thesis that "Existentialism is a Humanism"—he puts forward the argument that "human" does not refer to a member of a certain biological species, but to a concept that signifies a mode of being originating from the Roman *animal rationale* which is a modification of the Greek *zoon logon echon* (Heidegger 1993: 226). Heidegger proposes that a more stable and general term for *homo sapiens* is *Dasein*: the type of being that asks about its being. The human is only one of the modes of being for *Dasein* and despite its Ancient origins, our Modern understanding of the term is rooted in the Cartesian *Cogito* where to be a human is to understand oneself as a conscious subject encountering the world as object(s) (Heidegger 1993: 243). The significance of Heidegger's claim is that by accepting the human as historically contingent rather than biologically determined, we must also accept that the human subject must eventually come to an end.

In 20th century Continental philosophy, the eventual end of the human became a subject of fascination for the generation of French philosophers following Heidegger. For example, Foucault concludes *The Order of Things* (1966) with the claim that "man is an invention of

recent date. And one perhaps nearing its end" (Foucault 2005: 422). Similarly and shortly

thereafter in an address published as "The Ends of Man," (1969) Derrida proposes that

philosophy has two alternatives where it could either attempt a "deconstruction without changing

ground" of its fundamental concepts or else change not only its ground but also the style by

which philosophical thinking happens (Derrida 1969: 57). The suggestion to change style comes

from Nietzsche and we should recall that his *Ubermensch* prefigures both the end of Man and the

posthuman. Moreover, the call to change style is an invocation of Nietzsche's meta-philosophical

project of the reevaluation of all values and the overturning of fundamental concepts.

Accordingly, the posthumanist tradition is not solely grounded in a critique of Man, or the

human, or liberal humanism, but is part of a broader critique of philosophy's fundamental

concepts.

Heidegger, Derrida, Foucault, and Deleuze all worked in response to Nietzsche's project

with varying degrees of enthusiasm or apprehension. Deleuze's masterpiece, DR, sustains an

engagement with Nietzsche that centers around an attack on what Deleuze calls the dogmatic or

moral Image of Thought: a notion he first developed in his second monograph, N. The Image

represents what philosophers have taken to be the necessary components of thinking such as the

processes of recognition of objects, ways of identifying erroneous thinking, and a reliance on

"prephilosophical" fundamental concepts such as "thinking" itself (DR 129). Such concepts have

tended to appear necessary to philosophers when they are acknowledged at all. For example,

Deleuze acknowledges that Kant developed a total critique that extended to "all claims to

knowledge and truth," but then failed to extend critique itself to "knowledge and truth

themselves" and thereby places an *a priori* limit on philosophy without justification (NP 89).

The most recognizable and ubiquitous are—not coincidentally—the constituents of the human as

Cogito: "I," "thinking," and "being" (DR 132). The foundation of modern philosophy, then, is the human as the subject which necessarily exists by virtue of its awareness of its existence. Thus, the posthuman challenge to the human is a challenge to the *Cogito* and *vice versa*.

The lineage of posthumanism is clear in Gruber's call for a posthumanist "(de)ontology," which is not in any way Kantian, but is instead the term he uses to place himself within the tradition of anti-Platonic and anti-Cartesian philosophers. With references to Nietzsche and Heidegger he declares that the loss of the Platonic ideal means there is no longer any standard by which to orient ourselves: whether it be God, truth, Being, or the figure of Man "nothing more remains" (Gruber 2019: 73). In the absence of any standard we have two choices. On the one hand, we can invent new standards in the same form as the old: scientific knowledge could stand in for the light of Divine Truth, or "the brain" could replace Man as the measure of all things. The problem with such a move is—since we now must recognize them as inventions—these standards cannot authentically replicate the form of the old standards which were held to be immutable. Instead, Gruber proposes that we reject those forms of knowledge and valuation that rest on the pretensions of absolutism and immutability and instead try to develop a "nomadic ontology" that values "the constant flux inherent in life" (Gruber 2019: 74).

If we are to accept Gruber's prescription, then I suggest that we also go a step further. Note that whereas Gruber talks about a "nomadic ontology," Braidotti uses the terms "nomadic theory" or "nomadic thought" but also speaks of "vital ontologies" or "process ontology." That is, both are eager for posthumanism to critique standards such as the human or traditional ontology. Yet, even while Gruber suggests a (de)ontology, neither he nor Bradiotti seem to take the next step and challenge the concept of ontology itself. But it seems that the nomadic approach to thinking allows us to do exactly that. Furthermore, if we follow Deleuze's attack on

the Image of Thought, then we must not presuppose that ontology is beyond questioning. In other words, if nomadic thinking (i.e. nomadology) is a means to theorize the posthuman instead of the human, and given that the human itself is rooted in part in the fundamental concept of being, then we can think of Deleuze's nomadology as a replacement for ontology. In other words, we can think of nomadology as a non-ontological approach to philosophy.

Spinoza and Leibniz: From Cartography to Nomadology

In order to develop my claim that Deleuze's nomadology can replace ontology, I will proceed by considering the place of nomadology in Deleuze's philosophy before moving onto a discussion of the concept itself: that is, what philosophical problem does Deleuze identify which would require nomadology?

As we have seen, unlike the human which is fundamentally a subject which thinks, posthumans are embrained and embodied. To theorize posthumans we need to be able to express what their bodies can do. The question of what a body can do plays a significant role in Deleuze's overall project, especially in his work on Spinoza. Therefore, it is not surprising that Braidotti grounds her reading of Deleuze on his books on Spinoza, but given her frequent allusions to Deleuze's nomadic thinking it is worth pointing out that TF is where Deleuze proposes nomadology as a subversion of Leibniz's monadology.[2] What I want to suggest here is that while Spinoza led Deleuze to a philosophy centered on bodies, it was his work on Leibniz— and to a lesser degree, Foucault—which allowed him to adequately theorize the body. In short, then, it is the problem of the body which eventually leads Deleuze to a nomadology and it is to that problem which I will now turn.

Deleuze's theory of the body is difficult in part because he develops it throughout his works on David Hume, Nietzsche, Spinoza, Foucault, and Leibniz; but also because it is haunted

by Deleuze's and Felix Guattari's infamous Body without Organs (BwO) and their call in *A Thousand Plateaus* that one "make oneself a BwO" (ATP 158). As early as 1997, Ian Buchanan had noted that among academics the BwO had already "been the cause of much confusion, as well as anxiety and outrage." The confusion, he argues, likely stems from "a mistaken perception that because bodies and bodies without organs are both examples of what Deleuze and Guattari call assemblages—which effectively means neither have what is traditionally known as organs—there must not be any real difference between the two notions." Furthermore, he suggests that scholars have erred by assuming that the BwO is the basis for Deleuze's concept of the body when in fact the opposite is the case (Buchanan 1997: 73). I mention this here to dispel any suspicions that the problem of the body for Deleuze relies on the BwO. Instead, for Deleuze, the problem is that because philosophy has so often focused on the *Cogito* and matters of thinking or consciousness, the body has been either ignored or made to be synonymous with error. As a result, *we do not know what a body can do*.

That problem is one Deleuze first identified in NP, where he writes: "Spinoza suggested a new direction for the sciences and philosophy. He said that we do not even know what a body *can do*, we talk about consciousness and spirit and chatter on about it all, but we do not know what a body is capable of, what forces belong to it or what they are preparing for" (N 39). The problem that we do not know what a body can do and its accompanying question—what can a body do?—would become a refrain in Deleuze's work that appears at least six times through the original publication of *Cinema 2* in 1985. The problem is always one that he attributes to Spinoza and he repeatedly claims that understanding a body in terms of what it can do requires cartographies of the body. Doing cartography consists of the creation of a map that has two axes: the longitudinal allows us to conceptualize things in terms of extension and the relation between

things through their motion while the latitudinal concerns intension which is correlated to affect and capacities or degrees of power (ATP, 256-257; see also SPP 125–127).

A full account of cartography would require quite a bit more detail. I raise it again here just to show that it is both Deleuze's response to the problem of the body in relation to Spinoza as well as Braidotti's proposed method for nomadic critical posthumanities. However, for Deleuze it would not seem to be a fully adequate method for theorizing the body given that the problem that we do not know what a body can do persists in his writing until his work on Foucault and Leibniz. Nomadology therefore becomes necessary because there is a limitation to accounting for bodies through cartography. While cartography can tell us what an already individuated body can do at a given time, it does not account for the prior question of how bodies are individuated in the first place or for the changes that bodies have undergone up to a given time and will undergo in the future. Cartography still bears a shadow of ontology in that it only shows us what an actual body can do in a given time and so takes the body to be a static being, but as a philosopher of becoming Deleuze needs to be able to account for the possibilities and processes of differentiation that are constantly happening to and forming bodies in the world. Or as James Williams says, Deleuze thinks that to fully account for something, we must be able to comprehend it in terms of what is has been previously and will be subsequently (Williams 2013: 42).

Matthew Hammond has argued that Deleuze's engagements with Leibniz enabled him to do exactly that. Hammond claims that TF is crucial in that it transforms Deleuze's view of Spinoza to be "now understood as not only as the supreme philosopher of nature [from ATP], but also the 'Christ of Philosophy' [in WP] who obliges the philosopher (Deleuze) to engage with non-philosophic worlds…[and] whose John the Baptist is no doubt revealed to be Leibniz"

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(Hammond 2010: 242). Hagiography aside, these attributions emphasize the importance of Leibniz's thinking for Deleuze's broader philosophical project. The transformation in Deleuze's thought is possible because Leibniz's account of *differencing* allows Deleuze to theorize the possible *expressions* of unformed matter into individuated bodies (Hammond 2010: 236).

To explain how Leibniz transforms Deleuze's approach to theorizing the body and his wider thinking, we first need an account of Deleuze's understanding of differencing and expression in Leibniz. I will give such an account here by drawing largely from Daniel W. Smith's reading of Deleuze's Leibniz through not only *The Fold*, but also Deleuze's engagements with Leibniz in *Difference and Repetition*, *The Logic of Sense* (1969), and his 1980 series of lectures on the polymath.

Smith explains the concept of expression in Leibniz through Deleuze's inference of a *principle of difference* in Leibniz's thought. According to Smith, there is no overt mention of such a principle in Leibniz's work but it can be seen in his work on the principles of identity and sufficient reason (Smith 2010: 142). To briefly summarize the role of each, Leibniz recognized that the *principle of identity* in the formulation "A is A" implies a vector which moves from the predicate to the subject. This vectoring becomes clear when we consider judgements of attribution such as "The sky is blue" or "A is B" where the subject and predicate are obviously not identical but where the predicate is attributed to the subject (Smith 2010: 140). Smith says such an insight is still basic logic, so the surprising thing comes when Leibniz tries to account for *existing* things rather than just *essences* through a second *principle of sufficient reason*. This second principle is necessary because the principle of identity is unable to account for the quality of existing. To use Smith's example, the principle of identity can tell us what unicorns are, even though we know that they do not exist. As Deleuze explains in TF, a principle of sufficient

reason is needed to explain existing things because: "Everything is everything that happens, no matter what happens. Everything that happens has a reason!" (TF 41) Leibniz's specific formulations of the principle that Deleuze uses states: "All predication is grounded in the nature of things." and "'Every predicate is in the subject,' the subject or nature of things being the notion, the concept of the thing" (TF, 42; see also DI 36 and WP 207). In other words, the principle of sufficient reason accounts for the existence of a thing by asserting that everything which is predicated on the thing is included in its concept (Smith 2010: 141).

By explaining the existence of things in such a way, Deleuze argues that Leibniz radicalizes the meaning of the predicate, the concept, and the individual. Note that Deleuze describes "everything" as "what happens" where "an event is called what happens to a thing, whether it undergoes the event or makes it happen…." (TF, 41) Predication, then, no longer concerns the attribution of a property to a subject or substance, but rather we have "predicates-as-events." By replacing attributes with events in predicates, Deleuze claims that "Leibniz brings a new conception to the concept [*concetto*], with which he transforms philosophy" (TF, 42). The concept as *concetto* no longer refers to a general notion or idea that we can represent clearly and distinctly, but instead designates existing things: i.e. individuals where they themselves are definable by their events rather than through properties or an identity. The examples Deleuze uses in *The Logic of Sense* and TF—which he takes from Leibniz—are that if "Caesar crossed the Rubicon" is a true statement, then "crossed the Rubicon" must be contained in the concept "Caesar." Similarly, "to live in a garden, to be the first man, to sin" all designate the concept "Adam" (LS 114).

As Smith explains, Leibniz thereby transforms philosophy by moving beyond Aristotle's logic and metaphysics. In Aristotle and afterwards, concepts are distinct from individuals

because the former take the form of generalizations while the latter are particulars or singularities; but Leibniz extends the concept to the individual. This departs from Aristotle's metaphysics which include a principle of *anankstenai* or stopping the analysis of a concept after a certain point. Instead, the Leibnizian analysis is *infinite* because it not only requires that we account for what a thing undergoes, but also requires us to account for the ways that the thing relates to and affects other things: e.g. the event of Caesar crossing the Rubicon is directly related to the creation of the Roman Empire. It is also indirectly related to all other events in the world leading up to that point as well as all every event that resulted from the creation of the Empire. An apparent difficulty of Leibniz's position, then, is that any conceptual analysis of any subject necessarily includes the entire world. Leibniz's solution to the apparent impossibility of his position is the articulation of expression, which states: "the concept of the subject expresses the entirety of the world." He couples expression with the concept of *point-of-view* and by doing so he precedes Nietzsche in the development of perspectivism in philosophy.[3] The claim then becomes: the subject expresses the entirety of the world but only from a particular perspective. Smith is clear that Leibniz does not resort to relativism where everything becomes relative to the point-of-view of the subject. The point-of-view is prior to the subject and "the subject is constituted by the point of view; points of view are the sufficient reason of subjects" (Smith 2010: 142–143). Accordingly, the determination of the point-of-view is a function of that *finite* part of the world which we call the *body*. And the body can now be defined as a particular point-of-view through which the infinity of the world is expressed.

Such a framework gives Deleuze a way to account for how bodies are expressed or actualized within the world. But how do we go beyond cartography to overcome the problem of the body and account for what those bodies can do; which is to say, how do we account for

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things in terms of all their possible events? One option could be to account for all the events

pertaining to a certain concept: "to walk" might be an event which applies to humans but not to

oak trees. However, for Leibniz, we cannot adequately comprehend things through

categorization. We might correctly say that Adam and Caesar are both men, but a concept like

"men" is insufficient for comprehending the concepts Adam or Caesar. Because of this, Deleuze

locates a third *principle of indiscernibles* in Leibniz that says: "there is one and only one thing

per concept." (DR 12) Although this principle enables the infinite analysis we are led back to the

problem where even if we limit the analysis to a body itself, then we must be able to account for

the infinitesimal changes of relations that bodies are continuously undergoing through processes

of differencing. Yet, such an infinite analysis is exactly what Deleuze needs to account for what

bodies can do, and by extension it is what we would need for a genuinely nomadic

posthumanism.

Leibniz's famous solution for reconciling the infinite analysis with the determination of

possible worlds was to suggest that there are infinite compossible worlds which are not logically

incompatible (e.g. one in which Adam is not a sinner), but where only the best possible world is

actualized thanks to a harmony that God has pre-established (Smith 2010: 144). Of course, a

theological solution would not be acceptable for Deleuze or any other thinkers in the post-

Nietzschean tradition which seeks to challenge and overthrow all allegedly fundamental

concepts. Indeed, while Deleuze praised Leibniz for being the first philosopher of the event, he

would repeatedly recount Leibniz's "shameful declaration" that philosophy should create new

truths and concepts, but only if they do not "overthrow" existing sentiments (LS 116; see also N

104). Even so, while Leibniz imposed a limit on his own philosophy he also developed the

means for overcoming it. Those limitations and how Deleuze overcomes them to move from

ontological monadology to non-ontological nomadology will be the subject of the next section.

From Monad to Nomad: Leibniz's Limit and the Need for Folding in Nomadology

In addition to his theology and unwillingness to challenge prevailing sentiment, Leibniz

further compromises with transcendence for Deleuze in that his monadology resorts back to

identity through the substance ontology of the monad. The individual concepts which express the

infinity of the world are ultimately reduced by Leibniz to "simple substances" that still lack any

attributes (e.g. parts, extension, shape) and are therefore unable to change themselves and cannot

be altered externally. Instead they are enclosed and "Monads have no windows through which

anything could enter them or depart from them" (Leibniz 2014: 14–18). Leibniz's reliance on the

monads is, for Deleuze, a type of *infinite representation* where the infinite process of

differencing in the principle of sufficient reason is subordinated to the principle of identity

through the identities of the monad (DR, 49). As a result, Deleuze claims that Leibniz ultimately

confuses "the concept of difference-in-itself with the inscription of difference in the identity of

the concept in general" (DR, 50). Since part of Deleuze's aim in DR is to articulate a concept of

difference-in-itself without resorting to conceptual difference, difference cannot be subordinated

to the identity of the concept (DR, 26-27). Accordingly, the subordination of the processes of

differencing to identity is unfounded as Deleuze argues that identity itself is subordinate to the

difference principle or difference-in-itself. The way to overcome the principle of identity for

Deleuze is to comprehend existing things not through identity, but through continuity (Smith

2010: 149). What this requires is a way to shift from the monad to the nomadic, which Deleuze

locates in Leibniz's calculus. Thus, even while Leibniz places a limit on his own philosophy, he

also provides the means for overcoming that limit: for overtaking monadology with nomadology.

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Leibniz's infinitesimal calculus provides the means for comprehending the continuity between things without reference to any determinate terms. A fundamental operation of the calculus is differentiation which allows us to determine the rate of change at a given position in an infinite series expressed as the curvature of a line in a function. Leibniz views curves as infinitangular polygons where continuity is defined as "a variable ranging over an infinite sequence of values" (Duffy 2010: 91). Leibniz proposes the differential relation as a way to determine the rate of change (i.e. slope of the curve) over an infinitely small duration (i.e. at a given instant). The relation is the quotient between differentials (dy/dx) where the differential is taken to be an infinitesimal quantity or "an infinitely small nonzero increment" on either the x or y axis (Duffy 2010: 91–92). In using infinitesimal numbers to make finite determinations, Leibniz's calculus is as revolutionary as it is surprising. While it works for accurately determining rates of change, the infinitesimal was not rigorously defined by Leibniz and seems to contradict our understanding of mathematics through algebra and arithmetic. That is, the infinitesimal, by definition, lacks a quantity and is conceptually no different from zero in that respect. However, it is functionally different from zero in that any division by zero ought to yield zero and yet the stipulation of the infinitesimal makes the calculus possible (Duffy 2010: 96). Accordingly, the infinitesimal was the subject of suspicion for centuries and it was not given a rigorous foundation until the 1960s (Duffy 2010: 98).

The development of the calculus marks a shift from algebra which makes it possible to account for continuous change that is not reducible to the identity of the terms involved. In TF, Deleuze writes:

To be sure, in a fractional number or even in an algebraic formula, variability is not considered as such, since each of the terms has or must have a particular

value. The same no longer holds either for the irrational number and

corresponding serial calculus, or for the differential quotient and differential

calculus, in which variation becomes presently infinite (TF 17).

The shift from algebra to calculus was only part of a broader shift from thinking about

mathematics in relation to geometric objects toward thinking about relations between numbers as

well as symbols. Such a shift was monumental because geometry had been the standard from

Euclid until the 17th century. We can see its influence in the geometric method of Spinoza's

Ethics and even Isaac Newton adhered to it despite having invented the calculus himself

independently of Leibniz.[4] As Simon Duffy argues at length in relation to Deleuze's

appropriation of 17th-19th century developments in mathematics in TF, the shift itself would lead

to the development of the concept of the function, which was introduced by none other than

Leibniz although it only later developed its contemporary meaning as "a relation that uniquely

associates members of one set with members of another set." The expression of the differential

relation as a function was developed by Euler which replaced the differential with the derivative.

As a function, the calculus no longer needs to be conceptualized through the geometric curvature

of infinitangular polygons but can be understood through the changing relations of sets of

numbers (Duffy 2010: 98). The takeaway here is that for Deleuze the development of the

calculus and shift to thinking of mathematics in terms of functions can be used as a heuristic for

how philosophers think about metaphysics and epistemology (see also, Somers-Hall 2010).

As it concerns philosophy, the determination of terms through the differential relation is

what grounds Deleuze's understanding of empiricism—a term he uses to describe his own

philosophy. In ES, his first monograph on Hume, he declares: "We will call 'nonempiricist'

every theory according to which, *in one way or another*, relations are derived from the nature of

things" (ES 109). In contrast, for nomadology, the differential relation is a formulation of pure difference where differencing is not determined by the terms involved, but the terms themselves are determined through the process of differencing. As Smith puts it: "the differential relation is not only *external* to its terms (which was Bertrand Russell's empiricist dictum), but it also *determines* its term. In other words, difference here becomes *constitutive* of identity" (Smith 2010: 149).

Nomadology which conceives of things through differentiation is clearly a departure from traditional ontology which grounds being in God or substances, but how is it that nomadology replaces ontology itself? Could we not say that nomadology is a process or that differential ontology that understands being as becoming? I think we can see that it is not best understood in those ways if we recall Deleuze's other well-known formulation of empiricism in D, which I will quote in some detail:

> This geography of relations is particularly important to the extent that philosophy,
> the history of philosophy, is encumbered with the problem of being, IS. They
> discuss the judgement of attribution (the sky is blue) and the judgement of
> existence (God is), which presupposes the other. But it is always the verb *to be*…
> Precisely speaking, it is not enough to create a logic of relations, to recognize the
> rights of the judgement of relation as an autonomous sphere, distinct from
> judgement of existence and attribution…One must go further: one must make the
> encounter with relations penetrate and corrupt everything, undermine being, make
> it topple over. Substitute the AND for IS. A *and* B....Thinking *with* AND, instead
> of thinking IS, instead of thinking *for* IS: empiricism has never had another secret
> (D 56–57).

Here the movement from IS to AND is a movement from identification to conjunction and also an opening up of relationality that—as we have seen—carries it beyond what could be signified by the terms in question. Accordingly, what we have is not a formulation of being as becoming or even the articulation of being(s) through differencing. Instead, in the Nietzschean spirit that guided Deleuze's work, the call is an invocation to undermine and topple being. This call is not only directed at the concept of being but at any approach to philosophy itself with operates with the verb *be to* and seeks to understand something in terms of what it IS: in other words, it is directed at ontology. Nomadology as an empiricism which thinks with AND appears as the alternative to ontology. Deleuze provides an example of undermining the IS that comes about when we understand predication as a matter of events rather than attribution when he says: "I can no more reduce 'I travel' to 'I am a traveling being' than I can reduce 'I think' to 'I am a thinking being.' Thought is not a constant attribute, but a predicate passing endlessly from one thought to another" (TF, 53).

We have seen nomadology which uses the infinitesimal calculus as a heuristic for developing a philosophy of differencing that thinks with AND rather than IS. The previous example shows Deleuze using this nomadology to depart from the *Cogito*. We begin to come full-circle by following Ian Buchanan's claim that "according to Deleuze, the determination that *relations are external to their terms* is the condition of possibility for a solution to the empiricist problem: *how can a subject transcending the given be constituted in the given*?" (Buchanan 2000: 85) To put it slightly differently, if nomadology provides us with the means for theorizing subjectivity, how does it conceptualize subjectivity in a way that is appropriate for nomadic critical posthumanism? To answer that question, we must recall that while the infinitesimal

calculus provides Deleuze with a heuristic for nomadic thinking, he develops his nomadology through a concept of *folding*.

In the first section we saw that reckoning with the end of Man was a concern for the phenomenologists working in response to Nietzsche. Likewise, the concept of folding was introduced by Heidegger and Merleau-Ponty. In the introduction to ES, Constantin Boundas suggests that Deleuze's late work which centered on the fold and folding is an attempt to utilize their concepts to elucidate the processes of subjectivity. Deleuze's work, Boundas suggests, is not an attempt to radicalize phenomenology, but a "transition from phenomenology to nomadic sensation…" (ES 4–5). This transition is in part significant in that it signals a departure from both a dominant school of—and method for—doing philosophy in post-war 20th century French and German philosophy (see also van Tuinen 2010). But more importantly, by using folding to subvert phenomenology in favour of nomadology, Deleuze is able to avoid the *aporias* and crisis for philosophy itself that Heidegger and Derrida saw as a consequence of the end of Man. For Heidegger, even while phenomenology aims to uncover the existential condition of humanity through the analytic of *Dasein* and to articulate the fundamental question of philosophy as the question of the meaning of Being, it eventually leads him to declare the end of philosophy and the coming dominance of the sciences which he regards as separate and independent from philosophy (Heidegger 1993: 432–433). Similarly, for Derrida, phenomenology which finds that Being is empty also signals the end of Man for philosophy as: "Man is that which is proper to Being, which speaks into his ear from very near. Being is that which is proper to man" (Derrida 1969: 54). Thus, phenomenology points toward the need for philosophy that can think beyond the figure of Man as the figure of subjectivity that has dominated the Modern era, but is largely unable to do so itself because it is grounded in consciousness. In contrast—as Boundas again

points out—nomadology through folding departs from the *Cogito* which allows for the investigation of "nonhuman" or "superhuman" worlds (ES 4–5).

While Deleuze does not develop a full account of folding until TF, he first utilizes the term with an evocative example in a section on Spinoza in ATP that illustrates its role in thinking about nonhuman worlds. He and Guattari reference Geoffrey Saint-Hilaire's pre-Darwinian theory that species of animals could evolve over time. For Saint-Hilaire, they write, a vertebrate could become a cephalopod by folding it's head back fast enough while moving the pelvis to the neck and extremities outward "like 'a clown who throws his head and shoulders back and walks on his head and hand.' *Plication*" (ATP 255). Deleuze uses the example again in F as part of a broader discussion where he shows that folding was used by early biologists—including Charles Darwin—to explain the commonalities and variations among life-forms (F 128–129).

In TF, Deleuze once again uses Leibniz's calculus to theorize the fold. For our purposes, we can note that the calculus conceives of things in terms of rates of change that are expressed through the slope of a curve. By better approximating the slope of a curve we better express the change that is occurring. We might imagine that we could identify static points on a curve, but because the calculus allows for higher-order derivatives or the differentiation of the differential, any point is itself expressible as a process of change. For example, if we have a function between change in position and change in time (displacement), the first derivative will show us changes in terms of velocity (rate of change of displacement), while the second derivative will show change in terms of acceleration (rate of change of velocity).[5] For Deleuze, the calculus leads to the insight that there are neither points nor discrete units of matter. Drawing from one of Leibniz's plays, Deleuze quotes his assertion that:

The division of the continuous must not be taken as of sand dividing into grains,

but as that of a sheet of paper or of a tunic in folds, in such a way that an infinite

number of folds can be produced, some smaller than others, but without a body

ever dissolving into points or minima." In place of points or separate objects, the

fold as the basic unit of matter is "a simple extremity of the line (TF 6).

Deleuze suggests that in taking the fold to be a basic unit which prioritizes lines characterized by their movement, variation becomes primary so objects themselves become functional where: "The new status of the object no longer refers its condition to a spatial mold—in other words, to a relation of form matter—but to a temporal modulation that implies as much the beginnings of a continuous variation of matter as a continuous development of form." Under this new conception, Deleuze asks us to conceive of objects themselves as events. Borrowing a term from Bernard Cache, he suggests that the object now becomes the *objectile*. And Deleuze points out that: "If the status of the object is profoundly changed, so also is that of the subject" (TF 19).

Conclusion: Human to Posthuman, Chaos to Brain, Subject to Eject

As we have seen, the figure of the human as *Cogito* is fundamentally a conscious being characterized as a subject encountering the world as object. Under Deleuze's nomadological framework this figure becomes untenable. Nomadic philosophy adds to the posthumanist critique of the figure of Man by undermining the fundamental concepts of the human: consciousness, being, and subject/object. Nomadology replaces consciousness with embodied thinking and sensation, AND ontological being with the event. With the transformation of the object to the objectile, Deleuze finds a correlative transformation where the subject as point-of-view becomes the *superject* where the point-of-view is a point-of-view on variation rather than objects (TF, 20).

Yet, by his final book WP, written with Guattari, the superject itself is only one part of a tripartite structure of subjectivity.

The figure of subjectivity that Deleuze and Guattari describe in the conclusion of the book is what they call the Thought-brain (WP 185–186). Before discussing this figure we should recall that our starting point was Gruber's argument that Deleuze's work on the brain might lead us to (de)ontologize subjectivity in a way that could be of use to the neurosciences. Gruber's article is itself a response to an earlier article by Nikolas Rose which also centers on Deleuze, the brain, and neuroscience. I want to recount a couple of their central claims very briefly in order to say what the Thought-brain is *not*. Rose's argument is that for Deleuze: "It is the brain that thinks and not man…" (Rose 2016: 159). The phrase comes from the conclusion of WP and for Rose it means that the brain-organ is the locus of subjectivity and thanks to new technologies in neurosciences which—to some degree—permit researchers to determine the neural mechanisms in the brain that cause or underpin thinking, we now have a medium by which we can directly observe subjectivity itself. This claim, Rose contends, is what Deleuze may have meant by "that enigmatic phrase 'the brain is a screen'" (Rose 2016: 159). There are, however, two major problems with this reading of Deleuze. First, by taking the brain as an object that could be read, Rose resorts to the same form of representational thinking that Deleuze sought to overcome. Second, in isolating the brain as an organ, he is limited to an organic conception of the body which is at odds with Deleuze's aim of understanding a body in terms of what it does. Gruber notes both of these and, as we have seen, posits a nomadic body as a more open and undetermined model for thinking subjectivity beyond the form of man. Yet, if Rose's brain is too representational and organic then Gruber goes too far in the opposite direction. He tries to reconcile Deleuze's comment that the brain is a screen with another "famous Deleuzian saying"

that one "make oneself a Body without Organs." The result, he says, is a "concept of brainlessness, or the body's full braininess in the positive version" (Gruber 2019: 61). Such a paradoxical formulation is—I think it is fair to say—vague if not outright untenable. A brainless subject seems unlikely given that Deleuze and Guattari's final work is dedicated to articulating an account of subjectivity through the Thought-brain. As I discussed earlier, Gruber's error seems to arise from equivocating the BwO to the body and concluding that Deleuze wants to deny the existence of organs.

Although Rose and Gruber err in their reading of Deleuze's (and Guattari's) understanding of the brain, the errors are productive. Somewhat ironically, both Rose and Gruber note the familiar criticisms of vagueness made against attempts to develop theories in relation to existing things or the sciences using Deleuzian concepts. Yet both understand Deleuze as a thinker who is reducible to "intentionally ambiguous" and enigmatic phrases and sayings (Gruber 2019: 65). However, as we have seen, Deleuze's work is a rigorous engagement with the history of philosophy that aims to identify and overcome the most fundamental concepts and presuppositions of the discipline. In doing so, Deleuze, like other major figures of the 20th century, saw the end of the human as the *Cogito*; but unlike those thinkers who saw that end as a crisis which might spell the end for philosophy itself, Deleuze saw an opportunity for philosophy to reinvent itself with new figures resulting from new approaches to thinking. Nomadology which overcomes ontology is a new model for thinking subjectivity and we could see Deleuze and Guattari's Thought-brain as the starting point for developing such figures that cannot be reduced to a saying like the BwO. Accordingly, I will conclude with a brief outline of their account of the brain.

The Deleuzeguattarian Thought-brain is both a philosophical figure of subjectivity and the existing finite part of the world where philosophy, art, and science meet. It forms part of their larger argument which is an attack on opinion and a defense of thinking. Opinions are those beliefs which are uncritical or else grounded in appeals to common sense and they are difficult to resist because they shield us from the *chaos* that is the world we experience without understanding it. Yet, wherever there is opinion there not thinking. *Thinking* happens by creating art, philosophy, or science. The three are distinct but meet in the brain and "are not the mental objects of an objectified brain but the three aspects under which the brain becomes subject, Thought-brain" (WP 210). For subjectivity which now concerns variation rather than objects: philosophy brings with it *variations* of associations for the creation of concepts, science concerns itself with the *variables* that are used to determine functions, and art develops *varieties* of compositions that elicit sensation (WP 202). Through philosophy the brain-subject becomes the *superject* which says "I conceive" rather than "I think" (plane of immanence). Meanwhile, through art it says "I feel" and becomes the *inject* where sensation is a type of contemplation as self-enjoying (plane of composition) (WP 212). Finally, through the activity of knowing it says "I function" and becomes the *eject* "because it extracts elements whose principle characteristic is distinction, discrimination: limits, constants, variables, and functions, all those functives and prospects that form the terms of the scientific operation" (plane of knowledge [reference]) (WP 215).

A full account of the Thought-brain as the junction of philosophy, art, and science is beyond the scope of this paper, but this brief outline should show how Deleuze and Guattari use it to develop a nomadic posthumanist account of subjectivity that rests on neither the terms of the human nor the verb *to be*. Instead, there is conceiving and sensing and knowing and…

Philosophy, art, and science go beyond their own terms so that thought cannot be neatly

categorized into the disciplines. Deleuze and Guattari close by envisioning a future where each

recognizes the need for what it is not and the result is a "'people to come' in the form that art, but

also philosophy and science, summon forth: mass-people, world-people, brain-people, chaos-

people—" (WIP 218). Here we come full-circle as for Braidotti, "posthuman ethical praxis

involves the formation of a new alliance, a new people." (Braidotti 2018: 51) The significance of

moving beyond the human is that it has continually missed more people than it has included and

the "people yet to come" refers not only to future people but to those currently living and in the

past who have been neglected by Modern accounts of subjectivity. Yet, as I have argued, we

cannot make the move beyond the human without also going beyond the fundamental concepts

that constitute the human. As we have seen, on Deleuze's account, this does not so much require

a neo-Spinozist ontology as it does a neo-Spinozist/neo-Leibnizian nomadology. As Deleuze

remarks in the final sentence of TF: "We are discovering new ways of folding, akin to new

envelopments, but we all remain Leibnizian because what always matters is folding, unfolding,

refolding" (TF 137).

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[1] I use the following abbreviations for references to Deleuze's works: "ES" for *Empiricism and Subjectivity*, "NP" for *Nietzsche and Philosophy*, "DR" for *Difference and Repetition*, "LS" for *The Logic of Sense*, "DI" for *Desert Islands*, "SPP" for *Spinoza, Practical Philosophy*, "F" for *Foucault*, "N" for *Negotiations*, and "TF" for *The Fold*. For Deleuze and Guattari's *A Thousand Plateaus*, I use "ATP". For Deleuze and Parnet's *Dialogues*, I use "D".

[2] Deleuze and Guattari do devote a plateau to nomadology in ATP but that account revolves around the politics of the war machine and it is only in TF that Deleuze develops a full account of the concept.

[3] Note that while Leibniz's point-of-view is a type of perspectivism, Deleuze claims that perspectivism itself is not fully developed until Nietzsche (LS 174).

[4] Note that Newton's calculus was not infinitesimal and instead functioned through what he called fluxions, but it is Leibniz's notation that would eventually become the standard.

[5] The third derivative of position which shows rate of change of acceleration is called jerk. We can also take the fourth, fifth, and sixth derivatives which are called snap/jounce, crackle/flounce, and pop/pounce respectively.

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