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Whence Intensity?: Deleuze and the Revival of a Concept

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Abstract

Deleuze revives and centralizes the tradition of thought on the nature of intensity in Western ontology. The chapter sketches the history of the concept of intensity from Aristotle through the Medieval natural philosophers to expose some early episodes in the history of its increasingly quantified understanding. It is groundwork for understanding Deleuze's conception of intensity in relation to philosophical and scientific tradition. Notably, his conception insists on the philosophical necessity of a conception of intensity as independent from, or preceding, its coordination with, or expression in, extension. Thus, Deleuze's ontology does not positively employ a contemporary scientific notion of intensity.

Whence Intensity?: Deleuze and the Revival of a Concept

Intensities or intensive magnitudes, such as temperatures and speeds, are part of the physical descriptions of the world offered by the natural sciences. Scientific accounts of intensity have their roots in philosophical accounts, specifically in the ontologies developed in the philosophies of Medieval Europe. In Western philosophy since that period, there developed a minor tradition of philosophical thought about intensity, generally in the context of ontologies of quality and quantity. In *Difference and Repetition* and several other texts, Gilles Deleuze implicitly revives, enriches, and centralizes this lesser tradition of ontological thought on the nature of intensity in

Western philosophy. However, Deleuze rejects what he takes to be neutralizing accounts of intensity found in its treatment in much of Western philosophy. On his view, philosophical accounts of intensity that understand it as quality, or as extended quantity, fail to capture the specific character of intensity and its necessarily ineliminable structuring difference.

In the context of the debates on the concept of intensity, that concept refers to the intensification or remission of a quality, in Medieval terms, that is, to its becoming more or less of itself. The term 'intensity' in Deleuze's writings generally refers to this intensive change in a quality. Moreover, for Deleuze, although intensity is the intensification (or remission) of a quality, it is important to note that for this very reason intensity and quality ought not to be identified. A quality's becoming more or less of itself should not be confused with that quality itself. For example, the quality sweet is not identical to a sweetness becoming more or less sweet. Thus, any ontology of intensity that confused it with quality per se, instead of providing an account of the intensive change in a quality, would be fundamentally misleading, on Deleuze's view.

This emphasis upon the intensification or remission of a quality accords both with the history of the concept and with Deleuze's general interest, stressed throughout his corpus, in the ontology of becoming. The intensive change in a quality is a central concern of the tradition of Medieval philosophy, and hence a resource for Deleuze's reflections upon many sorts of becoming. Thought on intensity has a long history and one to which Deleuze refers at several points in his work. Although its complete history with respect to Deleuze's philosophy is yet to be recounted, some of its chapters already have been told admirably.¹ This is so especially for the philosophy of intensity found in the

works of Spinoza, Kant, Hegel and Bergson. This chapter's aim is to sketch some of the earlier episodes in a history of the concept of intensity that are less studied or known by philosophers interested in Deleuze's metaphysics. These episodes concern, first, the source of the concept of intensity in Aristotle's metaphysical philosophy and, second, several notable Medieval receptions of this Aristotelian heritage and their ontologies of intensity devised in response to Aristotle. Although the chief aim of this essay is thus to begin to supply a missing chapter in the scholarship on Deleuze's ontology, namely his relation to Medieval thought on the ontology of intensity, it neither exhaustively investigates the complete relation of Deleuze to Medieval accounts of intensity nor provides a definitive analysis of Deleuze's renewal of the concept of intensity. It tackles the more restricted goal of presenting some of the hitherto obscure but genuine sources of Deleuze's thought on intensity, in the hopes that this will serve the larger project of situating Deleuze's philosophy more amply within that version of the history of Western philosophy to which he refers.

At stake in the question of the ontology of intensity is the fundamental priority granted it by Deleuze—and presumably by Guattari, as well, in the co-authored books. Scholars have disagreed about the question of the centrality or fundamental nature of intensity in Deleuze's ontology. For instance, in the Anglophone scholarship, John Protevi and Peter Hallward differ on whether the concept of intensity is to be identified with that of the virtual in Deleuze's thought, and on how these two concepts relate to the paramount concept in Deleuze's ontology, that of difference.ⁱⁱ Other scholars construe Deleuze as a kind of "materialist," partly on the grounds of his frequent apparently valorizing inclusion of language, terms and concepts from the physical and formal

sciences in his philosophy.ⁱⁱⁱ Determining more clearly the senses in which Deleuze employs the notion of intensity, and in what ways his usages retain or relinquish established prior senses from the history of philosophy surely will be pertinent to some of these continuing debates.

Deleuze cites sources and scholarship on this Medieval discourse on intensity in a number of works, including in some of his major texts co-authored with Félix Guattari.^{iv} Although references to the concept of intensity, even central ones, appear in almost all of Deleuze's texts, the chief works to explicitly refer to Medieval philosophy of intensity are *A Thousand Plateaus* and *What is Philosophy?* It would be a significant oversight, though, not to include also mention of the capital role of the concept of intensity in *Difference and Repetition* and *Bergsonism*. Accordingly, this chapter takes these four texts as its primary foci among Deleuze's writings.

Deleuze's most cited sources on Medieval philosophy of intensity are Pierre Duhem's multi-volume *Le système du monde* (1913-19) and Gilles Chatelet's *Figuring Space: Philosophy, Mathematics, and Physics (L'Enjeux du mobile* (1993)), particularly "Chapter II: The Screen, the Spectrum and the Pendulum: Horizons of Acceleration and Deceleration" ("*La toile, le spectre et le pendule: Horizons d'accélération et de ralentissement.*") Nicolas Oresme (1320-1382), one of the chief philosophical figures in France in the second half of the XIVth century,^v is cited by name in *A Thousand Plateaus* and *What is Philosophy?* Oresme's text, *Tractatus de configurationibus qualitatum et motuum (Treatise on the Uniformity and Difformity of Intensities)*, is one important locus for the Medieval treatment of the concept of intensity. We will not address here the many

references to Medieval European philosophy in Deleuze's work that do not bear directly upon the question of the ontology of intensity.

But what importance should be granted to the problem of intensity, quite apart from its salience to the task of interpreting and assessing the ontology of Gilles Deleuze? Herman Shapiro astutely notes that our contemporary inclination is to think about the matter in an entirely quantified way. In other words, we take for granted a notion that neither early thinkers on the topic nor Deleuze assume. This is the notion that qualitative intensification is sufficiently and ultimately best understood in thoroughly quantitative terms. The modern reader, Shapiro holds, fails to even discern the problem of ontology of intensity because qualitative intensities are already translated or transposed into purely quantitative terms. About this general contemporary indiscernibility, he writes that the modern reader tends to understand the qualitative "more" and "less" to be expressed correctly and adequately in quantitative terms. For example, Shapiro claims, presumably referring to the thermometer, that when thinking of heat, we "measure its degree of intensity through the use of an instrument which conveniently translates the quality into a quantity. We have not, that is, *solved* the problem of intension and remission; we have, however, successfully *by-passed* it."^{vi} Is this the case? In what sense has the problem been skirted, instead of solved? The physical sciences provide us with accounts of temperatures, pressures, altitudes and other intensive quantities expressed in purely quantitative terms. Why should we think that such thoroughly quantitative expressions of phenomena traditionally termed "intensities" have not, in fact, supplied us with the most correct and rigorous account of their nature? What ontological questions remain which have not been solved by the total translation of qualitative intensities into quantities?

One purpose of this chapter is to supply some of the early philosophical history of the concept of intensity as a basis for eventual informed reply to such questions. Revisiting the history of the ontology of intensity can be part of a preliminary effort, then, to assess the state of contemporary philosophical understandings of intensities, as distinct from accounts of intensity as offered in and employed by the contemporary physical sciences. Philosophers of metaphysics and ontology, in other words, may look to the philosophical history of the concept of intensity so as to identify the complexities of the concept that show up in the tale of the triumph of quantitative expression of intensity that today appears so evidently adequate.

1. The Aristotelian Antecedents of the Concept of Intensity

For our purposes, there appears no stronger source of contemporary scholarship on Medieval ontologies of intensity, or on the Medieval debates over “the latitude of forms,” than the highly instructive research of Jean-Luc Solère.^{vii} His work and the work of Edith D. Sylla, John Murdoch and Marshall Clagett are the main touchstones for the following sketch of some early episodes in the history of the concept of intensity in Western philosophy.^{viii}

As we have noted, the notion of intensity, and the term itself, stems from Medieval European philosophy. But its antecedents are to be found in ancient thought. Specifically, it was Aristotle whose work set out a problem for which the concept of intensity became the main solution in Medieval philosophy. Medieval thought saw the flourishing of work on the question of how to understand qualitative change, or cases in which a quality becomes more or less of itself: more or less hot, more or less bright, more or less sweet, more or less loving.

Specifically, the Medieval debate on what is termed the ‘intensification,’ or *intensio* and ‘remission,’ or *remissio*, of qualities responds to Aristotle’s view that “some qualities, as accidental beings, admit of the more and the less.”^{ix} On this point, the pertinent textual source is *Categoriae* 8, where Aristotle writes:

“Qualifications admit of a more and a less; for one thing is called more pale or less pale than another, and more just than another. Moreover, it itself sustains increase (for what is pale can still become paler)—not in all cases though, but in most. It might be questioned whether one justice is called more a justice than another, and similarly for the other conditions. For some people dispute about such cases. They utterly deny that one justice is called more or less a justice than another, or one health more or less a health, though they say that one person has health less than another, justice less than another, and similarly with grammar and the other conditions. At any rate things spoken of in virtue of these unquestionably admit of a more and a less: one man is called more grammatical than another, juster, healthier, and so on.”^x

It should be noted that “sustaining increase” “it itself” is the sort of change at issue, here, as Aristotle specifies elsewhere, as well: “Again, a thing is called more, or less, such-and-such *than itself*; for example, the body that is pale is called more pale now than before . . .”^{xi} So, the concept of intensity is not devised to solve a problem with respect to comparison of quality or qualitative change between two qualities in two differing beings or subjects, but to craft an account of the ontology of qualitative change within a single being or subject. Moreover, the qualitative change at issue is not the sort of change that brings about the conversion of one quality into its contrary quality. Nor

does it cause the subject of the quality to degenerate.^{xii} As Solère writes: “For Aristotle, intensification is in fact a limited alteration that does not make the species change.”^{xiii}

Of course, not all kinds of beings, for Aristotle, admit of “the more and the less.” Neither substances nor quantities do.^{xiv} What kinds of beings admit of “the more and the less,” according to Aristotle? Some kinds of qualities do. The kinds of qualities that admit of the more and the less are: (i) states and dispositions (e.g. virtue); (ii) affections of bodies (e.g. sweetness, heat); and (iii) affections of the soul (e.g. anger).^{xv} But not all kinds of qualities admit of the more and the less. For example, geometrical shapes do not.^{xvi} That a quality admits of a more and a less implies that some type of change must be taking place; but how ought this change to be understood, for Aristotle? To grasp his answer to this question, we must return to his well-known classification of types of change or motion: “There are six kinds of change: generation, destruction, increase, diminution, alteration, change of place.”^{xvii}

Among other sorts of change or motion, Aristotle here distinguishes between two strictly different kinds. One kind is called ‘increase,’ along with its contrary, ‘decrease’ or ‘diminution,’ and the other kind is called ‘alteration.’ (‘Increase’ is sometimes also translated as ‘augmentation.’) These two different sorts of change apply to two different sorts of categories. The kind of change or motion called ‘increase’ or ‘augmentation’ is reserved for quantity. “Motion in respect of Quantity has no name that includes both contraries, but it is called increase or decrease according as one or the other is designated.”^{xviii} Increase or augmentation also has several essential requirements. That which increases or augments must have distinct parts, which permit divisibility, and additive parts, which are characteristic of quantity.

The kind of change or motion called ‘alteration,’ on the other hand, is reserved for quality. “Motion in respect of Quality let us call alteration, a general designation that is used to include both contraries, and by Quality I do not here mean a property of substance (in that sense that which constitutes a specific distinction is a quality) but a passive quality in virtue of which a thing is said to be acted on or to be incapable of being acted upon.”^{xix} As is clear in the continuation of the passage on the six kinds of change or motion, Aristotle explicitly argued that alteration is sort of change distinct from all other five sorts of change. Most importantly, he especially separates analytically alteration from increase and decrease. He writes:

“That the rest are distinct from one another is obvious (for generation is not destruction, not yet is increase or diminution, nor is change of place; and similarly with the others too), but there is a question about alteration—whether it is not perhaps necessary for what is altering to be altering in virtue of one of the other changes. However, this is not true. For in pretty well all the affections, or most of them, we undergo alteration without partaking of any of the other changes. *For what changes as to an affection does not necessarily increase or diminish—and likewise with the others.* Thus alteration would be distinct from the other changes. For if it were the same, a thing altering would, as such, have to be increasing too or diminishing, or one of the other changes would have to follow; but this is not necessary. Equally, a thing increasing—or undergoing some other change—would have to be altering. But there are things that increase without altering, as a square is increased by the addition of a gnomon but is not thereby

altered; similarly, too, with other such cases. Hence the changes are distinct from one another.”^{xx}

That is, although alteration is a kind of change rightly described in terms of “the more and the less,” it is *not* a species of increase or decrease, terms that apply only to quantities. Alteration of a quality is rightly described in terms of “the more and the less,” but “the more and the less” of a quality are not instances of increase or decrease. A thing can be generated, destroyed, increase, decrease and change place without altering. Correlatively, a thing can alter without also being generated, destroyed, increased, decreased or changing place. For Aristotle, the fact that a quality can alter independently of all of these other kinds of changes demonstrates that the alteration of a quality is a distinct sort of change.

What is of special importance here is that, for Aristotle, the alteration that is a quality’s change in respect of the more and the less is a kind of change that is not quantitative. It is, rather, to be understood in entirely qualitative terms, and by means of the classical fundamental Aristotelian concepts of act and potency. The account is given in terms of the concepts of contrary qualities, act and potency, and preponderance: “On his purely qualitative account, the more and the less [of a quality] depend only on the preponderance of a quality over its opposite”^{xxi} This preponderance, or “the more and the less,” is explained “in terms of act and potency: “. . . the more its contrary is in potency, the more the quality is actualized.”^{xxii}

This conception is supposed to be a rigorously qualitative notion of change, which “results only from the interplay of potential and act, and is totally distinct from the processes implying a more and a less that are quantitative. . . . Alteration is a change that

can take place independently of any other movement, in particular without any quantitative modification. This movement thus must be conceived in itself, solely in terms of the actualization [*de passage à l'acte*] of what was already present in potential form, without any extrinsic addition whatsoever of anything new.^{xxiii} A white thing may become “more” white and a soul may become “more” charitable but, as alterations, these changes must be “the gradual elimination of the contrary and the actualization of that which of the quality remained potentially.”^{xxiv} Notably, such changes, on an Aristotelian view, could not be described in terms of the addition of external parts, as such additions would imply quantity, and often a preexisting quantity. On the Aristotelian position, the growth in whiteness of a thing already white cannot be conceived of as the adjunction of supplemental white parts that are added to an initial whiteness. The white thing that whitens cannot be conceived of as having parts of white added to it, as if its growth resembled the growth in extension of a line to which separate and external linear segments are adjoined. Of course, the same holds in the case of qualitative remission and its comparative non-resemblance with the subtraction of extended quantities.

This notion of change of a quality over time that is described in terms of “the more and the less”—but where a “more” and a “less” are understood to be strictly non-quantitative—serves as the basis for ontological puzzles for which the Medieval concepts of intensity are proposed solutions. An extremely fertile debate over the ontology of intensity develops in the Medieval period, set off by problems with the ontology of Aristotle’s purely qualitative notion of “more” and “less” of a quality. However, the Medieval solutions that come to prevail actually challenge and abandon this qualitative notion construal of “the more and the less.” In fact, this allegedly purely qualitative

version of alteration is treated to increasingly quantitative explanation, ending in the complete quantification of quality and its becoming, according to Solère. As he puts it, “Everything in the Aristotelian bases and treatment of the problem opposed augmentation [or increase] and *intensio*. However, the Medievals brought them as close together as they could.”^{xxv}

2. Intensity and the Medieval Tradition of Aristotelian Commentary

Aristotle bequeathed to Medieval thought the problem of how qualitative change rightly could be described in terms of ‘the more and the less’ and yet not be quantitative. The problem was to determine the nature and source of the variation described in the phrase “the more and the less.” Proposals for such an explanation struggled to identify the exact seat of the qualitative change under investigation: “. . . does intensification occur in the form itself, or in the subject?”^{xxvi} In Medieval usage “qualitative form” or, simply, “form”, designates a quality that is susceptible to intension and remission. The particular qualitative changes that prompted this question were intensifications of qualities of the first Aristotelian sort, such as charity, justice and health. When such a quality intensifies, does this quality not itself remain unchanged, with the subject of such a quality—namely, the charitable, just or healthy individual—doing the changing, rather than the quality itself? If the variation takes place in the subject alone, then the form or quality itself would remain invariable. If the variation takes place in the form or quality itself, however, some Medieval thinkers reasoned, the form itself must be thought to have some ‘latitude.’ What, exactly, is undergoing change in cases of intensification?

This sort of puzzle had theological implications in the Medieval period. The Aristotelian account of changes in states and dispositions in terms of alteration gave rise

to a particular Christian theological problem. The problem was whether charity could be increased in the human soul, and how to understand such increase if it is possible.^{xxvii} Prevalent theological understandings of human charity conflicted with the Aristotelian schema for conceiving of qualitative change in a human state or disposition such as charity. Two obstacles in particular were of importance. A dominant theological conception of human charity made it identical with the Holy Spirit, one of the three persons of God, itself. But if human charity is identical with the Holy Spirit itself, this yields an untenable result. For the Holy Spirit, being divine and therefore unchanging, should neither be subject to increase nor to alteration. Further, Aristotle's account of alteration bases it upon an ontology of qualities taken in pairs, in which each quality in the pair is the contrary of the other. A strictly Aristotelian account of the intension or remission of charity in a human soul, then, should imply that charity grows as its contrary quality diminishes. But this, in turn, would imply that charity has a contrary, a view that must be rejected on theological grounds; for "charity, as a divine gift, has no contrary."^{xxviii}

Solère here describes an early step in the gradual abandonment of Aristotle's purely qualitative notion of intensive change. This process of departure from Aristotle's theory of alteration turns in part on the question of whether qualities are species in themselves, such that were something to be added to or subtracted from them, those additions or subtractions would change their species or kind. Solère argues that intensification is progressively assimilated to increase, namely, to "an adjunction of a preexisting quantity," as Aristotle had understood increase.^{xxix} Some Medieval philosophers propose the solution that qualities are not fully determined species, but have

an internal “latitude” for additions or subtractions to occur in them. On this view, such qualities could undergo additions and subtractions without changing in kind. In this way, a thoroughly qualitative theory of intensive change begins to be moved in the direction of a quantitative explication. For with such theories of qualitative latitude, the addition of parts—for Aristotle, a characteristic feature of increase—is employed to understand alteration, a process of change in quality that is allegedly independent of quantitative change, as Aristotle had argued in *Categories*.

But, interestingly, at this stage, some partitive theories of the intensification of a quality actually separate the notion of a part from the notion of quantity. For Aristotle, of course, they are joined; as Solère specifies, Aristotle held that increase “(or diminution) can only occur where parts can be distinguished and subsequently added (or subtracted).”^{xxx} The innovation here, then, is the idea that a quality itself can have parts, or degrees, which divide it such that a kind of addition of parts or degrees of a quality, rather than parts or degrees of a quantity, is conceivable. Thus, the previously separated concepts of intensity and quantity are joined in the concept of an intensive quantity. But numerous theories of intensive quantity are developed, and elaborate disputes over their varying pictures of the growth and diminution of a quality abound in 14th century Europe, within the context of the emergence of a natural philosophy that began to be critical of Aristotle.^{xxxi}

Three Theories of Intensification

Scholars differ on the question of how to classify the many theories of intensity developed in the Medieval period. Solère divides Medieval theories of intensification into three types: theories of actualization, succession and addition. Edith Sylla and Herman

Shapiro adopt a different tripartite classificatory vocabulary, retaining the types of succession and addition, but using the category of “admixture” instead of actualization.^{xxxii} Anneliese Maier considers the two most important theories of intensive alteration to be those of succession and addition.^{xxxiii} For our purposes, we follow Solère’s designations, as the term “actualization” appears to capture well, and to retain, the Aristotelian foundation of theories of intensive alteration that explain it by appeal to an “admixture” of contrary qualities in a subject. A synopsis of the essentials of these theoretic approaches, with emphasis on Aquinas’s position, follows.

The Actualization Theory

The chief proponent of the actualization theory is Thomas Aquinas in the 13th century.^{xxxiv} On Aquinas’s view, alteration is the actualization of potential, rather than the addition of anything new. As to the question of the seat of change, and whether intensification takes place in the form or quality itself or in the subject it qualifies, Aquinas holds that quality itself does not vary. It is only “qualified things (*qualia*)” that are intensified or remitted.

Aquinas advances explicit objections to the additive theory. Confusing the increase in quality with the increase in a body is one source of error. This species of charge, namely, the claim that rival theories engage in a confusion of radically distinct kinds of growth and diminution, recalls the Aristotelian position. Even considered apart from any intensive change, the *apparent* extension of qualities found in ordinary expressions should not be considered metaphysically accurate. Thus, the white of a white surface and the time interval of an action, although they can be described as “large” or “long,” are not properly speaking quantitative realities.

Aquinas's chief objection amounts to questioning how charity could be augmented by addition of charity to charity. Addition requires distinct items to be summed, and distinction must be either by species or by number. But two instances of charity are not different in species, so they cannot be added as distinct species. They are not different in species because Aquinas holds that difference in species "follows diversity of objects," and hence would be a matter of increase as an extension to new objects. But charity is such that its increase cannot be described in terms of its extension to apply to more and more objects; this is because "even the slightest charity extends to all that we have to love by charity."^{xxxv} So, there can be no distinct charity to be added to an initial charity to extend its scope; its scope is already essential to its very identity as charity, and cannot be increased. Nor can charity be increased by addition on the basis of numerically distinct instances of charity. By contrast to specific distinction, determined in reference to objects, Aquinas holds that numeric distinction is a matter of the distinction of subjects. Thus, in order for two instances of charity to differ numerically, they must inhere in different subjects, as their accidents. But in that case, their addition would require two subjects to be added, which is not possible since the subjects in question are souls. Moreover, the issue at hand was how to understand the increase in charity in a single soul. Even if souls could be summed, Aquinas notes, "the result would be a greater lover, but not a more loving one."^{xxxvi}

How ought variation in quality to be understood, then? According to Solère, Aquinas's view Platonizes the Aristotelian position. Although a quality itself is immutable, variation occurs only in the participation of a subject in a quality. Intensive variation, then, is variation in the degree to which a subject participates in a quality. But

the position still retains an Aristotelian aspect, since Aquinas conceives of participation itself in terms of potency and act. Moreover, a subject can participate in a quality across a range of degrees; that is, a quality can be actualized to varying degrees depending on the degree to which the subject participates in it. The intensification of a quality, then, is a function of the progressive participation of a subject in a quality, that is, of the actualization of the quality through the subject's participation in it. Intensification also takes place along a range and has an endpoint or maximum. The limit to the actualization of a quality is to be located in the potency of the subject. Thus, Aquinas preserves the Aristotelian view that "a thing's possessing a quality in a greater or lesser degree means the presence or absence in it of more or less of the opposite quality."^{xxxvii} At the same time, actualization is lent a Platonic meaning since the change in the presence or absence of a contrary quality is understood ultimately to be a matter of the participation of the subject in a quality.

In the *Summa Theologica*, the positive analysis is carried out with specific reference to the question of whether charity can increase. Here, Aquinas argues that the quality of charity can increase in a soul, but it can "by no means increase by addition of charity to charity."^{xxxviii} In the case of charity, as an accidental form whose being is to adhere to its subject, it increases "solely by being intensified," that is, by being "more in its subject." Increase in charity is for charity "to have a greater hold on the soul."^{xxxix} Aquinas compares this to kinds of increase in knowledge: if knowledge increases by extension to new truths, this is an increase by addition, by "knowing more things." But we can also say that knowledge increases by intensification when someone "knows the same scientific truths with greater certainty now than before."^{xl} Aquinas also describes

intensification, this being “yet more in its subject,” as a “greater radication in the subject.”^{xli} He stresses that this radication is an increase in charity essentially, in charity as an accident, and that this increase is not to be explained by anything being “generated anew” or “beginning anew.”^{xlii} This latter rejected position, which suggests that intensification in some way would need to be understood in terms of the first two of Aristotle’s six types of change, is the theory explicitly adopted by several prominent 14th century rivals to Aquinas’s account.

The Succession Theory

This rival theory of intensification pursued the notion that variation in intensity should be conceived on the model of replacement or succession, and hence of the destruction and generation of forms of a given degree. Chief proponents of this succession theory of intensification were Geoffroy of Fontaine and Walter Burley in the early 14th century. For these thinkers, intensification is never a matter of addition or accumulation, but only of renewal.^{xliii} Intensification is “a succession of more and more perfect realizations of a form that remains the same in species or essence,” but does not remain numerically the same. In intensification, each form is entirely destroyed and is replaced by a new form of the same species but in a greater degree than the previous form. Importantly, there is thus no composition of new forms with prior forms, or with their parts, since prior forms are destroyed. Given the prevailing conception of quantity, according to which quantitative growth would require distinct pre-existing and persisting parts so as to permit divisibility and addition, in the succession theory the process of intensification is decidedly not quantitative. As Solère insightfully remarks, “here,

addition is not even a metaphor. We may only relate each form to an extrinsic measure.^{»xliv}

The Addition Theory

Another rival theory of intensification is the addition theory, developed in the 14th century by Franciscans and the later Oxford Calculators. To move towards an account of intensification in terms of addition is to approach a quantitative conception of it and thus to depart from Aristotle's understanding of alteration. According to the addition theory, in the intensification of a quality "[a] distinct reality is added to the quality's pre-existing degree, thereby creating a new unity."^{»xlv} Multiple routes away from Aristotle's purely qualitative account of qualitative intensification were adopted. The new additive theories of intensification offered ontologies of quality that began to lend quality the property of being divisible into parts. One common problem confronted in this progressive abandonment was whether there is a conception of quality such that a quality could be subject to the addition or subtraction of parts without its changing in species.^{xlvi} As mentioned, the critical innovation in the additive theory was the notion of an inherent variability *within* a quality, such that intensification would be change along an internal range of possible variation of a quality. This is the notion of a latitude, or *latitudo*, numerous conceptions of which were developed in the various additive Medieval approaches to the ontology of intensity. Hence, a central Franciscan objection to the actualization theory is that "[v]ariation in actuality (or being, *esse*) requires latitude in essence."^{»xlvii} It is the additive theory that eventually prevails generally, and is the theoretical source of the thoroughly quantified views of intensity of today. A quality itself comes to be understood as having parts that are susceptible to addition and subtraction

and thus are liable to being treated, ultimately, in quantitative terms of some sort. As Solère explains, “No longer regarded as intrinsically immutable and indivisible, qualitative forms will be regarded instead as subject to processes of construction and deconstruction part by part, and to calculation (although not in our modern sense).”^{xlviii}

3. Nicolas Oresme and the Geometricization of Quality

A special place in the history of the concept of intensity and Deleuze’s reception of it must be reserved for the Medieval French theologian, Nicolas Oresme (1320-1382).^{xlix} Oresme was an eminent theologian, “man of science,” and cosmologist, as well as being a major translator of Aristotle into French. His contribution to Medieval thought on intensity is to be found in *De configurationibus qualitatum et motuum*, most likely written in the 1350’s.¹ A. Maier characterizes “Oresme’s method of graphical representation” as “undoubtedly the most original achievement of the fourteenth century.”^{li}

Oresme develops a graphic representation of a quality in two ways so as to show both its extension and its intensity. They are aptly called “configurations,” as they figure both of these aspects together. Oresme also retains the terms “longitude” and “latitude” that were used in the debate on intensity that preceded him. He uses a horizontal line to represent the extension, in space or in time, of a quality, and a vertical line to represent the intensity of that same quality. These two lines, which also should vary to represent variation in the quality’s extension and intensity, actually form bounded planes or areas. It is these planes that represent intensities composed with extensities. The extension of a subject is represented on the horizontal line; the intensity of a subject is represented on the vertical line. The work of Gilles Châtelet clarifies the difference between Oresmian

configuration and Cartesian coordination.^{lii} Importantly, the longitude in Oresme is extensive, but it does not co-ordinate as the Cartesian abscissa does; in other words, it does not make an intensity correspond fully to an extensity. Oresme's longitude is not an abscissa and not a coordinate; it does not co-order, but composes into a surface area. Qualities are represented along two straight lines, which lines yield an entire area, not points or lines, as would a coordinate system.

The critical difference between the two modes of representation, here, is that the specificity of intensity and extensity are not identified and fused in the Oresmian diagram. The coordinate system, by contrast, reduces the two radically distinct realities of extensity and intensity to the one-dimensional line, that is, to an extension. Oresmian configurations retain the dualism of the two represented realities by composing them into the two dimensional area. Of course, the produced plane is indeed an extended geometrical figure, and in Oresme's hands proves to be additive and manipulable, as was any traditional geometrical figure of the time. But it did preserve the dual features of intensity and extensity in the two dimensions of the surface area used. By joining the two features in a single two-dimensional graphic, instead of in a line, according to Châtelet, "Oresme showed that he had succeeded in grasping intensities and extensions in one common intuition, without going beyond a tradition that carefully distinguished them."^{liii} He explains that the distinctive value of Oresme's diagrams is "to succeed in articulating these two measures, to dominate their opposition and to bring into play the principle that holds that in the corporeal order ontological degrees and extensive magnitudes *cooperate without confusion*."^{liv}

As we will see below, Deleuze approves of this duality, and of preserving—while composing—the distinctive difference between intensity and extension. Deleuze appreciates Oresme’s theory of intensity for not forcing intensive ordinates into coordination with extensivities, that is, for not being a thoroughly modern mechanician’s account. That is, Deleuze endorses the idea that the distinctive features of both intensive and extensive quantities are displayed in relation to each other in Oresme’s configurations. But he also appears to count Oresme’s theory as a step toward the reduction or neutralization of intensity found in later purely extensive formulations in the historical development of thought on intensity. It is unlikely that Deleuze could favor the equation—implied by the additivity of the surface areas of qualities in Oresme’s account—that, as Oresme says, “a uniform speed that lasts for three days is equal to a speed three times as intense that lasts for one day.”^{lv} Of course, Deleuze is not denying the importance of Oresme’s (or others’) mean speed theorem to physics and to its history. But the extensive equivalences of intensities found in such equations imply a loss of the distinctive *experiences* of intensive variation, and thus work against his aim of a philosophy of sensibility and of the experience of difference as intensive.

4. Medieval Philosophy of Intensity and Deleuze’s Thought

At least four main texts by Deleuze, or Deleuze and Guattari, make clear the centrality of his, and their, thought on intensity and suggest its indebtedness to Medieval accounts of intensity. Here, we merely sketch some of central points in these four texts that link Medieval thought on intensity with Deleuze’s ontology of intensity.

In *Bergsonism* (1966), Deleuze presents Bergson’s critique of intensity, which critique charges thinking that is based on the concept of intensity with creating a false

problem. The falsity in the problem of intensity is alleged to be that the concept of intensity necessarily deals in composites that amount to conceptual confusions. Something that is not ultimately determinable as part of a composite is nonetheless understood only as a component; when so mixed, it cannot be grasped as what it is. The charge finds at least two arguments. One is that intensity is always wrongly conceived as being explicable in extensive terms. The psychophysics of the period famously came in for attack by Bergson in *Time and Free Will* for reducing affective intensities to purportedly complete expression in terms of quantifiable sensations, or in terms of their even more quantifiable external causes. Here, the misleading composite is the explanation of intensity as a measurable quantity of some sort, which entirely obscures the qualitative nature of an intensity. Indeed, it is intensive quantity that is the object of Bergson's critique here. The second argument assumes that the discourse of intensity presupposed a gradational ontology of quantitative degrees, and that the quantitative continuity that this implies means that differences in kind are obscured or indiscernible. Here, the "composite" is the amalgamation or fusion of elements whose distinction ought to imply a trenchant difference in kind rather than a scalar, fused continuity of degrees. Mere differences in degree cover over striking difference in kind. As Deleuze puts it, for Bergson, "the notion of intensity involves an impure mixture between determinations that differ in kind."^{lvi} Bergson holds that these composites thus must always be split up so as to reveal their properly qualitative element, distinguished as it should be from the extensive element to which it has been conceptually joined. This properly qualitative element is fundamentally and non-spatially temporal. Thus, the standard notion of intensity that Bergson critiques is one that in his view already wrongly included a

measurable, quantifiable element. To purify such composites of these quantifiable elements is one of Bergson's aims. As Deleuze explains, however, "The critique of intensity in *Time and Free Will* is highly ambiguous."^{lvii} By this Deleuze means that there appear to be three different moments in Bergson's thought on intensity and that they do not offer identical objections to traditional and contemporary conceptions of intensity. We can see that the question of the singularity of quality and qualitative change, so present in the Medieval debates over the specificity of alteration proposed by Aristotle, is essential to Bergson's own philosophy. He clearly seeks to establish the uniqueness of qualitative phenomena with the concept of duration, among other such concepts, and to strenuously resist the reduction of such phenomena to extensive, spatial, or quantitative terms. Deleuze's account of Bergson's thought on intensity necessarily employs many of the central concepts set out in Medieval discussions of the issue: alteration, quantity, quality, increase, degree, divisibility, extension, number, magnitude, composition, and many others.

As is well known, *Difference and Repetition* (1968) is the essential text for the presentation of Deleuze's philosophy of intensity. Intensity is metaphysically primordial for the ontology of difference developed in that work. We find discussion of it, therefore, in much of the book and in differing philosophical idioms: mathematical, physical, psychoanalytical, aesthetic. The opening to Chapter V: "Asymmetrical Synthesis of the Sensible" includes treatment of many of the most important features of the concept of intensity in this work.^{lviii} Mainly, the account is given in terms of the discourse of physical systems, in particular those treated in terms of energy. Despite the fact that the relevant passages remain fairly generalized, apparently describing physical systems in

general, and with few examples, Deleuze does discuss intensity in the explicit context of “energetics.” Here, his discussion of physical systems quotes from two 1922 French studies in the philosophy of science, as well as citing Carnot’s and Curie’s principles, Kant, Novalis, signal-sign systems and entropy. These pages do not explicitly refer either to ancient or to Medieval philosophers. But they do employ the expressions developed in Medieval natural philosophy’s accounts of intensity, many of which are retained in Bergson’s language. Deleuze writes: “It turns out that, in experience, *intensio* (intension) is inseparable from an *extensio* (extension) which relates it [i.e. intension] to the *extensum* (extensity).”^{lix} This is in the context of his effort to argue for the claim that in a system “each intensity is already a coupling . . . , thereby revealing the properly qualitative content of quantity.”^{lix} Although it simplifies matters too much to make as a complete claim, we can say that in *Bergsonism* Deleuze aims chiefly to provide a reading of Bergson’s thought, while in *Difference and Repetition* he works out his own philosophical proposals. These include a tripartite philosophy of intensity that seeks to lend it a specifically philosophical sense, I wish to suggest, which is not synonymous with any of the scientific conceptions of intensity that treat it as exhaustively definable in purely quantitative terms. The present essay is but a small part of a larger argument that is required to demonstrate the point that Deleuze’s conceptions of intensity depart from the scientific conception of intensity as susceptible to adequate and complete quantitative expression.

The quote about intensity as a coupling makes clear that Deleuze wishes to expose an ineliminable qualitative aspect to the kind of energetic quantities he treats in these important passages on intensity and physical science. Above, we noted one reason for

which Deleuze considers the identification of a quality with its intensification to be an ontological fault. In addition to that reason, however, Deleuze advances another reason for which this identification would be mistaken. For in *Difference and Repetition* he argues that qualities are ontologically dependent upon intensities, even though our experience of intensities can only take place through our registration of qualities. That is, in this text, Deleuze holds that intensities, although they are the source of sensations and of experience, are not sensed or experienced as intensities themselves. It is the coupling of an intensifying or remitting quality with an extension that is the way in which intensities are registered. In other words, they are only registered by their impact as extended qualities, or qualities as extended. Thus, to identify quality with intensity would be to deny the ontological dependence of quality upon the allegedly more primordial level of intensities.

In *A Thousand Plateaus* (1980), Deleuze and Guattari clearly adopt the Medieval language of intensity, although it is difficult to establish all of their sources solely from that text with any sense of certainty. We can, however, identify two evident references to Medieval thought on intensity in the work. In Plateau 10. “1730: Becoming-Intense, Becoming-Animal, Becoming-Imperceptible . . .,” Deleuze and Guattari offer a discussion of the problem of accidental forms that explicitly refers to Nicolas Oresme, directing readers to “Pierre Duhem’s classic work *Le système du monde*” (1913-1959) on Oresme and “the problem of intensities in the Middle Ages.”^{lxi} The same section, “Memories of a Theologian,” makes explicit reference to Duns Scotus’s concept of a haecceity.^{lxii} Here, we see repeated the exact terms of the Medieval debate on intensive variation: “accidental forms are susceptible to *more and less*: more or less charitable, but

also more or less white, more or less warm. A degree of heat is a perfectly individuated warmth distinct from the substance or subject that receives it.”^{lxiii} The allusion is imprecise and is likely to Scotus’s unique ontology of intensity, with scarce care for the immensely complex detail of that ontology. Explicit reference to Oresme seems to endorse the composition of intensities and their charting in terms of “latitudes” and “longitudes.” Part of the effort here is to gesture toward an ontology of individuals distinguished or composed of intensities. However, when we compare the hasty discussion in this section with the extremely refined and nuanced theoretical armories developed by Medieval philosophers of intensity, Deleuze and Guattari appear to have created their own composite of quite different Medieval approaches to conceiving of intensive variation. Here, it seems that the important insights they wish to draw from Medieval thought, chiefly via Duhem’s work, are the notions that intensities can be individuating and that there is a singular reality in intensity that cannot be explicated in purely quantitative terms.

In *What is Philosophy?* (1991), Deleuze and Guattari return to the work of Nicolas Oresme, in reference to Pierre Duhem and to Gilles Châtelet’s “La toile, le spectre, la pendule,” in *Figuring Space: Philosophy, Mathematics, and Physics*.^{lxiv} Their chief concern here is the Oresmian moment in the history of the concept of intensity in which we find a graphic means for the representational composition of intensities with extensities. These pages in *What is Philosophy?* contain a clear a philosophical employment of this idea of the Oresmian composition of intensities and extensities, as well as of the later practice of coordinating intensities and extensities in a properly coordinate system. However, it is critical to notice that this employment is precisely *not*

an endorsement of such a coordinative concept of intensity in the field of philosophy. Indeed, the coordination of intensities with extensities is a mark of the *non*-philosophical. For *What is Philosophy?* in fact argues that this coordinative concept of intensity is a characteristic mark of a logical, mathematical or scientific project, and not of a properly philosophical one. It is absolutely clear that in this text Deleuze and Guattari in no way are adopting the fully extensive and quantitative construal of an intensity that we find in our contemporary physical, and other, sciences.^{lxv} Indeed, it appears that Deleuze himself never endorses a contemporary physical notion of intensity for *philosophical* and ontological purposes. As *What is Philosophy?* makes clear, this position does not imply that contemporary scientific conceptions of intensity are illegitimate in their scientific uses. It means, rather, that Deleuze does not adopt any of these conceptions, especially on their own self-understandings, for his own philosophical constructions.

Given this synoptic reconstruction of some high points in the history the philosophical concept of intensity, one might wonder whether Deleuze would endorse Aristotle's philosophy of qualitative change and in particular whether he would favor Aristotle's non-quantitative account of qualitative change. There are a number of reasons to suppose that Deleuze would not find Aristotle's account acceptable. For present purposes, perhaps the plainest such reason is that Aristotle's account, given in terms of act, actualization and potential, does not conform well to Deleuze's express ontological commitments throughout his works. We know that Deleuze rejects the Aristotelian ontology of potential and actualization as well as a Bergsonian metaphysics of possibility. On this matter, his thinking is much closer to that of Spinoza, Ruyer and Simondon. For his use of the notion of actualization rejects the ontology of potential in

favor of a specific Deleuzian conception of the virtual. Neither Aristotle nor Bergson appears to have supplied Deleuze with satisfactory ontologies of the potential.

5. Conclusion

Deleuze contrasts science, a practice in which a plane or level of reference is constructed by means of functions, to philosophy, a practice for the creation of concepts on a plane or level of immanence, or consistency.^{lxvi} To refer, for Deleuze, is to co-order at least two different variables within a limited plane or field or system of reference. Reference is essentially a co-ordinated location of an ontological mixture. The difference between co-ordinates and co-ordination, on the one hand, and ordinates and ordination, on the other hand, is critical here. The domain of intensity, philosophy and the concept is the domain of the ordinate, not of the co-ordinate. An intensity is essentially a set of ordered differences, not co-ordered differences.

We may return to Shapiro's above quoted question and, in a provisional manner, hypothesize that for Deleuze there is a difference between a given temperature and a given measured temperature. The temperature would be an intensive ordinate; the measured temperature would be the co-ordination of such an intensive ordinate of temperature with the extended substance of, say, the mercury of a mercury thermometer. The extension of the mercury would be the extensive expression of the intensive ordinate of temperature, or its co-ordination with the extended mercury.

Deleuze's position is that science and philosophy are distinguished, and are to be distinguished, in part on the basis of the question of the neutralization of intensities. The modern mechanician, who does not and need not notice that an extensive and an intensive quantity have been rendered in a common extensive quantity, is not taking this distinction

to be relevant to his or her intellectual project. Science is a practice of establishing coordinate systems, and working with the functions that they permit. Philosophy will be the intellectual pursuit that attends to intensities, in addition to tending to them: the concept, the chief creation of the practice of philosophy, is essentially intensive. In this way, then, the stakes of the question of the nature of intensity become the stakes of the proper province of philosophy.

A difficult philosophical problem also emerges from this review of the history of the concept of intensity thus far, if we seek to identify the quantitative or qualitative nature of a given historical conception of intensity under examination. This is the problem of which definitions of quality and quantity to employ—from amongst the unfolding and varying theoretical accounts of intensification that we find in the history of philosophy—in order to designate a conception as qualitative or quantitative. For it appears that to answer the question of when, how and to what extent a conception of intensity is qualitative or quantitative will require us to adopt at least a working definition that provisionally relates to the very terms under examination—quantity and quality—although this definition may or may not be identical to any of the definitions catalogued in the history under review. Whenever, then, we want to assert that a conception of intensive change is qualitative or quantitative, we should ideally at least specify as clearly as possible which senses of those terms we are employing. Subsequent work on the problem will need to tie our claim that Deleuze's conception of intensity retains a non-quantitative aspect to the specific definitions of quantity offered in the history of philosophy tributary to Deleuze's thought.

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ⁱ See especially Simon Duffy, *The Logic of Expression: Quality, Quantity and Intensity in Spinoza, Hegel and Deleuze* (Aldershot, UK: Ashgate, 2006); Daniel Smith, *Essays on Deleuze*. (Edinburgh: Edinburgh University Press, 2012); Juliette Simont, *Essai sur la quantité, la qualité, la relation chez Kant, Hegel, Deleuze: Les “fleurs noires” de la logique philosophique* (Paris: Éditions L'Harmattan, 1997). Important work on Deleuze’s ontology of intensity has been carried out many others, including: Keith Ansell-Pearson, Alain Beaulieu, Michel de Beistegui, Jeffrey Bell, Véronique Bergen, Levi Bryant, Claire Colebrook, Manuel DeLanda, Peter Gaffney, Peter Hallward, Joe Hughes, Leonard Lawlor, Jean-Clet Martin, Dorothea Olkowski, Paul Patton, John Protevi, Jon Roffe, Anne Sauvagnargues, Judith Wambacq, François Zourabichvili.

ⁱⁱ See Peter Hallward, *Out of This World: Deleuze and the Philosophy of Creation* (London and New York: Verso, 2006); John Protevi, “Review of Hallward, *Out of This World: Deleuze and the Philosophy of Creation*.” *Notre Dame Philosophical Reviews: An Electronic Journal*, 2007.08.03.

ⁱⁱⁱ See, for example, Manuel DeLanda, *Intensive Science and Virtual Philosophy* (London & New York: Continuum, 2002).

^{iv} This chapter does not address the content of the individual philosophy of Félix Guattari or seek to distinguish it from that of Gilles Deleuze in their co-authored works.

^v Jeannine Quillet, Ed. *Autour de Nicole Oresme*. (Paris: Librairie Philosophique J. Vrin, 1990).

^{vi} Shapiro, Herman. “Walter Burley and the Intension and Remission of Forms,” *Speculum*, Vol. 34, No. 3 (Jul., 1959), pp. 416-7, n 8.

^{vii} We here rely upon a number of Prof. Solère’s essays, but recommend in particular: Solère, Jean-Luc. “The Question of Intensive Magnitudes According to Some Jesuits in the Sixteenth and Seventeenth Centuries,” *The Monist*, vol. 84, no. 4, (2001), pp. 582-616; “Tension et intention. Esquisse de l’histoire d’une notion”, in L. Couloubaritsis & A. Mazzù (eds.), *Questions sur l’Intentionnalité*, Bruxelles, Ousia, (2007), p. 59-124; “Plus ou moins : le vocabulaire de la latitude des formes,” in *L’Élaboration du vocabulaire philosophique au Moyen Âge*, éd. J. Hamesse et C. Steel, Turnhout, Brepols, “Rencontres de Philosophie médiévale” no. 8, (2000), pp. 437-488.

^{viii} See “Bibliography” for the major works of these scholars of Medieval thought that treat the topic of Medieval philosophy of intensity.

^{ix} Jean-Luc Solère, “The Question of Intensive Magnitudes According to Some Jesuits in the Sixteenth and Seventeenth Centuries,” *The Monist*, vol. 84, no. 4, pp. 582-616.

(2001), p. 582.

^x Aristotle, *Categories* 8, 10b26-11a4. Hereafter abbreviated as *Cat.*

^{xi} Aristotle, *Cat.* 4a 3-4. My emphasis. See also J.-L. Solère, “D’un commentaire à l’autre: l’interaction entre philosophie et théologie au Moyen Âge, dans le problème de l’intensification des formes,” in *Le Commentaire entre tradition et innovation*, Ed. M.-O. Goulet, Paris, Vrin, “Bibliothèque d’histoire de la philosophie” nouvelle série, 2000, p. 411, n. 1.

^{xii} J.-L. Solère, “The Question of Intensive Magnitudes According to Some Jesuits in the Sixteenth and Seventeenth Centuries,” 583. Aristotle, *Physics*, V 2, 226b 1-2, VII 2, 244b 6-12.

^{xiii} J.-L. Solère, “Thomas d’Aquin et les variations qualitatives,” in Chr. Erismann & A. Schniewind (eds.), *Compléments de Substance (Études sur les Propriétés Accidentelles offertes à Alain de Libera)*, Paris, Vrin (« Problèmes & Controverses »), 2008, p. 148. (My translation.) Here the Aristotelian reference is to *Physics*, V 2, 226b1-2.

^{xiv} Aristotle, *Cat.* 3b33: “Substance, it seems, does not admit of a more and a less.” *Cat.* 6a19: “A quantity does not seem to admit of a more and a less.”

^{xv} Aristotle, *Cat.* 8, b26; *Cat.* 8, 9a14; *Cat.* 8, 9a28.

^{xvi} See Aristotle, *Cat.* 8 11a5.

^{xvii} Aristotle, *Cat.* 14, 15a13.

^{xviii} Aristotle, *Physics*, V 2, 226a 30.

^{xix} Aristotle, *Physics*, V 2, 226a 26.

^{xx} Aristotle, *Cat.* 14, 15a13 ff. (My emphasis.)

^{xxi} J.-L. Solère, “The Question of Intensive Magnitudes According to Some Jesuits in the Sixteenth and Seventeenth Centuries,” 584.

^{xxii} J.-L. Solère, “The Question of Intensive Magnitudes According to Some Jesuits in the Sixteenth and Seventeenth Centuries,” 584.

^{xxiii} J.-L. Solère, “Plus ou moins: le vocabulaire de la latitude des formes,” 460. (My translation.)

^{xxiv} J.-L. Solère. “Thomas d’Aquin et les variations qualitatives,” 148. (My translation.)

^{xxv} J.-L. Solère, “Plus ou moins: le vocabulaire de la latitude des formes,” 460. (My translation.)

^{xxvi} J.-L. Solère, “The Question of Intensive Magnitudes According to Some Jesuits in the Sixteenth and Seventeenth Centuries,” 583.

^{xxvii} See J.-L. Solère, “The Question of Intensive Magnitudes According to Some Jesuits in the Sixteenth and Seventeenth Centuries,” 584ff.

^{xxviii} J.-L. Solère, “The Question of Intensive Magnitudes According to Some Jesuits in the Sixteenth and Seventeenth Centuries,” 584. For a nuanced qualification of this point as a matter of Aristotle interpretation, see “The Question of Intensive Magnitudes According to Some Jesuits in the Sixteenth and Seventeenth Centuries,” n. 20, p. 609.

^{xxix} J.-L. Solère, “The Question of Intensive Magnitudes According to Some Jesuits in the Sixteenth and Seventeenth Centuries,” 585. The pertinent reference in Aristotle is *De Gen* I. 5, 320b 30-31.

^{xxx} J.-L. Solère, “The Question of Intensive Magnitudes According to Some Jesuits in the Sixteenth and Seventeenth Centuries,” 584. The pertinent reference in Aristotle is *De Gen* I. 5, 321a4-5, 20-21, 321b13.

^{xxxi} The chief centers for this late Medieval natural philosophy were Paris and Oxford, according to Anneliese Maier. See Maier, *On the Threshold of Exact Science: Selected Writings of Anneliese Maier on Late Medieval Natural Philosophy*. Ed. and Trans. Steven D. Sargent. Philadelphia: University of Pennsylvania Press, 1982, 145.

^{xxxii} Edith Dudley Sylla, “The Oxford Calculators.” In Norman Kretzman, Anthony Kenny, Jan Pinborg, Eds. *The Cambridge History of Later Medieval Philosophy*. Cambridge: Cambridge University Press, 1980, 555. Herman Shapiro, “Walter Burley and the Intension and Remission of Forms.” *Speculum* Vol. 34, No. 3 (Jul., 1959), 414ff.

^{xxxiii} Anneliese, Maier, *On the Threshold of Exact Science: Selected Writings of Anneliese Maier on Late Medieval Natural Philosophy*. Ed. and Trans. Steven D. Sargent. Philadelphia: University of Pennsylvania Press, 1982, 160.

^{xxxiv} See J.-L. Solère, “The Question of Intensive Magnitudes According to Some Jesuits in the Sixteenth and Seventeenth Centuries,” 586ff.

^{xxxv} Aquinas, *Summa Theologica*, IIa, IIe q. 24, a. 5: “Whether charity increases by addition?”

^{xxxvi} Aquinas, *Summa Theologica*, IIa, IIe q. 24, a. 5: “Whether charity increases by addition?”

^{xxxvii} Aristotle, *Physics*, V, Ch. 2, 226b ff. (*The Complete Works of Aristotle. The Revised Oxford Translation*. Ed. Jonathan Barnes. Vol. I., 383.)

^{xxxviii} Aquinas, *Summa Theologica*, IIa, IIe q. 24, a. 5: “Whether charity increases by addition?”

^{xxxix} Aquinas, *Summa Theologica*, IIa, IIe q. 24, a. 5: “Whether charity increases by addition?”

^{xl} Aquinas, *Summa Theologica*, IIa, IIe q. 24, a. 5: “Whether charity increases by addition?”

^{xli} Aquinas, *Summa Theologica*, IIa, IIe q. 24, a. 4: “Whether charity can increase?”

^{xlii} Aquinas, *Summa Theologica*, IIa, IIe q. 24, a. 4: “Whether charity can increase?”

^{xliii} J.-L. Solère, “The Question of Intensive Magnitudes According to Some Jesuits in the Sixteenth and Seventeenth Centuries,” 587. For Burley’s arguments against addition theories, see especially Herman Shapiro, “Walter Burley and the Intension and Remission of Forms.” *Speculum* Vol. 34, No. 3 (Jul., 1959), pp. 413-427. On identification of the addition theory’s origin, and its attribution to Scotus by A. Maier, see Shapiro, 415, n. 5.

^{xliv} J.-L. Solère, “The Question of Intensive Magnitudes According to Some Jesuits in the Sixteenth and Seventeenth Centuries,” 587.

^{xlv} J.-L. Solère, “The Question of Intensive Magnitudes According to Some Jesuits in the Sixteenth and Seventeenth Centuries,” 585. Also, see this essay for a fascinating account of some prominent 16th century addition theorists’ arguments against succession theory.

^{xlvi} The property of changing in species by means of addition or subtraction finds a related thesis in the view espoused by both Bergson and Deleuze that intensive phenomena are characterized by a kind of divisibility that produces change in species or change in measure.

^{xlvi} J.-L. Solère, “The Question of Intensive Magnitudes According to Some Jesuits in the Sixteenth and Seventeenth Centuries,” 587.

^{xlviii} J.-L. Solère, “The Question of Intensive Magnitudes According to Some Jesuits in the Sixteenth and Seventeenth Centuries,” 587.

^{xliv} Deleuze refers by name to Oresme in *A Thousand Plateaus*, 253; 540, n. 29; and *What is Philosophy?*, 121; 226, n. 3.

¹ Cf. Marshall Clagett, *Nicole Oresme and the Medieval Geometry of Qualities and Motions: A Treatise on the Uniformity and Difformity of Intensities Known As Tractatus de configurationibus qualitatum et motuum* (Madison: University of Wisconsin Press, 1968), 14.

^{li} Anneliese Maier, *On the Threshold of Exact Science: Selected Writings of Anneliese Maier on Late Medieval Natural Philosophy*, 39.

^{lii} Gilles Châtelet, *Figuring Space: Philosophy, Mathematics, and Physics*. Trans. Robert Shore and Muriel Zagha. (Dordrecht, Netherlands: Kluwer Academic Publishers, 2000).

^{liii} Gilles Châtelet, *Figuring Space: Philosophy, Mathematics, and Physics*, 39-40.

^{liv} Gilles Châtelet, *Figuring Space: Philosophy, Mathematics, and Physics*, 44. (My translation.)

^{lv} Georges Molland, “The Oresmian Style,” in *Nicolas Oresme, Tradition et innovation chez un intellectuel du XIV^{ème} siècle* (Paris: Les Belles Lettres, 1988), 23. (My translation.)

^{lvi} Gilles Deleuze, *Bergsonism*, Trans. Hugh Tomlinson and Barbara Habberjam. (New York: Zone Books. 1991),19.

^{lvii} Gilles Deleuze, *Bergsonism*, Trans. Hugh Tomlinson and Barbara Habberjam. (New York: Zone Books. 1991), 91-92.

^{lviii} Gilles Deleuze, *Difference and Repetition*. New York: Columbia University Press, 1994), 222-223.

^{lix} Gilles Deleuze, *Difference and Repetition*. New York: Columbia University Press, 1994), 223.

^{lx} Gilles Deleuze, *Difference and Repetition*. New York: Columbia University Press, 1994), 222.

^{lxi} Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia* (Minneapolis: Minnesota University Press, 1987), 540, n. 29.

^{lxii} Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia* (Minneapolis: Minnesota University Press, 1987), 252-3; 540, n. 33.

^{lxiii} Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia* (Minneapolis: Minnesota University Press, 1987), 253.

^{lxiv} Deleuze and Guattari, *What is Philosophy?*, 121; 226, n. 3.

^{lxv} For more on this stark differentiation in conceptions of intensity and their use, see Deleuze and Guattari, *What is Philosophy?*, Chapter 5: “Functives and Concepts,” 117-133, especially 121 ff.

^{lxvi} Deleuze and Guattari, *What is Philosophy?*, 216; *Qu'est-ce que la philosophie?*, 204.