Divine Machines and Univocal Reason: Natural Philosophy Between Duns Scotus and Leibniz

by

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Notes on References and Abbreviations

References made to the writings of Duns Scotus will be in the standard citation format for selections from his Ordinatio and Quaestiones quodlibetales, followed by the source they were taken from (except in the case of his Early Oxford Lectures on Individuation, where references will be made specifically to the book in which these lectures were found, published by the Franciscan Institute).

The following abbreviation will be used when referencing Leibniz’s writing:


When citing from the *PE* collection, the essay cited will be included in the footnote, along with any proposition number if the essay cited includes numbered propositions (ex: the *Monadology*). Proposition numbers will also be included for references to the *Theodicy*, followed by the page number of the edition used.
Forward

This essay examines the relationship between the philosophies of nature of two prominent thinkers in the history of philosophy: John Duns Scotus (1266-1308) and Gottfried Wilhelm Leibniz (1646-1716). This project was initially motivated by the portrayal of Leibniz as a pre-cybernetic thinker. Leibniz was actively interested in technological developments, and developed many technologies of his own, including the first calculator to perform the four arithmetic operations. Norbert Wiener famously called Leibniz the ‘patron saint’ of cybernetics. However, such a claim seems odd. Not only did Leibniz live and write in a time period where technology rarely carried the connotation of autonomous behavior that it does in the cybernetic model, but he was also the most outspoken defender of scholastic (roughly 1100-1700) theology and philosophy among the ‘modern’ philosophers. How would a thinker with influences so divorced from contemporary technological sensibilities be relevant to Wiener’s project?

While researching Leibniz’s philosophy of technology, and his various technological projects, a clear trend emerged: Leibniz tended to see technology as an imperfect replica of the natural world. Leibniz writes to this effect in his *Monadology*, arguing that,

> each organized body of a living being is a kind of divine machine or natural automaton, which infinitely surpasses all artificial automata. For a machine constructed by man’s art is not a machine in each of its parts. For example, the tooth of a brass wheel has parts or fragments which, for us, are no longer artificial things, and no longer have any marks to indicate the machine for whose use the wheel was intended. But natural machines, that is, living bodies,
are still machines in their least parts, to infinity. That is the difference between nature and art, that is, between divine art and our art.¹

Created beings, for Leibniz, exemplify the standard of machinery, whereas human craftsmanship is unable to produce machines that contain ‘machines in their least parts, to infinity.’ Deleuze puts in nicely when he writes that, “mechanisms are not sufficient to be machines. A mechanism is faulty not for being too artificial to account for living matter, but for not being mechanical enough, for not being adequately machined.”² A shift in focus towards Leibniz’s natural philosophy seemed to be the necessary ground for grasping how Leibniz thought about technology.

Such a shift also made much simpler the aim of working through the influence of scholasticism on Leibniz’s thought. In the simple sense, approaching Leibniz from the angle of his theology immediately opens up a space to discuss how his theological project pertains to the theology before him; there is nothing particularly ‘modern’ about believing in God. In a more specific sense, Leibniz’s description of God’s creation of living, individual beings marks a key difference between Leibniz and his scholastic predecessors. The ontological units Leibniz posits are individual substances (what he calls ‘monads’ in his mature philosophy). This is contrary to the typical hierarchical ‘scale of being’ popular among the scholastics. A famous text in the scholastic period was Porphyry’s (234-305 AD) Isagoge, an introduction to Aristotle’s Categories.³ In this work, Porphyry outlines a traditional

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¹ “Monadology” n. 64., in PE, 221.
'tree' of being with the following structure used as the 'skeleton' of the individuals we encounter in nature:

Leibniz does not include this progression from genus to species to individuality via differentiae in his philosophy of nature. Leibniz writes in a correspondence that, "in forming universals the soul only abstracts certain circumstances by concealing innumerable others. And so it is only in an individual that there is a notion so complete that it also includes all of its changes." The forms above individuality (species & genus) came to be known as 'universals' in scholastic discussion, and thinkers tended to be those who believed in their reality (realists) or those who

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4 “From the Letters to De Volder,” in PE, 182.
thought that such forms are mental abstractions, produced by the mind rather than anything inherent in creatures (nominalists). While technically speaking Leibniz is a realist, for reasons explored below these categories of being do us little help when making sense of the order of nature. Leibniz’s dimming down of universals in nature also entails a commitment to a particular principle of individuation, not grounded in these ‘abstract’ forms. The principle of individuation was a heavily debated topic in scholastic theology and philosophy, intimately tied to the debate over universals. The issue the principle of individuation addresses is the numerical existence of an individual (its singularity). If two twins are of the same species and same genes, what makes them different individuals?

Leibniz’s thought will be thought in comparison with the scholastic philosopher-theologian John Duns Scotus. Scotus is a ‘realist’ regarding the status of universals, but his realism is an odd one. Largely in response to earlier thinkers who claimed no knowledge of God could be attained through natural cognition (i.e. not relying on revelation), Scotus aimed to compose a metaphysical system wherein genuine scientific knowledge of universal forms (such as species) could be cognized through natural means alone. This system will be covered in the first chapter, and will highlight the different ways Scotus (and an earlier thinker, Henry of Ghent) managed the complex issue of how to relate God with creatures found in nature. This discussion will serve as the backdrop for considering how Leibniz’s formulation of the principle of individuation and divine creation accords with and differs from the scholastics.
Individuals are also what Leibniz uses to ground the mechanistic worldview. Leibniz’s above terminological choice of ‘machine’ here points towards his fondness for the mechanistic sciences. As mentioned, Leibniz was actively interested in technology. He also took seriously the mechanistic sciences (particularly the study of dynamics) and is perhaps best known today for his invention (independently of Newton) of calculus. In short, Leibniz was no reactionary nor Luddite when it came to the sciences and technology of his time. His approach to a metaphysics of these mechanist sciences, however, rests on his particular ontology of individual substances. As the above passage from the *Monadology* makes clear, absolute mechanical precision is a craft belonging to God alone, executed the individual substances God creates.

This essay then aims to identify what about individuals mark them as ‘divine machines,’ and by what process God engineers these individuals. How Leibniz was able to utilize concepts from scholastic theology as a ground for the mechanistic sciences is the central puzzle that will be addressed. This will be approached through four specific concepts from Scotus’s philosophy (compossibility, haecceity, univocity, virtuality) that are developed by Leibniz to synthesize his theological and scientific interests.

This study of the transformation of these concepts will be thought alongside underlying tendency present in the philosophies of Scotus and Leibniz. Both thinkers (albeit in very different ways) employ the natural world to promote theological legitimacy. Though this tendency may be familiar to historians of science and
philosophy, it is opposed to the common sense understanding of the modernizing of the sciences.

Alexandre Koyré marks the distinction between the medieval and modern sciences insofar as, “modern science is bound to replace the system of flexible and semi-qualitative concepts of the Aristotelian science by a system of rigid and strictly quantitative ones...[modern science] substitutes for the world of the more-or-less of our daily life a universe of measurement and precision.” We will see a change of this sort (to a certain extent) in the shift from scholasticism to Leibniz’s philosophy. The comparatively more precise formulation of the natural world in Leibniz’s metaphysics, however, is paired with his simultaneous augmentation of divine presence in the natural world. This is equally true for Scotus, for whom theological legitimacy rested upon utilizing a theologically relevant conceptualization of the natural world. This is not a ‘strictly quantitative’ approach, but simultaneously promotes scientific and cultural/religious understandings of the world.

As parts of this essay explore, Scotus’s and Leibniz’s focus on nature allowed them to pursue cultural, political, and theological ends (such as religion ecumenism and theories of justice) by employing facets of nature’s structure (such as the world’s infinite precision via God’s optimal engineering). Such linking of the non-scientific to the scientific is more in line with contemporary science studies than the traditional understanding of the enlightenment and ‘modernity’ as a rupture in human thought,

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6 In the contemporary sense of ‘scientific.’ Scholastic theologians considered theology a ‘science.’
giving birth to the truly objective sciences. Wiener’s above remark about Leibniz’s influence is mentioned in reference to Leibniz’s plans for a universal language and a calculator of rational thought. Though Leibniz completed neither, such plans fundamentally rest upon presuppositions about what nature has to ‘offer’ the sciences, and this offering is contingent upon God’s benevolence and power to execute a perfectly mapped out and intelligible world.

Bruno Latour argues that,

Moderns have simply invented longer networks by enlisting a certain type of nonhumans...Since this enlistment of new beings had enormous scaling effects by causing relations to vary from local to global, but we continue to think about them in terms of the old opposite categories of universal and contingent, we tend to transform the lengthened networks of Westerners into systematic and global totalities. To dispel this mystery, it suffices to follow the unaccustomed paths that allow this variation in scale, and to look at networks of facts and laws rather as one looks at gas lines or sewage pipes.  

The appearance in Leibniz’s philosophy of a universal system of scientific intelligibility is always grounded in the contingent structure of God’s creations, as we will investigate in depth. This interaction, between scholastic theology and the modern mechanistic sciences, plays out in Leibniz’s thought in a way that allows us to establish clearly how Leibniz’s universal truths of nature have to be wrought through a painstakingly selective and contingent process of divine creation.

There are then two lines of thought this essay hopes to follow. The first is exploring the differences in the general metaphysical structures of Duns Scotus and Leibniz. As Leibniz (explicitly and implicitly) utilizes concepts found in Scotus’s

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philosophy, this line of thought aims to map out, as a history of philosophy and science, how philosophical concepts, taken as plastic and moldable entities, can be morphed to fit into new contexts and applications, as Leibniz uses scholastic concepts as a ground for a mechanistic natural world. The second line of thought explored is how this particular story, of the progression from pre-modern to modern philosophy and science, supports a reading of ‘modern’ thought where the distinction between cultural interests and the objective (‘quantitative’) sciences breaks down.
An illustration depicting the destruction of the Porphyrian Tree.
This section will discuss Duns Scotus’s response to the epistemology of Henry of Ghent (1217-1293). Both Scotus and Henry posit general forms over and above individual creatures in their metaphysics. Henry, however, believed to access such forms humans require a ‘divine illumination’ (i.e. help from God), as the created world is deficient with respect to the presence of essences in their purity. Duns Scotus responds by creating a complex metaphysical system to support a naturalist cognitive model, in which common forms (such as species) are accessible to the human intellect by natural means alone.

In doing so, Scotus argues we need a ‘univocal’ term in order to legitimize the teachings of theologians (using only truths derived from nature) as actually true of God. The naming of God’s attributes typically followed one of three understandings of how these names relate to God: equivocal, univocal, and analogical naming. Aristotle opens up the *Categories* with a discussion of univocal vs equivocal naming:

> Things are named equivocally if only the name applied to them is common but the expression of the *substance* [i.e., the definition] corresponding to that name is different for each of the things…Things are named univocally if both the name applied to them is common and the expression of the *substance* corresponding to that name is the same for each of the things…

Aquinas famously took a middle route, and favored analogical naming of God’s attributes. This is defined as, “the relationship between two things or terms which are

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partly the same and partly different...similarity but not identity.”

Scotus wants to derive a metaphysical and theological system that allows for the univocal naming of God’s attributes, attainable through natural means alone. By establishing a metaphysical system that can support a univocal naming of God’s attributes, Scotus will employ the other three concepts mentioned in the forward, which will be discussed below: composibility, haecceity, and virtuality.

To begin this project, Scotus asks two mutually dependent questions: What kinds of entities populate our natural world, and what is the process of an intellect coming to understand them? The issue of cognition is particularly important for theology (being significantly debated in the scholastic tradition). The legitimacy of theology depends on a cognitive ability; if one cannot come to know certain attributes of God, then theology is an empty discipline. The primary dualism of approaches to understanding God is that of revelation and reason. A reliance on revelation claims that understanding of God is only initiated by God’s disclosure or revealing of certain truths (such claims are rooted in biblical passages such as, “Oh, the depth of the riches and wisdom and knowledge of God! How unsearchable are his judgments and how inscrutable his ways!”). Those who claim rational knowledge of God believe that certain elements of God can be known through our finite intellectual abilities.

In the wake of Plato and Aristotle’s translation into Latin, and their subsequent influence on medieval Europe, theologians began forming more complex...

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11 Rom. 11:33.
theories of cognition that combined both perspectives. One such cognitive formulation stakes an anti-naturalist stance, and frames human cognition as depending on a divine realm for attainment of knowledge (in a sense, adding elements of revelation to concepts natural to the human intellect). We find a famous example of this in Augustine’s *Confessions*: “If both of us see that what you say is true and that what I say is true, then where, I ask, do we see this? I do not see it in you, nor you in me, but both of us see it in the immutable truth which is higher than our minds.”

Cognized truth is thought not to be present in the realm of creatures and nature, but only in a transcendental realm above finite existence. How is such a cognitive theory formulated?

Henry of Ghent hones in on the perceptible world’s variability, arguing that a rigorous method is needed for deriving stable knowledge from the variations perceived by our senses. A central question for both Henry and Duns Scotus is, what is the source of an individual creature in nature? This question is one formulation of the question of the principle of individuation: what makes this individual creature in nature distinct from all others (if two cats are both equally cats, what makes them *individual cats*)? Both Henry and Duns Scotus share the positing of a general form (i.e. species) that is contracted into individuals by unique differences (i.e. a principle of individuation). For Henry, this difference is the introduction of existence into an essence of the divine intellect. An essence that previously was to be found only in the

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transcendental intellect of God now has existence in nature. Gilson phrases it as the difference between, “what is being and what has being, or may have it. The first kind of being is by itself, it is uncreated; the second kind of being is by another, it is created…the term ‘being’ does not apply to both at one and the same time.”\textsuperscript{13} This ties individuation intimately with the features of nature’s existents, attributes such as matter. Matter (as a feature of natural existence) is importantly foreign to the essence of a creature. Henry writes: “because a donkey does not act through its form immediately, but through its power transmitted into matter, so it cannot form the complete truth of its form in matter.”\textsuperscript{14} As being embodied is an inessential feature, the essence can only act \textit{indirectly} on our intellect. In Robert Pasnau’s terms, the essence of a thing is, “concealed by its matter and from our senses, which perceive only accidental, material properties.”\textsuperscript{15} In Henry’s account, absolute truth cannot be found in the sensible world. The variability of nature signals the separation of creatures from the divine intellect.

The truth of an essence is the reality of its relationship to the divine intellect (its pure form). Henry terms these ‘imitability relations,’ through which essences imitate God. In her commentary, Marilyn McCord Adams writes that, “The fact that equinity \textit{is} and chimera \textit{is not} a way of imitating the Divine essence is what makes it \textit{possible} for horses and \textit{impossible} for chimeras to exist in reality. Equally, it is what

\textsuperscript{14} Henry of Ghent. \textit{Summa of Ordinary Questions: Article One: On the Possibility of Knowing}. (South Bend, IN: St. Augustines Press, 2008), 59.
makes horses *intelligible* and chimera *unintelligible*.”\(^{16}\) The essential content, then, of a creature is its imitation of the divine essence. One can see how this conclusion may be reached. If God knows foremost Its own being, and from this knowledge of Itself creates finite essences, these essences will be composed of elements originally found in God’s own being. What essentially defines these essences, then, would be that they are finite versions of the divine essence. Carlos Steel phrases it as,

Henry understands the ideas as the diverse modes wherein God considers the nature of being, which He himself is absolutely, under diverse aspects of participation and imitability, which correspond to the difference specific natures of the participated beings….Those ideas thus constitute the exemplary forms or essences of all possible created beings.\(^{17}\)

These beings are then defined by their finite imitation of an *uncreated* being (God).

Importantly, a *separate* relationship is to be found between a creature and human cognition (i.e., what is realized through sensible perception). A *created* being, by that very definition, is unable to authentically express its essence (i.e. unable to express something uncreated). Divine truth is, according to this line of thought, inaccessible to human cognition, being grounded in the perceptual world. Gilson writes that, “The mistrust of natural knowledge, corrected by a theology, conditions the whole attitude of Henry of Ghent.”\(^{18}\) For truly reliable, determinate (scientific) knowledge one must understand the essence as it exists in the divine intellect (imitating the divine essence). For Henry, “A human cannot by purely natural means


\(^{18}\) *History of Christian Philosophy*, 448.
attain such a cognition of the divine exemplar without a special illumination.”

Pasnau expands on this, noting that, “For Henry the real problem is that our cognitive faculties preclude understanding the truth about things…The key is to understand what makes the likenesses we receive from the sensible world inadequate for knowing the truth of things.”

What do we know about creatures in the natural world?

Individual creatures are marked by a double negation, relative only to the natural world. These negations are that the individual is not divisible (it cannot be further divided into constituents, as genus and species can), and that the individual is not identifiable with other individuals (ex: what makes it a distinct, individual cat). We understand individuals as grounded and unique.

Henry argues that there is a specific kind of knowledge that can be derived from these natural features. Steven P. Marrone notes that, for Henry, the mind can derive general forms from its own perceptions, as “In the human mind the exemplar was the universal species of the thing, a cognitive form caused by the external thing.”

We can derive some generalization about natural individuals, such as all individuals of a certain species carry similar features (cats all have fur, a tail, etc.). This is, however, for Henry not wholly determinate and pure knowledge. As our discussion above regarding the indirect presence of an essence through a creature’s existent attributes makes clear, purely sensory familiarity would never be able to reach truths

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as they pertain to the divine intellect. It only leaves us with “the imperfect truth of a
thing.”

To know truths of the divine intellect, rather than of the created world, Henry
employs his concept of divine illumination. When our generalizations of natural
forms are considered by our intellect, God can impress (reveal) the knowledge of
these form’s divine essences. Marrone phrases this revelation as, “God’s light
[cleansing] the mind, which had been clouded by the base affections of the flesh, and
[restoring] it to spiritual health.” The only way Henry believes we can come to know
definitive truth about God is through a divine illumination that stabilizes and perfects
the variable and imperfect knowledge we attain through natural means alone. As the
essences of God’s intellect are the forms of the creatures we find in nature, this
‘illumination’ becomes necessary for all scientific knowledge. Henry’s knowledge is
knowledge about the natural world, as it is knowledge about perceived things, but it is
not derived from sense data. Truly scientific knowledge is pure and stable truth
(untouched by the deficiencies of matter). This allows humans to transcend the
world’s variability so as to ground nature in its essential foundation(s). Marrone
elucidates that, “God did not so much give the mind literally a new species as reform
the concept the mind had already devised from the earthly one.” Pure scientific
knowledge is therefore only analogical to the creatures perceived; our scientific
knowledge about nature refers primarily to the uncreated essences in the divine

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22 Ibid., 24.
23 Ibid., 31.
24 Ibid., 38.
intellect. Our ‘illuminated’ knowledge is knowledge about the essences (in the divine intellect) that serve as the forms of the existents we encounter in nature.

Henry’s account is criticized by Duns Scotus for two main reasons. The first deals with Henry’s description of the separation between God and creatures. Contrary to Henry, Duns Scotus argues that the initial deficient influence of matter in the natural world would be impossible to overcome through a divine illumination. Our initial sensible knowledge of creatures is invested with matter, the very elements that Henry understands to separate things from their uncreated essence. The idea that the divine light can authentically influence a creature (‘cleanse the mind’) is seen as contradictory. As Alexander Hall explains, “Scotus takes Henry to believe that God is so unlike creatures that knowledge of the divine essence requires direct illumination…Scotus’s objection points out that were the human mind so weak as to require an illumination to know God, it would not be able to hold knowledge thus acquired.”

As both creatures and human cognitive faculties involve materiality, and it is this very materiality/created-ness that initiates a separation from the divine intellect, a formulation that posits such material foundations as able to contain divine influence is taken to be absurd. If the human mind without divine illumination (naturally) possesses indeterminate knowledge, this weakness should undermine the whole cognitive system.

Scotus’s second point of contention (building off the first criticism) is that he sees Henry’s writing as threatening the legitimacy of theology (as a science practicable

by human theologians), potentially promoting skepticism of knowledge of God. If it is contradictory for the mind to be invested cognitively in both the material world (variable) and the divine intellect (essential), we are left with an unbridgeable difference between creatures and God. This is why Henry’s knowledge of the natural world is analogical, as only analogy could connect perceptions founded in the world of creatures with knowledge of uncreated essences. However, as Henry does not conceive of a ground truly common to uncreated essences and created creatures, Scotus does not see any way to connect the two, which makes analogical knowledge impossible under these conditions. Without being able to connect the realm of divinity and the realm of nature, theological practice becomes impossible (as humans become unable to comprehend divine truths). In other terms, Scotus’s two critiques find Henry’s analogical knowledge to be equivocal knowledge.

Scotus’s philosophy entails that our grounding in nature is a permanent affair. If such knowledge is polluted by a substantial distinction between God and creatures, knowledge about God is also subsequently inhibited. To safeguard the validity of theological discourse Scotus turns his metaphysical attention towards the material world (and sensation). Hall argues that Scotus’s criticism of Henry rests on the conclusion that, “illumination theory undermines sense certitude...Scotus believes that Henry’s theory of analogy vitiates theological discourse...illumination furnishes concepts that refer to God, experience furnishes concepts that refer to creatures, and we lack any concepts that pick out both.”²⁶ [italics mine] Henry believes in two

²⁶ Ibid., 19.
incompatible concepts of being, referring to the uncreated essence and the created existent, respectively. Without a concept of being common to creatures and God, connecting God to nature, Scotus does not believe there is any way to explain and legitimize the truths of theology.

How does Duns Scotus relate nature and divinity, and what kind of knowledge do we attain through his construction? The picture of divine creation is a complicated and elusive one. Whereas Henry claimed the origin of essences in the divine intellect to be their imitation of the divine essence, Scotus insists that the establishment of an essence, or common nature/species, must occur before any recognition of its imitation of the divine essence. Marilyn McCord Adams, in her essay on Scotus’s De Primo Principio, further explains that, “Key to Scotus’s critique of Henry is his insistence that relations are both metaphysically and epistemologically posterior to their relata... And that is why a relation cannot be known prior to both of its relata being known.”27 For Scotus, what defines a (possibly creatable) essence is the compossibility amongst its simple notae (i.e. metaphysical constituents, such as rationality, or animality).

Scotus discusses, “a mode of composition called ‘logical.’ And this indicates the non-repugnance of terms of which the Philosopher in Metaphysics V, ch. ‘De Potentia,’ says ‘that is possible of which the contrary is not true of necessity.’”28

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27 “Final Causality and Explanation in Scotus’s...”, 159.
Common examples of repugnant terms given by Scotus involve chimeras, such as the co-existence of equity and rationality. Fabrizio Mondadori explains that, “the notion of (in)compossibility is characterized by Scotus entirely in terms of (non)repugnancia formalis,”29 which he later explains,

is because the natura communis [common nature] humanity has the ratio formalis it has, viz. its essential ‘constituents’ are such-and-such formalitates (typically: animality and rationality), that a relation of repugnancia formalis holds between it and (say) the differentia irrationality; and it is because such a relation holds between them, that they qualify as (formally) mutually incompossible.30

Compossibility as the non-repugnance of terms makes possible God’s creation of an essence, rather than (as we read in Henry) an essence’s imitation of the divine intellect. This is a weaker sense of ‘impossibility’ than what we may now consider to be strict logical impossibility, as compossibility adheres primarily to the organizational scheme of Porphyrian Tree-esque metaphysical boundaries, as descending from genus to species to individual. Contradicting these boundaries, such as claiming horses are rational, is what Scotus seems to argue defines incompossibility.

As the above description suggests, the judgment of compossible/incompossible arises after determining the repugnance or non-repugnance of the terms constituting an essence. Absolutely primitive terms (those which do not stand in potential relation to other terms) cannot be impossible in-

30 Ibid., 329.
themselves, as Calvin G. Normore writes, “it seems that for Scotus impossibility is a fundamentally relational idea.”

Normore also notes that,

the concept of ‘chimera’ is internally incoherent in the sense that the metaphysical constituents out of which the nature of chimera would be composed (the *notae*) simply cannot be combined…this repugnance presupposes that ‘chimera’ is itself a complex term in which several *notae* are combined. On Scotus’s view, we eventually reach simple *notae*.

These simple *notae* are irreducibly simple, not claiming any potential relations, and thereby excluded from the determination of what is possible and impossible for God to create. Scotus writes of, “the imagining of those seeking the impossibility of some things as if [the impossibility] were in some one thing, is false—as if something one…were formally impossible in itself.”

Impossible arises through the combination of logically simple terms (in-themselves not involved in any relation or imitation) whose contrary is a necessity (ex: a human who is not an animal).

Rather than understanding essences as founded in divine imitation, Scotus understands them to be founded in compossible non-repugnance. Such an understanding of compossibility hinges on Scotus’s argument that relations are posterior to their relata. An essence could only be related to the divine essence after its composition (as a potential ‘relata’) has been determined. To understand the co-existence of essences is to break them down into their simple *notae* and analyze the compossibility of the *notae*’s relations.

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31 “Duns Scotus’s Modal Theory,” 150.
32 Ibid., 149.
33 John Duns Scotus, *Ordinatio I*, d. 43, n. 18, in *ibid.*, 150.
In this frame, because an essence is not defined by its imitation of an uncreated being, to be individuated does not entail any real, substantial distinction between existent creatures and their formal essence. A created essence is just that: created. What a common nature aims to do is be created (be a finite essence), and this it realizes through finding actualization in creatures (producing these creatures via efficient causes). Creatures are what actualize a created essence (aka a common nature). As Scotus argues: “the end is cause only insofar as it moves the efficient cause to act and to give being [to something].” This is a stark difference from Henry’s account, in which individuals are separated from their corresponding uncreated essence. Timothy Noone writes that, for Scotus, “if there is individual unity, there must be some positive being corresponding to it to provide the ontological foundation.” Individuals for Scotus are not individuated by a substantially different attribute of being (i.e. uncreated vs existent). The ‘positive being’ Noone mentions is the common nature (the essence), the ‘ontological foundation’ and source of the individuals we perceive. This marks a naturalist turn in which essences of the divine intellect can find authentic expression in the created world. How exactly is this presence then conceptualized by our understanding?

While individuals (as mentioned earlier) are indivisible (unable to be further divided into constituents), the essence whose final cause is the efficient causation (production) of individuals is necessarily divisible (a species contains many members,

i.e. there are multiple individuals of the species ‘cat’). Scotus, working from the understanding that divisible essences (or species) produce said indivisible individuals, points out a similar relationship between these essences and our universal concepts.

Our concept of ‘cat’ is, for Scotus, a mental-object that is numerically singular and indivisible. Richard Cross writes that, “Universality, like individuality, is an accident of the nature: it is the nature’s accidental existence as a thought-object.”

(We will explore precisely what is meant by ‘accident’ here below). Cross mentions that Scotus maintains the Aristotelian identity of universality, such that any universal concept, to be predicated of a creature, must have numerical unity. The identity of any one universal concept is a numerically unified (and thereby indivisible) predicate, applicable logically to relate multiple individuals. This ability to be predicated, Cross argues, means it cannot be the divisible (common) nature Scotus posits. He explains: “numerical unity entails indivisibility. The universal is numerically one; so it is indivisible…The universal can be considered as being able to signify not the common nature but some extramental instantiation of that nature.”

The common nature responsible for individuation cannot be numerically unified, or it would lose the attribute of divisibility and no longer be able to produce new individuals.

The common nature (or species, form, essence, etc.) involves some unity, but it is not the unified, numerical unity of creatures or of our universal concepts. Scotus, retaining the stability of these common natures without risking their attribute of

37 Ibid., 46-7.
38 Ibid., 47-8.
divisibility, names the unity of common, created natures ‘less-than-numerical unity.’

Scotus writes: “The nature itself is indifferent of itself to being in the intellect and to being in a particular—and therefore also to being universal and to being particular or singular.”\textsuperscript{39} Intellectual apprehension is of the universal type while individual creatures are of the particular type. The indifference to either is an indifference to numerical unity; a created nature stands in relation to such modes of existences, but in-itself remains a unity less determined than numerical unity, so as able to further exercise its final cause. This less-than-numerical unity is precisely what allows it to be perpetually contracted into varying modes of being (creatures and concepts).

Less-than-numerical-unity is an elusive concept. One can think of a composer writing music on standard staff paper. To write a note does not involve any concrete instantiation of that note as it is supposed to be expressed. One needs some external element (an instrument) to individuate this note. Similarly, it does not involve the perception of hearing this note and remembering that it is one particular note with its own final causation (the written note), diverse from other higher or lower notes (this corresponding to the intellect generalizing a species concept after multiple encounters with individuals of that species).

The question of how such created natures are determined (individuated) can then be addressed. Though the created nature is a finite creation, it is not numerically unified, and so demonstrates plasticity in its identity. What is needed for contracting such a nature to individuality are properties that are simple and irreducible to each

\textsuperscript{39} John Duns Scotus, \textit{Ordinatio} II., d. 3, p. 1, q. 1, n. 33, in “Five Texts on the Medieval Problem of Universals,” 64.
other, which guarantees the indivisibility and noninstantiability of individuals (these are the ‘accidents’ mentioned above by Cross). One can think of Aristotelian prime matter as a concept akin to these simple, irreducible properties (our knowledge of these properties, however, is imprecise, as discussed below). These properties ground the common nature in an actual, individual existence. William O’Meara discusses these extrinsic properties. He comments that, “although conceding that the distinction arising from actual existence is in some way accidental, it is yet not truly accidental.”

Scotus locates within the created natures a capacity to be determined in various individual ways, while remaining faithful to the nature’s essence.

How do these properties retain the common nature’s essence while expressing them in nature? In other words, how can efficient causation act as a medium for a final cause? No single coordination of a nature’s essence is essential, as the nature is in-itself incompatible with being numerically one. The contraction of a common nature is caused both by simple and diverse elements and the common nature itself. This maintains and connects both the properties of individuality (the double negation), and the properties of a common species.

A note played by an orchestra involves both the note on the page and all the particular elements of that instantiation of the note (timbre, tone, volume, etc.). These properties do not eliminate the relationship the performed note has to the written one, but can only be executed through particular elements that are extrinsic to the note in-itself. This haecceity (or ‘thisness’) of an individual is the ultimate

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determination of the common nature. Maurice Grajewski writes: “The individual is, therefore, not made up merely of matter and form, but of this matter and this form, forming this composite or individual. The ultime realitas entis or haecceity contracts and completes the specific form by impressing upon it its definitive seal.”\textsuperscript{41} While an individual involves elements extrinsic to its species, these elements are made to express the essence of the individual’s species (the brass and breath involved in playing trombone are made to express the note ‘A,’ making the performance not simply ‘A,’ but this ‘A’).

These common natures act as the causes of the creatures we perceive. Scotus writes: “The difference between abstractive intellections is not merely numerical, since they are produced by causes of different species and by features proper to these causes.”\textsuperscript{42} Despite Scotus labeling universal concepts as mental constructions, he is in opposition to scholastic nominalism. The cause of such intellectual intentions is not the intellect, but rather the reality of a common nature (a ‘universal’).

This leads Scotus to argue that individuals are only formally distinct. This ‘formal distinction’ expresses the same common nature across formally distinct individuals. Across different performances of the same note, each performer is playing the same written note. The individual is then dependent on the nature’s unity, while expressing such dependence in its own way. Horan explains that, “the ability to consider a particular dimension of the integrated whole is a feature that is a prior to

\textsuperscript{41} Maurice Grajewski, \textit{The Formal Distinction of Duns Scotus}. (Washington, DC: The Catholic University of America Press, 1944), 152.
the mental consideration, resulting, as it were, in the discovery of an extramental
distinction…this distinction is such that it is inseparable from the essence…while at
the same time formally distinct from it.” ⁴³ Each individual then expresses a
dependence on the common nature in an individual way, and so are only distinct in
this way. This is a distinction is a formal one, rather than substantial. Individuals,
then, as well as universal concepts, rely on and express in a multiplicity of forms the
same extramental reality. This allows Scotus to explain the variability of natural
creatures as not entailing a substantial divorce from their essence, thus granting to the
natural world a power and significance absent in earlier accounts.

Henry of Ghent’s conception of individuation involved a substantial
distinction between uncreated essences and their corresponding created individuals.
This meant Henry had to rely on a divine light to allow our cognitive faculties access
to the uncreated divine intellect. There is no such separation in Scotus’s version.
Marilyn McCord Adams writes that Scotus “rules out as impossible by definition the
allegedly Aristotelian and later Averroist claim that some beings have a final cause
without having an efficient cause…Scotus’s language allows him to speak of God as
the most well-organized of lovers…the end(s) for which God acts are final cause(s)
not of God but of creatures.” ⁴⁴ The natural world finds organization through a
relation to divinity absent in Henry’s account. This means that the focus on nature
found in Scotus is due primarily to the work he did to load the natural world with
theological and metaphysical significance (what we have discussed so far). Similarly,

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⁴⁴ “Final Causality and Explanation in Scotus’s…”, 164.
cognition is then allowed to proceed to universal concepts naturally, leading Robert Pasnau to claim “Scotus [as] the first major philosopher to attempt a naturalistic account of the human cognitive system.” The association between an essence and material creatures also has led Alcibiades Malapi-Nelson to think of Scotus’s metaphysics as an early interest in transhumanism. Arguing that Scotus’s way of thinking forms a part of the history of cybernetic thinking, Malapi-Nelson writes of a “Scotian bridge between the physical and the non-physical.” In the analogy used above, this is the relationship between the performance of the note (physical) and written note (non-physical).

The motivation for Scotus’s brand of naturalism was, however, theological. Malapi-Nelson points this out as well, writing that an equivocal relationship between divinity and nature (what Scotus opposed) “would allow for the possibility of a being beyond intelligibility, which could lead to the denial of existence of the Ultimate Being.” To reject divine illumination as a cognitive model entails investing the material world with a richer theological symbolization. The naturalist metaphysics we have understood so far is then interesting to Scotus insofar as it is extendable to natural theology, performed via Scotus’s concept of univocity.

Scotus has built a natural world in which the essences God creates authentically express that essence through the production of individuals, and in which we can

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47 Ibid., 238.
naturally attain knowledge of abstract concepts that are true of these essences (or common natures). We also know that Scotus thinks that analogical knowledge is not sufficient to legitimize theological teachings and ward off skepticism regarding the existence of God. Scotus is then searching for a univocal concept. We defined this earlier, but we can also turn to Scotus’s own definition of univocal predication: “I call that concept univocal that has sufficient unity in itself that to affirm and deny it of the same subject suffices as a contradiction.” Such a concept must be attributable to each and every creature that exists, and to deny it of these creatures would be a contradiction. It must also be able to be attributed of God, similarly involving a contradiction if one were to exclude this concept from our understanding of God. Scotus identifies ‘being’ as a concept able to fill all these roles. Ingham and Dreyer write that, “The concept being is most common, most basic and extends virtually to all that exists.” By Scotus’s account, God exists necessarily and is infinite, while creatures contingently exist (dependent as they are on God’s will) and are finite, but they both, generally speaking, exist. Being, for Scotus, possesses, he writes, “a twofold primacy—namely, not only one of commonness but also one of virtuality.” We have touched on the common element of being, but what does virtuality signify?

One motivation for Henry, in distinguishing between created and uncreated being, was to ensure God’s transcendence over created, finite beings, but this is not

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49 Philosophical Vision of Duns Scotus, 46.
50 Ibid.
lost in Scotus’s univocity of being. ’Being’ is not exhaustive of God’s nature. The univocity of being functions as a neutral middle ground between God and created natures, but does not fully encompass either. We cannot grasp God intuitively, in-Itself, but only through the abstracted concept of an infinite being. This has an equal and symmetrical effect at the created end of Scotus’s ontological continuum. Peter King explains that, “It turns out that ‘being’ in not univocally predicable in quid of either ultimate differentiae or the proper attributes of being, although it is predicable of each of them in quale.”

This lack of in quid predication does not run into the problems of skepticism Scotus saw looming in Henry’s philosophy, however, because being is not only common to all existents, but virtually contains distinctions which otherwise escape our concept of ‘being.’

In the cases of both God and (explored more fully below) concrete individuals, we can have no intuitive, conceptual knowledge. As Scotus explains, “only in general notions is there univocation.” Both God and individuals, in their thisness, elude our sciences. Scotus wants to say, however, that we are still able to know truths of God accepting these conditions, and it is virtuality that allows us to do so. Being itself is not indicative of any truths about God (except God’s existence); it cannot capture the full truth of either finite or infinite beings, as it must be common to both. And yet, though we do not know the absolute truth of God, because God exists we know that God has being. Through qualifying being in certain ways, despite not attaining a

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52 This would be, in fact, a contradiction; intuitive cognition for Scotus is a different faculty than abstractive cognition, and it is abstract concepts that we use when doing things like metaphysics.
53 Duns Scotus, Metaphysician, 117.
beatific vision, Scotus thinks we can have some true knowledge of God. Ingham and Dreyer phrase virtual knowledge as, “knowing via something that includes the notion of being.” If we can consider being in a way appropriate to God, we can understand him through this notion of being, even though this does not exhaust God’s essence.

The things we know through the concept of being, according to Scotus, include, “first intelligibles—that is, to the quidditative concepts of genera, species, and individuals…and to the uncreated being.” We know truths about created essences, as Scotus’s metaphysics does not prevent natural cognition from deriving true universal concepts. Scotus’s understanding of how this knowledge can be related to knowledge of God (‘an uncreated being’) is (uncharacteristically) relatively straightforward. He associates created essences with finitude, or limitation. This limitation signals imperfection, such as when he writes that, “the formal notion of something [is] imperfect in creatures,” where this deficiency can be recognized by, “imperfection or limitation.” Individuals are limitations of their nature and therefore imperfect expressions of them. Finitude, created-ness, and imperfection are intimately related. One only needs to then consider these formal notions (Scotus mentions standard attributes of God such as wisdom, intellect, goodness) in an infinite sense to have an understanding of an infinite, uncreated, perfect being. These are “absolute perfections [that] apply to God in the highest degree.” This is why Scotus argues that, “Those things we know of God are known from their likenesses in

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54 Philosophical Vision of Duns Scotus, 47.
55 Duns Scotus, Metaphysician, 121.
56 Ibid., 115.
57 John Duns Scotus, Ordinatio I., d. 3, p. I, q. 2, n. 42, in Being and Cognition, 92
creatures.” As ‘being’ in-itself is neutrally between finite and infinite existence, truths of being can be virtually extended to different types of being. This includes an infinite being. Attributes of an infinite (and perfect and uncreated) being, while not exhausting God, are still true of God.

Scotus elsewhere is clearer on what is meant by ‘virtual’ knowledge, though without using the term virtual. He argues that,

in such a case [of considering transcendental attributes] God is conceived confusedly as it were, just as in thinking of animal, man is being thought of [confusedly]. But if such a common transcendent concept is thought of as qualified by some more specific perfection such as supreme, first, or infinite, we obtain a concept which is proper to God in the sense that it is characteristic of no other being.

The concept of an infinite being is true of nothing except God, even though this concept is not the whole truth of God. A concept is virtually true of that which it exclusively and truly pertains to, though without actually or exhaustively capturing.

The process of this divine naming (and Scotus’s proof of God) is more complex than the rationale behind its legitimacy, but need not concern us here. As this essay is centrally concerned with different philosophies of nature, it suffices to notice, regarding the above relation of univocity and virtuality to a natural proof of God, how this aim (natural access to divine truths) motivates the conception of the other territory excluded by the univocal and generic sense of being: concrete individuals. Peter King describes univocity as, “a single unified notion of being that

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58 Ibid., 119.
59 John Duns Scotus, Quaestiones quodlibetales, 14.13, quoted in Natural Theology in the High Middle Ages, 114.
applies equally to substance and accident, as well as to God and creatures, which serves to ground metaphysics as a science.” The concept of being, which Scotus uses to ground metaphysics as it applies equally to creatures and God, similarly applies equally to substance and accident. A concept of being cannot then capture the ultimate differences (haecceities) of individuals of a common nature. We can now turn to the specifics of how these differences are left out of Scotus’s metaphysical picture.

Haecceity, as mentioned earlier, is what makes an instantiation of a common nature this instantiation, or individual (what makes a performance of the written note ‘A’ this performance). The universal concepts we come to hold about species originate in our abstractive cognitive abilities, which generalize concepts across multiple individuals. A separate faculty, intuitive cognition, is responsible for cognizing the immediate presence of a single creature. The elements that contract a common nature to individuality are ultimate differentiae. King defines these differentia as ultimate, “if it does not itself have a differentia…Only when we reach differentiae that are not themselves further decomposable will we have reached the ultimate differentiae.” In relation to a written note, the actualized instantiation grounds the presence of the note, but all the particular details are only grasped by intuitive cognition; the abstract concepts we are able to understand of this note deals only with the abstract details

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60 “Scotus on Metaphysics,” 18.
61 Ibid.
(i.e., its pitch, volume, tone, etc.; anything that can be notated for musical performance).

We can turn to Scotus for more clarification. He writes of the limits of our cognition, in which “the singular is not grasped [intellectually] when the species is understood...That it is not understood per se by our intellect, then, is not due to anything on the side of the singular but stems from the imperfection of our intellect—just as the inability of the owl to see the sun is on the part of the owl, not of the sun".62 Thus scientific knowledge, and the ultimate natural presence of essences, remains at the level of species. Singulars in nature are ungraspable by our abstractive cognition, as they ground the presence of species. Scotus explains that individuals are infinite, and such infinites ‘should be left alone’ by art (that is why art and science do not go beyond the most special species);--another reason is because individuals have no proper attributes or means [whereby anything can be demonstrated of them, as one demonstrates attributes of a subject by means of its essence]. Hence artistic and scientific knowledge must halt at the level of the most special species.63 [italics mine]

The production through efficient causation of a final cause only concerns God insofar as it produces an authentic expression of the common natures God has chosen to create. God’s concern for final causes halts at the level of species.

This also means that, while Scotus has significantly altered Henry of Ghent’s formulation by holding that an essence can be expressed by its effects in the created world, this expression is only concerned with that of common natures. It does not

63 Ibid., 93.
involve the ultimate particularities of individuals. This is how Scotus distinguishes the differences contracting genus to species, and the differences contracting species to individuals. He argues that,

[Individuality] does not add essential entity to the species in the way the species does to the genus. And that is why it is said that ‘the species expresses the whole being of the individual.’ The genus, however, does not predicate the whole quiddity of the species in this way, but the species adds more quiddity.\textsuperscript{64}

This is a naturalistic formulation, but particular individuals are only scientifically and theologically relevant insofar as they express their species. A written command to perform a note does not in-itself encompass all the intricacies and complexities involved with concrete performance. God does not give consideration or specificity to the \textit{entire} natural realm. Ultimate differentiae, in a sense, swarm beneath a metaphysical scale of being, and God’s ordering of the natural world does not reach their activity in-themselves.

\textsuperscript{64} \textit{Ibid.}, 95.
Divinity & Wisdom

The idea was to make my sister perfectly happy by means of a construction perfectly adapted to her person.65

As we explored in the previous chapter, by investing nature with a link to the divine, Scotus hoped to preserve religious belief and theological legitimacy. Considering this relationship between divinity and nature prepares the discussion for our next thinker: Leibniz. It is one of Leibniz’s characteristic traits that he both embraced the modern (specifically, mechanical) sciences while remaining an advocate for more ‘traditional’ religious and metaphysical doctrine. Raised in a war-ravaged Germany (he was born in Leipzig during the tail end of the Thirty Year’s War) amidst a politically unstable Europe, Leibniz was interested in both scientific discovery and achieving a socially stable world, recognized as governed by eternal and indisputable laws. His conception of divine creation will be explored in depth below, focusing primarily on how God’s creations are invested with final causality. In Henry’s account, creatures deficiently express their final causes. Duns Scotus argued that creatures express their final causes authentically, but that final causes halt at the level of an individual’s common nature. How does Leibniz formulate this relation between the creations of God and their expression of final causes?

Just as we framed Scotus as responding to the threat of theological skepticism inherent in illumination theories of cognition, it may help to provide some context

regarding the issues Leibniz tackles in his philosophy. In her biography of Leibniz, Antognazza writes that the debate between the mechanists and the Aristotelians precipitated “the most significant intellectual crisis of the young Leibniz’s life.”\textsuperscript{66} This crisis led Leibniz to proclaim his adherence to mechanical philosophy, but this is only half of the truth, as Antognazza explains that, “What Leibniz rejected was not the Aristotelian philosophy as such but the employment of Aristotelian substantial forms in the explanation of the phenomena of physics proper. As he made clear, the adoption of mechanistic physics was not incompatible with elements of Aristotelian metaphysics properly understood.”\textsuperscript{67} Antognazza further details that the more metaphysical principles were used to explain the final causes of natural truths (the principles of the laws of physics, for example), while mechanistic science explained efficient causation.\textsuperscript{68} His linking of the mechanistic sciences of his time to properly metaphysical concepts (such as substantial forms) can then be read as a method of reconciling these disparate approaches into a unified system of belief, acceptable by conflicting intellectual factions.

Much of Leibniz’s philosophical project is indebted to his desire for an overarching and unified theo-philosophical system that would organize intellectual and cultural activity. Christia Mercer notes how Leibniz’s philosophy demonstrated a ‘conciliatory eclecticism,’ which sought to unify a diverse collection of intellectual

\textsuperscript{66} Maria Rosa Antognazza, \textit{Leibniz: An Intellectual Biography}. (Cambridge, UK: Cambridge University Press), 53.

\textsuperscript{67} \textit{Ibid.}

\textsuperscript{68} “Firmly embracing the new mathematically based science of nature for the scientific explanation of phenomena, in other words, did not answer for Leibniz more fundamental questions about the ultimate principles of reality.” in \textit{Ibid.}
influences. Mercer writes, “we need to take seriously Leibniz’s call for intellectual peace and religious insight…the object of human life is to discover this divinity within the world and to perceive our place in universal harmony.”\textsuperscript{69} [italics mine] Leibniz importantly took the natural sciences, of this world, to be key allies in his plan to rally assent to universal and eternal governing truths (both theological and metaphysical). He also famously took this world to be the best of all possible worlds, chosen specifically by God, signifying a genuine relationship between divinity and nature.

A note on the structure of this chapter: Leibniz’s philosophy is immensely complicated, and there is no clear ‘best’ place to start when approaching his thought. The following strategy will be used: we will begin by highlighting some key differences between Scotus and Leibniz. These differences will be mentioned initially without reference to why Leibniz argued for them or what work they do for his general philosophy. By getting our foot in the door through some preliminary (though admittedly vague) comparisons with Scotus, we can then address how Leibniz modifies Scotus’s philosophy. This consideration will set the stage for a possible justification for Leibniz’s claims, and allow us to begin approaching Leibniz’s philosophy in a more robust sense (including a better explanation of why Leibniz differs from Scotus in the way he does).

In an early work (the 1663 \textit{Disputatio metaphysica de principio individui}) Leibniz directly addresses the principles of individuation of many of the scholastics. Though

his metaphysical positions changed throughout his life, the positions mentioned here are maintained in his mature philosophy. Leibniz does not take issue with the general concept of a substantial form or nature (as his ‘modern’ peers were often eager to do), but rather reshapes this concept. In this work he criticizes those (among the mentioned are Henry of Ghent and Scotus) requiring an ‘extrinsic’ element to serve as the individuating factor, writing: “But they did not see that nature could individuate itself.” What does a claim like this mean? What would motivate Leibniz’s odd idea that a nature can ‘individuate itself’? We can provisionally turn to Leibniz’s critique of Scotus to begin to see what Leibniz saw in Scotus’s explanation of individuation that counts as ‘extrinsic.’

Leibniz’s criticism of Scotus is a bit obscure. Leibniz takes Scotus’s concept of common natures to be equivalent to a universal essence, over and above any individual. Such an interpretation finds common natures to exist apart from any haecceity (/individual instantiation). This is a slightly incorrect reading; as a haecceity is what contracts the nature into an individual creature, there is no actual existence for a common nature apart from it (ex: the death of every cat would mean the extinction of that species, even though the general species is not contained by any individual cat). Common natures furthermore remain differentiated from universal concepts as they are incommunicable and exhibit less-than-numerical unity. This does not, however, mean that Leibniz’s reading is lacking insight. Laurence B.

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McCullough writes that “[Leibniz] makes a fundamental blunder when he equates
common nature with universals,” but Leibniz is correct in taking common natures
to be categorically higher than individuals. As we know, Scotus outlines a world
whose precision halts at the level of species. Leibniz correctly sees that Scotus’s view
on individuation entails some separation between individuals and their common
natures. What we know of Leibniz’s position so far is that for him, natures individuate
themselves; there can be no distinction (or separation) between the individual nature
and the elements involved in the process of its individuation. Accepting, without yet
fully grasping, this position we can try to understand Leibniz’s criticism of Scotus.

There are two lines of thought that seem productive. The first is Leibniz’s
aversion to any cryptic or obscure scholastic concepts that would be baffling to a
modern ear (‘less-than-numerical unity’ seems to be a fair inclusion). Leibniz himself
writes of Scotus that, “Scotus often obscures matters instead of throwing light upon
them.” It is also worth noting Leibniz’s attention to general rhetorical strategy, as he
himself confesses that, “nothing should be demonstrated apart from that which does
not clash too much with received opinions. For in that way this metaphysics can be
accepted; and once it has been approved, then, people examine it more deeply later,
they themselves will draw the necessary consequences.”

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71 Leibniz on Individuals and Individuation, 56.
73 G.W. Leibniz, Sämtliche Schriften und Briefe, (Berlin: Akademie Verlag, 1923-), VI.iii 575f.: Pk 95,
quoted in, Christia Mercer and R.C. Sleigh Jr, “Metaphysics: The early period to the Discourse on
Metaphysics,” in The Cambridge Companion to Leibniz, ed. Nicholas Jolley, (Cambridge, UK:
more exoteric concepts, and his own slight misunderstanding of Scotus’s common natures perhaps speaks to the inaccessible nature of Scotus’s philosophy.

There is a more metaphysically legitimate issue Leibniz seems to take with Scotus’s ideas, however, which involves Leibniz’s critique of an extrinsic element as the principle of individuation. Though Scotus does metaphysical work to ensure that the haecceity of an individual does not eliminate its link to a common nature, there is no such linking of the differences between individuals and Scotus’s categorically prior species. The elements that constitute an individual as individual are extrinsic to the common nature in-itself (running with the musical example from the previous chapter, the differences between a violin and a trumpet are extrinsic to the common note they both perform). A review of the relevant parts of Scotus’s philosophy here will prepare the way for an understanding of Leibniz’s position.

Scotus justified the validity of natural cognition’s by substantially linking common natures and individuals via a haecceity. This haecceity combines a shared, common nature, and individual differences not essential (or intrinsic) to the common nature. Timothy B. Noone writes, “the individual differences are primarily and simply diverse, although the individuals constituted by those differences are items sharing the same specific nature.” Both of these points should be contentious if we aim to have a nature ‘individuate itself.’ What does ‘primarily and simply diverse’ mean? Richard Cross explains that, “The haecceity is ‘primarily diverse’ from anything to which it is not joined: its diversity is not explained by anything other than itself. It is

74 “Universals and Individuation,” 121.
something like a bare particular…”⁷⁵ These are the ultimate differentiae mentioned in the first chapter. Even though the activity of these elements is dictated in part by the common natures of individuals, there is no rational explanation for why this bare particular exists how it does in-itself. Because of this, they do no substantial work in constituting individuals (the work they do is rather to qualify them as noninstantiable and indivisible).

This allows Scotus to claim a ‘formal distinction,’ such that the individuals are not really different from one another, but simply different expressions of a shared common nature. The lack of ingrained rationale in the primarily diverse elements which contract common natures means there is no clear reason why certain instantiations of a common nature exist, as they all express the same nature and are therefore, for metaphysical and theological purposes, essentially redundant. This also explains why scientific knowledge, for Scotus, concerns the natures common to many individuals rather than the activity of specific individuals themselves. Leibniz’s nature-individuating-self formula does not allow for such ultimate differentiae, as these exist extrinsic to the metaphysical essences God creates.

The absolute ground of nature is composed of individual substances, which Leibniz claims, “involve infinity.”⁷⁶ The infinite involvement of these individuals constitutes an important difference between Leibniz and Scotus, and rests on how Leibniz employs compossibility. For Scotus, the compatibility of an essence’s simple notae

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⁷⁶ “From the Letters to De Volder,” in PE, 182.
(ultimate metaphysical constituents) determine what can be created and what cannot.

Normore’s account of Scotus’s modal logic, however, stipulates that,

[Scotus] does not work with the notion of truth ‘in’ some collection of divine ideas or some collection of positions that God has not willed to make true…Propositions that are really possibly true are not really possibly true because of their copresence with other propositions in a maximal collection but because there is a real power for realizing them.77

In Leibniz’s case, on the contrary, compossibility is relevant all the way down to existence in a world. God thinks individuals as possibilities for worldly existence. In the Theodicy Leibniz highlights the essential world-character of the individuals God has decided to create, describing how, “all existent things…must needs be reckoned all together as one world…all things are connected in each one of the possible world: the universe, whatever it may be, is all of one piece, like an ocean: the elastic movement extends its effect there to any distance whatsoever.”78 Donald Rutherford adds to this understanding by writing, “God is obliged to reckon the perfection of monads on a world-by-world basis, rather than on an individual basis.”79 This concern for the worldliness of monads by God marks a central difference between Leibniz’s and Scotus’s ideas about divine creation.

This means that compossibility involves the possibility of an essence to exist alongside other essences in a compatible way. As mentioned below, Leibniz believes that God had a choice regarding which world was eventually created, entailing that

78 Theodicy n. 8-9, 131.
there are multiple possible worlds. This co-possibility of possible worlds is not what is meant by compossibility here. Compossibility in this context refers rather to the possibility of a collection of individuals to co-ground the same world. Fabrizio Mondadori highlights that, over and above the scholastic concept of compossibility, “a possible world [for Leibniz] is a collection of compossibilia, each of which mirrors, and is connected with, all the others.” Though we will not discuss the mirroring component of monads until the next chapter, we can note here that compossible individuals, for Leibniz, are intrinsically connected to each other. As God only uses individuals when composing a world, this connection is what grounds the world.

The world is then grounded in individual natures, but each individual nature is chosen for this world, and their compossibility refers to a possibility for worldly existence. Furthermore, actualized natures (/substances) are pre-programmed in their intrinsic concept for worldly existence. In his letters to Arnauld, Leibniz writes that, “the complete individual notion involves relations to the whole series of things.” Even more striking in its terminology is Leibniz’s claim that these individuals “include the laws of its world in its notion.” We find the significant claim here that the world-of-individuals grounds a particular set of natural laws. Leibniz is even clearer on this point in On The Ultimate Origination of Things, writing: “everything in the world takes place in accordance with laws that are eternally true, laws that are not

80 “Leibniz on Compossibility: Some Scholastic Sources,” 310.
81 This leads Merleau-Ponty to describe Leibnizian substances as “In der Welt Sein,” in Maurice Merleau-Ponty, The Visible and the Invisible, (Evanston, IL: Northwestern University Press, 1968), 223.
82 “From the Letters to Arnauld,” in PE, 69.
83 Ibid., 71.
merely geometrical, but also metaphysical...in accordance with formal reasons." As we will see, this entails a direct relationship between the substantial ground of nature and the resulting laws of nature.

Individuals contain in their individual concept relations to a particular world, and so these creations are divinely ordered all the way down to concrete individuals. Martin Lin emphasizes that, “if there had been different substances then there would likely have been different laws. But what is impossible is that there are all the same substances but different laws.” The individual substances created by God are necessarily related to the laws of nature that define their world. This preprogramming, and direct grounding of the world, however, is only present when a world is created. Simply possible substances are left lacking this worldliness in their concept. As an individual nature can then be conceived of by Leibniz as possible without being compossible, we can turn now to what precisely compossibility involves for Leibniz, and what makes it more exclusive than possibility.

We can begin with the elements God utilizes when composing a world: individual notions. Leibniz writes to Arnauld in May 1686 that “the creation of an Adam [was] chosen from among an infinity of possible Adams.” What does it mean for there to be infinite variants of the same individual? We earlier mentioned that God considers infinite possible individuals for a potential world, but this is a two-fold

84 “On the Ultimate Originatio of Things,” in PE, 152.
86 ‘Possibility’ here is taken to be equivalent to Scotus’s concept of compossibility: something that could possibly be created without contradiction.
87 “From the Letters to Arnauld,” in PE, 72.
structure. Not only does God conceive of infinite possible individuals, God can consider each of these individuals in infinite possible worlds. The different worlds considered importantly change the structure of the individual in each case. There is something particular about Adam in our world versus in another.

We must also consider the divine faculties as Leibniz structures them. Leibniz ascribes to God “perfect power, knowledge and will, that is it will have omnipotence, omniscience, and supreme goodness.”\(^{88}\) Here we find the three primary faculties of God: perfect power, knowledge, and will. These faculties, Leibniz writes, result in the conclusion that “God chose the best possible plan in producing the universe…the most power, knowledge, happiness, and goodness in created things that the universe could allow.”\(^{89}\) This is one formulation of Leibniz’s famous best-of-all-possible-worlds concept; our natural world is the best one creatable. These faculties are utilized to determine the compossibility of individuals and the best-ness of all possible worlds.

Gregory Brown in his essay on compossibility considers this determination of the best possible world. Brown early on distinguishes primitive individual concepts from composite individual concepts, bringing clarity to the previously mentioned issue of multiple instantiations of the ‘same’ Adam. Leibniz held that primitive concepts are irreducible and permit no further analysis; furthermore they constitute the ground of any composite concept. These primitive concepts, Brown notes, are

\(^{88}\) “Principles of Nature and Grace, Based on Reason,” n. 9, in PE, 210.

\(^{89}\) Ibid.
“concepts of the attributes, or perfections, of God.” Brown goes on to consider sets of these primitive concepts as constituting concepts of individuals. Brown utilizes Leibniz’s defining of primitive concepts as unable to ‘be analyzed into others’ to highlight the non-relational quality of such concepts, and by proxy the individuals which contain these primitive attributes. Brown calls these “primitive predicate concepts.” These primitive predicate concepts alone, however, cannot be the concept of a created individual; we know that created individuals involve a relation to a particular world in their concept.

Hide Ishiguro clarifies that, when a world is considered for creation, “Relational properties and non-relational properties are […] intrinsically bound up with one another.” It seems useful here to utilize our understanding of Scotus’s haecceity.

What we know so far, regarding Leibniz’s divergence from Scotus, is that Leibniz allows no extrinsic elements to be involved in the process of individuation, and that compossibility is concerned with individual concepts and they way they relate to each other in a common world. Despite this hostility, he surprisingly employs the term

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91 “Meditations on Knowledge, Truth, and Ideas,” in PE, 26.
92 In a footnote Brown makes the point that, when present in created individuals, technically speaking, these are limited versions of primitive concepts, as creatures are “essentially limited.” in “Compossibility, Harmony, and Perfection in Leibniz,” 184.
93 It is not exactly clear what the non-relational properties of, say, Socrates, are, however.
94 “Compossibility, Harmony, and Perfection in Leibniz,” 188.
‘haecceity’ in the *Discourse on Metaphysics*. By investigating the differences in their usage of the same concept, we can obtain a more in-depth understanding of this difference, and begin to speculate as to why Leibniz changed the concept in the ways he did.

Leibniz writes in the *Discourse on Metaphysics* that,

we can say that the nature of an individual substance or of a complete being is to have a notion so complete that it is sufficient to contain and to allow us to deduce from it all the predicates of the subject...God, seeing Alexander's individual notion or haecceity, sees in it at the same time the basis and reason for all the predicates which can be said truly of him, for example that he vanquished Darius and Porus; he even knows *a priori* (and not by experience) whether he died a natural death or whether he was poisoned, something we can know only through history.⁹⁶

Thinking back to Scotus, the haecceity of an individual does not eliminate its correspondence to a common nature; it rather determines the *thisness* of a given nature. The same can then be read into Leibniz's notions of non-relational and relational predicates. The non-relational predicates correspond to the common nature, and the relational predicates correspond to the *thisness* of the nature. To know that Alexander’s haecceity involves certain natural events does not necessarily mean an absolute difference between *this* Alexander and an Alexander in another possible world, but justifies some difference between these two individuals (just as there is some difference between different individuals of the same species for Scotus). We can turn again to Ishiguro for clarification. She explains: “Leibniz believed that the necessity of such laws of nature resided in the nature of each individual

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⁹⁶ “Discourse on Metaphysics,” n. 8, in *PE*, 41.
substance…These laws of nature determine how each individual thing behaves in various situations.\textsuperscript{97} The individual concept is modified according to the natural laws of the world it is incorporated within.

Why structure divine creation this way? At a certain level, it seems counterintuitive to insist on an individual technically existing independent of a given world, while simultaneously defining \textit{complete} individual concepts as presupposing a created world. This duality leads Brown to write: “the complete concept of an individual is a pair—consisting of an individual concept and the laws of the universe to which that individual belongs—from which those relational predicate concepts can be deduced.”\textsuperscript{98} The rest of this chapter will deal with one possible answer to the question of this two-fold structure of individuality, involving both non-relational and relational predicates: solving the issue of the moral character of the natural world. Leibniz seems particular interested in the problem of evil and securing the just jurisprudence of God. The problem of evil, one of the more prominent issues that theologians have wrestled with, can be framed as: how do we reconcile a benevolent God with the evils experienced in the created world? Understanding Leibniz’s argument for divine creation in this way results in the extension of the goodness of God throughout the entirety of the universe, meaning final causation will no longer halt at the level of species, but will exercise its influence everywhere.

By having a haecceity serve as what individuates an individual to a world, Leibniz is able to claim the following: individuals contain in their concept relations to

\textsuperscript{97} Leibniz’s Philosophy of Logic and Language, 113.
\textsuperscript{98} “Leibniz on Compossibility, Harmony, and Perfection,” 192.
the world, and, as a result, individuals do not need anything extrinsic to themselves for the process of individuation in said world. These combined mean God can determine the *entire* natural world through individual concepts, as ultimate differentiae (extrinsic to God’s creations) are no longer needed to ground individuals concretely in nature.

We can then conceptualize Leibniz’s usage of haecceity by thinking of a musical piece written for a single instrument to be played in an orchestra. The instrument itself is capable of performing a different part in the context of a different orchestra. In any given case, however, the part it plays it determined by the parts being played by the other instruments. To perform together, their parts have to harmonize and be performed in sync. A specific part in the context of an orchestral performance can be thought of as the Leibnizian haecceity of an instrument. As we read in Ishiguro: “These laws of nature determine how each individual thing behaves in various situations.”99 The exact performance given by an instrument is dependent on the general structure of the piece, as it is to be performed collectively by the entire orchestra. This is a more orderly and complex picture of divine creation (or musical composition) than we found in Scotus’s philosophy.

This hopefully makes more concrete Leibniz’s claim that individuals are always considered for existence alongside a possible world, involving both non-relational and relational predicates (though we will not address what *exactly* a haecceity is for

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99 *Leibniz’s Philosophy of Logic and Language*, 113.
Leibniz until the next chapter). It is important to note that Leibniz is steadfast, contrary to Scotus’s objections to the idea of God exerting influence throughout the entirety of the world (arguing, “the connections that ground contingent truths would be ‘built into’ the ideas themselves, and then there would be no contingent truths.”), on insisting that his notion of compossibility does not eliminate contingency. Leibniz is worried about eliminating God’s freedom, and of “an absolute fatalism ruling all our actions as well as all the other events of the world.” This is perplexing. Aren’t individuals supposed to already include their relationship to the world in their concept? As Leibniz writes, “the demonstration of this predicate of Caesar is not as absolute as those of numbers or of geometry, but it supposes the sequence of things that God has freely chosen.” What about natural occurrences, then, are contingent?

Opposed to contingent truths are necessary truths, which “can be demonstrated through an analysis of terms, so that in the end they become identities…That is, necessary truths depend upon the principle of contradiction.” The truth of an identity does not allow for simultaneous affirmation and negation across various possible worlds; these statements must be universally affirmed or denied. In contrast, contingent truths do allow for inclusion in one world while being excluded from another. An instrument used for a performance in an orchestral work allows for the possibility of being included in one orchestral performance while being excluded from another. What then do they depend on?

100 “Duns Scotus’s Modal Theory,” 155.
102 Ibid., 46.
103 “On Contingency,” in PE, 28
Necessary truths are necessary by their own concept of identity. Because contingent truths involve not only an identity, but an identity bundled with relations (haecceity) to other contingent truths (the world it is created for), Leibniz writes that “in contingent propositions one continues the analysis to infinity through reasons for reasons…but there is always, underneath, a reason for the truth…” Only God knows this ‘reason underneath,’ decided upon by the divine faculties. But what about this safeguards contingency? The central point seems to be that even God does not know or determine the infinite events that will occur in the natural world; God knows rather the general principles which ground nature. Leibniz himself seems to say this when he claims that, “In contingent truths…the resolution proceeds to infinity, God alone seeing, not the end of the resolution, of course, which does not exist, but the connection of the terms…” [italics mine] God may even organize individuals in a compossible such that there is only one such way in which an individual’s life could play out, but it is not this individual life which is determined. As Leibniz frames it, God only takes “individuals into account as much as [can] be done consistently with preserving the harmony of the universe.” Nothing about the individual’s existence is in-itself definitively determined; God creation of this world is rather concerned with its general harmony.

To add some depth to our understanding of this idea, we can begin considering a way in which Leibniz uses such a metaphysical structure to solve the

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104 Ibid.
problem of evil. If a morally good world were selected with regard to a generalized harmony of the universe, contingently occurring evils may be produced that contribute to this general structure, without God explicitly deciding to creating evil. Any example Leibniz uses is that of painting and music, in which, shadows and dissonances truly enhance the other parts, and the wise author of such works derives such a great benefit for the total perfection of the work from these particular imperfections...Thus, we must believe that God would not have allowed sin nor would he have created things he knows will sin, if he could not derive from them a good incomparable greater than the resulting evil.\textsuperscript{107}

God aims to create the greatest goodness for the entire world, and so is not concerned with each individual being or event, but only insofar “as much as [can] be done consistently with preserving the harmony of the universe.”\textsuperscript{108} There almost then seems to be two levels of contingency: the first is God’s creation of a particular world because of its best-ness, and not because its creation was necessary. The second is that each individual, through its haecceity, may produce effects that from a finite perspective appear at odds with this world being the best-of-all-possible-worlds. These ‘evils’ are contingent occurrences insofar as they do not carry necessary existence in-themselves, but are rather byproducts of God’s general plan for the world (the reason for their existence can only be found in the general plan of the world, and so for finite minds such a resolution would ‘proceed to infinity’).

We are then tasked when addressing what makes God choose to create one world instead of another (what makes one world 'the best'). Leibniz does some work to clarify this point when he writes that

the principle of contingent things [is] *that whatever is more perfect or has more reason is true*. Except for the existence of God alone, all existences are contingent...the reason why some particular contingent thing exists, rather than others, should not be sought in its definition alone, but in a comparison with other things.\(^{109}\)

The necessary existent is unsurprisingly God. The explanation of the existence of particular contingent beings is explained by their having 'more reason.' They furthermore do not have more reason in an absolute sense, but in relation to other contingent creations.

We can also go a bit further and consider how a determinate structure, which carries the 'most reason,' can find expression in a contingent world. Namely, how is a contingent natural world able to express 'best-ness' as its final cause? In Scotus's account what was common was the attribute of being. Leibniz has his own notion of a concept common to God and creatures, which he brings to light by explaining that, “since we say that both God and creatures exist and we say that necessary propositions are true no less than contingent ones, it is necessary that there be some common notion...it is common to every truth that one can always give a reason...”\(^{110}\)

What is common to creatures and God is the principle of sufficient reason. This principle, to which all activity accords is, “that by virtue of which we consider that we

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can find no true or existent fact, no true assertion, without there being a sufficient reason why it is thus and not otherwise.”

For everything that exists, there must be a reason. In the above example, a reason can be given for every evil that occurs; any evil God permits must contribute to the overall structure of the world in a way impossible otherwise.

We can say a bit more in comparison with Scotus before addressing precisely what this ‘reason’ is. For Scotus, what connected divinity and nature was the univocity of being. Being could be attributed to both God and creatures, the former being attributed an infinite share and the latter a finite share. With Leibniz, following the principle of sufficient reason, we find instead a univocity of reason. Following Scotus’s definition mentioned in the previous chapter, we could phrase this as: it is impossible to attribute to an existent a lack of reason for existence without a contradiction. It is a reason for existence that can be attributed to both creatures and God, the former being attributed a necessary reason and the latter a contingent one.

What difference does this change of the term of univocity entail? Being is a quite neutral term; as we have seen it does not concern itself with causation beyond the specificity of species. A univocity of reason, governing individual concepts, involved in a world composed just of individuals (no ultimate differentiae to be found), leaves nothing out.

Leibniz’s concept of God’s creation paired with the univocity of reason accords with final causation in a way that a univocity of being cannot. As the ‘reason’

for the existence of contingent things must possess this reason *in relation* to a particular world, every natural occurrence shares in possessing a reason for existence. The way Leibniz’s includes final causes into nature then carries a confidence absent in Scotus, as *nothing* happens distinct from this univocal term, *nothing* occurs in nature completely unrelated to God. We can then turn to what ’having the most reason’ (i.e. final causation) consists in.

Julia Joráti explains the rationale behind divine creation in her essay “Divine Faculties and the Puzzle of Incompossibility.” Joráti focuses on what makes one world the ‘best’ option, and how this attribute pertains to a world being composed of maximally compossible individuals. She initially introduces the three divine faculties we are already familiar with: infinite intellect, will, and power. God’s will is the only faculty constrained to the best-of-all-possible-worlds as its object; God’s intellect knows both good things and bad, and God’s power can enact both good and bad things.

In Leibniz’s *New Essays on Human Understanding* we read of this constraint when Philalethes (spokesperson for Locke) says: “we might say, that God himself cannot choose what is not good,” to which Theophilus (spokesperson for Leibniz) responds: “I am so convinced of this truth that I believe we can assert it boldly.”112 This stratification of God’s faculties, with the stipulation of the will being drawn to the best world, allows the created world to be given moral consideration. Joráti writes: “Leibniz can say that God could have created a different world…The only reason God

112 *NE*, 198-199.
did not actualize a different world is because these other worlds were less good.”

God's intellect, power, and will work together to create the best world, realized through an infinite divine calculus, what Leibniz names “a Divine Mathematics.”

The contingency of existence discussed above means God is allowed infinite specificity (no world is necessary; God can consider infinite variations of primitive individuals in infinite worlds) when determining the best world.

Some concept of maximal goodness motivates Leibniz’s claim of this world being the best-of-all-possible, and it is here we can relate Leibniz’s theology with his political and social reasoning before turning to an explication of the theological method Leibniz ascribes to God. In his essay “Meditation on the Common Concept of Justice,” Leibniz is clear that justice is not simply the effect of anything God wills, because this would entail no difference between “whether it is good and just because God wills it or whether God wills it because it is good and just.”

Leibniz wants to argue for the latter case, as he argues later that “the goodness of the actions and productions of God do not depend on his will, but on their nature.” What about the nature of God’s productions make them good? Leibniz writes that, “Justice is nothing else than that which conforms to wisdom and goodness joined together: the end of goodness is the greatest good, but to recognize it wisdom is needed,” where goodness

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114 “On The Ultimate Origination of Things,” in PE, 151.
116 Ibid., 46
is, “that which serves in the perfection of intelligent substances…” Furthermore: “wisdom is in the understanding and goodness in the will…And this is what God does in the world…whose infinite penetration and sovereign power one cannot avoid.” [italics mine] The ground of the best world is ‘infinitely penetrated’ by God’s wise sovereignty, whereby nature is the effect of these divine principles and the univocity of reason.

The ‘wise’ ground of nature, governed by a univocal notion of reason, is also Leibniz’s recommended perspective when dealing with the problem of evil, as mentioned above. Leibniz argues, “I believe that God did create things in ultimate perfection, though it does not seem so to us considering the parts of the universe…I cannot explain [this ultimate perfection] in detail. One would have to know the general harmony of the universe for that, whereas we know only a very small part.” In the same passage Leibniz writes that God ‘derives’ from momentary evils a greater good with view to this general harmony. It is the overarching structure organizing natural activity that promises goodness, rather than individual occurrences in-themselves. What promises this assurance on Leibniz’s part is that, “Knowledge of reasons perfects us because it teaches us universal and eternal truths, which are manifested in the perfect Being,” and that “The goodness of the author of things…[makes itself] known to the human race…through the eternal light of

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117 Ibid., 50
118 Ibid.
120 “Felicity,” in Political Writings, 83.
reason. It is by tending to the reasons for contingent truths that Leibniz claims we are led to faith, as it reveals the general harmony of the universe.

It is also worth noting that Leibniz’s insistence on contingent goodness is the most apparent point of tension between Leibniz’s thought and Spinoza’s. In Spinoza’s Ethics we read that, “Nothing in nature is contingent, but all things are from the necessity of the divine nature determined to exist and to act in a definite way.” Leibniz’s response to Spinoza’s philosophy reveals a very present concern for the socio-cultural implications of a metaphysical system. He states that in his view, “Spinoza does not attribute intellect and will to God.” Spinoza is then criticized for thinking that the mind can greatly be strengthened if it understands that what happens, happens necessarily. But the mind of the sufferer is not rendered content through this compulsion, nor does it feel its evils any the less...The soul is happy if it understands that good follows from evil, and that what happens is the best for us, if we have wisdom. [italics mine]

Briefly setting aside our metaphysical inquiries, one can note Leibniz’s attention to individual’s concerns about their lives, and how this speaks to his general political conservatism and desire for ecumenism, both of which require soothing any anxieties over present evils (and subsequent impulses towards revolutions or reformations) with the promise of a future good (an evil on credit, or what Leibniz calls “the divine economy”). The scope of rational philosophy extends its relevance here to lawful

121 “The Common Concept of Justice,” 58.
123 “Comments on Spinoza’s Philosophy,” in PE, 278.
124 Ibid., 281.
125 “From the Letters to Arnauld,” in PE, 88.
and regulated political and religious implications. The faculty he recommends we approach such knowledge with is wisdom, however, which is not one of the three primary divine faculties. What is wisdom for Leibniz?

We can revisit here the problem of compossibility for Leibniz. All we know of it so far is that it is concerned with individuals not in-themselves, but as they exist in (and for) a world. Joráti views wisdom as essential to the problem of compossibility. Joráti also distinguishes wisdom from intellect, such that while intellect is the faculty of knowing in general, “wisdom consists exclusively in knowledge of the good, of the best, or of happiness.”\textsuperscript{126} Joráti also notes that Leibniz often uses wisdom to mean knowledge of order and regularity, such as in the \textit{Principles of Nature and Grace Based on Reason}, where he writes that, “the laws of motion depend upon the \textit{principle of fitness}, that is, upon the choice of wisdom.”\textsuperscript{127} Leibniz utilizes both definitions in conjunction in the \textit{Monadology}: “There must be a sufficient reason for God’s choice, a reason which determines him towards one thing rather than another…And this reason can only be found in \textit{fitness}…And this is the cause of the existence of the best, which wisdom makes known to God.”\textsuperscript{128} The sufficient reason for God’s choice is then ‘fitness,’\textsuperscript{129} which God recognizes through his wisdom.\textsuperscript{130}

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\textsuperscript{126} \textit{Ibid.}, 187.
\textsuperscript{127} “Principles of Nature and Grace,” n. 11, in \textit{PE}, 211.
\textsuperscript{128} “Monadology,” n. 53-55, in \textit{PE}, 220.
\textsuperscript{129} Leibniz uses the terms ‘Principle of Fitness’ and ‘Principle of the Best’ interchangeably. Though most readers familiar with Leibniz are more accustomed to the latter principle, I will use ‘fitness’ as it a more illustrative and intuitive term in regards to understanding what this essay takes the principle to signify (i.e. harmonious and orderly co-existence, both moral and natural). There is also a live debate over what \textit{exactly} constitutes the ‘best’ world for Leibniz. This essay does not aim to answer this question,
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The above quote from the *Principles of Nature and Grace Based on Reason* again reiterates the association between wisdom and fitness: “the principle of fitness, that is, the choice of wisdom.” What, then, is fitness? There are several ways to approach this question, and Leibniz gives differing answers depending on the text. We find in the *Theodicy* that Leibniz relates the principle of fitness to the concept of justice, such as when he writes that, “There is, however, a kind of justice and a certain sort of rewards and of punishments…This justice has its foundation only in the fitness of things, which demands a certain satisfaction for the expiation of an evil action.” As mentioned earlier, to re-pay the debt of an ‘evil’ at this moment, a greater ‘good’ must make up for it. Leibniz also seems to say that maximal happiness is an element of the best world. When God sets out to create a world, Leibniz argues, “we mustn’t doubt that the happiness of minds is the principal aim of God and that he puts this into practice to the extend that general harmony permits it.” The individuals that are instantiated into a shared world must make room for each other, such that one’s activity does not inhibit another’s in an unjust way. This world also is structured to allow for the maximal amount of ‘harmonized’ happiness. Knowing nor does it seem to rely on any particular definition. Essentially what is being claimed here is a direct relationship between the moral fitness of a world (whatever that may be for God) and the laws of nature which govern the activity of that world.

130 Where exactly ‘wisdom’ is to be found in the faculties of God is unclear. The only thing we need to know about wisdom is that it is knowledge of fitness.
131 “Principles of Nature and Grace,” n. 11, in *PE*, 211.
132 *Theodicy*, n. 73, 163.
134 I take this to mean that each created individual is maximally happy insofar as this does not ‘get in the way’ of another’s happiness.
the world in this way is what Leibniz defined as ‘wisdom’ above; it guarantees that no individual is unfairly treated in the grand scheme of the world.

Elsewhere, Leibniz uses this principle to explain the order and regularity of natural laws. We read previously Leibniz’s claim that, “the laws of motion depend upon the principle of fitness, that is, upon the choice of wisdom.”\(^{135}\) A ‘fit’ world produces regular and orderly laws of motion. Another association Leibniz makes is between the perfection of the world and, “[its] amount of essence.”\(^{136}\) This isn’t the clearest definition, but seems to suggest the ‘best’ world is the world which contains the most amount of created essences in which justice and natural regularity hold (perhaps there is more than one possible world in which the two aforementioned senses of ‘fitness’ are true, but one of these has a greater ‘amount of essence’).

The principle of fitness, however, is not the only descriptor for compossibility Leibniz uses. The translators of Leibniz’s *New Essays in Human Understanding* write, “how can Leibniz explain possible species’ being non-compossible? His answer might be that there would be a loss in the simplicity of general laws which was not compensated for by the gain in the richness of particular facts.”\(^{137}\) This is another famous Leibnizian doctrine: God acts with maximum simplicity yielding maximum richness in production. For instance, he writes in the *Discourse on Metaphysics* that, “The simplicity of the ways is in balance with the richness of the effects.”\(^{138}\) However, elsewhere he seems to associate this definition with our understanding of the

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\(^{135}\) “Principles of Nature and Grace,” n. 11, in *PE*, 211.

\(^{136}\) “On The Ultimate Origination of Things,” in *PE*, 50.

\(^{137}\) *NE*, lxxix.

principle of fitness, as a principle concerned with harmony. Leibniz writes in the *Theodicy* that “The ways of God are those most simple and uniform: for he chooses rules that least restrict one another.”\(^{139}\) The fitness of individuals is co-present alongside simplicity, as simplicity guarantees the harmony of a world.

The two senses of fitness, that is, moral fitness and the fitness of natural laws, importantly seem to be necessarily related. We established above that when individual concepts are determined to exist in a particular world, they are bundled with relational attributes (a Leibnizian haecceity) that modify the internal concept of this individual according to the structure of its world. At the level of the moral jurisprudence of God, a world is created for its moral fitness (which may include elements such as expiation for every evil, maximal harmonious happiness, maximal essence, among others).

When individuals are selected for their moral fitness, and they are modified by a haecceity particular to that world, these individual then contain the ground of nature in their concept. We mentioned before that individual concepts “include the laws of its world in its notion.”\(^{140}\) If these notions are internally constituted by their contribution to the ‘best’ (i.e. most fit) world, there is a clear correlation between this moral element (the world’s final cause) and the laws governing the natural world (laws of efficient causation, such as the laws of motion). Moral and natural orders are simultaneously produced by the same cause: the creation of the most ‘fit’ world.

\(^{139}\) *Theodicy*, n. 208, 261.

\(^{140}\) “From the Letters to Arnauld,” in *PE*, 71.
As Leibniz writes, the sufficient reason for God’s creation of a world “can only be found in *fitness,*” a description reached only through a consideration of how individuals would relate and exist together in a world. We also find in Leibniz’s *Against Barbaric Physics* that the, “laws of nature...derive from...true metaphysical principles...the laws of motion have been established not with absolute necessity, but from the fitness of things...organisms are everywhere, and nowhere is there chaos unworthy of wisdom.” We again read that natural laws result from the fitness of the world. The fitness of the laws of nature is inseparable from the moral fitness determining a world as the 'best.'

The univocity of reason does much of the work in produces a harmony between the morally just structure of individuals which fit together best, and the resulting natural laws. We can quickly review here what we have covered throughout this chapter. Leibniz complained that Scotus relied on an extrinsic element for his principle of individuation. Rather than common natures, Leibniz argues that God uses individual concepts when creating a world. Leibniz includes in the concept of each individual its relations to its world (realized through a modified usage of haecceity), as his version of compossibility concerns not just the compatibility of an essence’s metaphysical constituents (its *notae*), but also the compatibility of this essence with the particular world it is being considered for.

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141 “Monadology,” n. 54, in *PE,* 220.
142 The barbaric physicists being the Newtonians
143 “Against Barbaric Physics,” in *PE,* 319.
By doing this, Leibniz is claiming that God’s creations determine *everything* that exist in nature; no ultimate differentiae are needed as Leibniz’s brand of haecceity means that individuals are grounded in *this* world within their own concept. Leibniz also uses ‘reason’ as a univocal term, extending the influence of God’s reason (or plan) for creation to every existent thing. Everything in nature exists for a reason, and these for each are grounded in God’s general reason for creating this world. As God then has control over the entire ground of nature, and has greater precision than Scotus’s God (for whom final causation halted at the level of species), Leibniz can claim that this world is the best possible world. Contingent events may occur that from a finite perspective appear to threaten this world’s best-ness, but Leibniz argues that this is only the appearance of the threat, as if we had the ability to perform an infinite analysis of its role in the general structure of the world we would be able to see how this evil contributes to a greater good, which would otherwise be impossible.

This kind of knowledge, of the general goodness (or fitness) of the world, is what Leibniz calls wisdom. Fitness signifies both moral laws and orderly laws of nature. We considered above the hypothesis that because Leibniz believes individuals contain the ‘laws of its world’ in their notion, this association (between moral and natural fitness) is a necessary one. We have mainly focused so far on the structure of the (best) world God has decided to create (compossible for a world, individuals requiring nothing extrinsic for individuation, adhering to the principle of sufficient reason). This particular structure we have reviewed, using the above elements, allows God to create a world that is the ‘best’ in all of its contingent and particular occurrences.
This divine calculus we have covered, Leibniz writes, produces the world, which he calls “the most admirable machine.” The correspondence between divine essence and nature does not exhibit total parallelism, however, as it would in, for example, a Spinozist account. The divine rationale exceeds and is “outside this series of contingent things.” This refers back to the earlier discussion on contingency. The contingent realm may at times appear to diverge from the path of wisdom. The activity of the contingent individuals populating our world will be the focus of the next chapter. These individuals are what Leibniz names monads; they are created substances. It will be necessary to keep in mind our discussion so far, because although God does not exist in our world, it is God’s structure that perpetually determines our world. We are then moving between Leibniz’s two natural kingdoms, which he claims correspond to one another as, “a perfect harmony between two natural kingdoms, the one of efficient causes, the other of final causes…” Though the ultimate decision making process involved in the final causes involves other possible worlds (God’s creation being a contingent one), the willing of the best world to creation enacts a harmony between the subject of this chapter, final causation, and the subject of the next chapter, the efficient causation of the best possible world. By exploring this relationship we will attempt to gain a greater sense of the relationship between moral and natural fitness.

146 “Monadology,” n. 87, in PE, 224.
Nature & Mechanism

Even chance is not divorced from nature, from the inweaving and enfolding of things governed by Providence. Everything proceeds from it.\(^{147}\)

We read in the last chapter about the process of divine creation. God, a necessary being, considers a collection of individuals, chooses the one that demonstrates the most fitness, and from this a world is instantiated that bundles each individual’s non-relational attributes with a haecceity specific to this world, which determines their co-existence. Accepting this background, how do we conceptualize nature, and efficient causation?

We can start by considering what this world is composed of, beyond the abstract individual/haecceity distinction. We know from last chapter, without knowing exactly what defines them, that monads are created simple substances. Is there anything else to be found in nature? Popular in scientific discussions during Leibniz’s life were the concept of a void (or vacuum), pure space and time (Leibniz was particularly concerned with Newton’s ideas concerning pure space and time), and the concept of atoms, or ultimately irreducible particles that compose nature. Leibniz was certain that void, pure space and time, and atoms are completely fictitious and have no place in nature. Why is this? Leibniz’s argumentation always starts from the premise that none of these entities can be grounded in the principle of sufficient reason. Without this principle we forfeit the central commonality between the divine

and the natural, and we risk introducing entities into nature which were unintended by God. The same method of argumentation is used for the denial of space, a void, and atoms, so we only need to focus on one or two examples. Leibniz is clear on the relation between the principle of sufficient reason and such entities:

if space were an absolute being, something would happen for which it would be impossible that there should be a sufficient reason...Space as something absolute does not differ in anything from another point of space....[it] is impossible there should be a reason why God should have placed [bodies] in space after one certain particular manner and not otherwise—why everything was not placed the quite contrary way...\(^\text{148}\)

The issue Leibniz is pointing to is that, in the case of two perfectly similar, uniform collections of space, what would make God choose one over the other (for existence, for situation of bodies, etc.)? Without a reason for choice, no choice will be made, and so it is impossible for God to have chosen the existence of absolute space (or any other entity which claims a uniform, undifferentiated essence, such as a void or atoms). The principle of sufficient reason must ground the entirety of nature.

This rejection of the concept of pure space is paired with a rejection of the concept of pure time. Leibniz gives two compelling arguments for this position, both of which are grounded in the principle of sufficient reason. Leibniz poses first the issue of the time of God’s creation of the world. If time were an independent entity, the world would exist in certain moments of time. But what would make God choose one time for the world’s genesis over another? Leibniz’s explanation is, “It is a like fiction, (that is) an impossible one, to suppose that God might have created the world

\(^{148}\) “From the Letters to Clarke,” in \textit{PE}, 325.
some millions of years sooner...since God does nothing without reason, and no reason can be given why he did not create the world sooner...”\textsuperscript{149} The question again depends on the principle of sufficient reason, and a lack of reason for God’s choice.

The second argument Leibniz gives for the rejection of pure time is slightly different, as he begins here to hint at what space and time truly consist in. This argument begins as we would expect, claiming that, were we to accept the idea of an entity of pure time, “it would be impossible that there should be any reason why things should be applied to such particular instants rather than to others,” which Leibniz uses to conclude that, “then the same argument proves that instants, considered without the things, are nothing at all and they consist only in the successive order of things...”\textsuperscript{150} Time is an effect, or phenomena, dependent on the ordered succession of things.

These ‘things’ are the monads with which God organized and created our world. They also ground space. Space’s ground Leibniz formulates as, “an order of the existence of things observed as existing together...”\textsuperscript{151} [italics mine] The order of existent things produces the appearance of space, and their succession produces the appearance of time. This order is the structure of the best possible world; it consists in the compossible individuals discussed in the previous chapter. We will discuss the actual constitution of time and space more later on, but what is important here is that they cannot exist in ‘pure’ form, as this would violate the principle of sufficient

\textsuperscript{149} Ibid., 329.
\textsuperscript{150} Ibid., 325.
\textsuperscript{151} Ibid., 334.
reason. The best world possible must be grounded in elements that do not exist in the ‘pure’ form that space and time do. These are monads.

We can approach an understanding of monads through Leibniz’s mention of them in reference to the principle of sufficient reason. Leibniz explains that, “It is necessary that each monad be different from each other. For there are never two beings in nature that are perfectly alike, two beings in which it is not possible to discover an internal difference…”152 This is the principle of the identity of indiscernibles; between two monads it is always possible to find an internal difference. That every monad is internally distinct from every other is what allows God to instantiate it in a created world. It is never possible to find two monads with exactly the same features because, as argued above, what would the reason be for their co-existence?

One can see here how a univocity of reason deals in more precise natural terms than Scotus’s univocity of being. This point will become clearer throughout this chapter, but we can start to consider what Leibniz’s rejection of species as ‘abstract beings’ amounts to. Final causation in Scotus’s account halts at the level of species, and so the divine foresight of this world’s activity only extends that far. Leibniz aims to extend the effect of God’s planning to all facets of the natural world, embracing and influencing the entirety of the efficient causal order. For Scotus, ultimate differentiae (irreducibly simple properties that ground species in individual creatures) are the elements through which species express their essence in the realm of efficient causes.

152 “Monadology,” n. 9, in PE, 214.
One can imagine Leibniz’s response to such a concept. For what reason do they exist? Why is God not powerful enough to extend his wisdom all the way down to concrete individuals? These questions motivate Leibniz’s conceptualization of an individual’s haecceity, modified to suit these questions.

Leibniz’s own brand of haecceity can also find further clarification here. By spending a bit of time considering some possible objections to claiming Leibniz’s metaphysics relies on his brand of haecceity we can hopefully add more depth to this concept before exploring how it applies to a mechanistic world.

To grasp a full picture we must consider both the principle of sufficient reason and the principle of the identity of indiscernibles. The haecceity of an individual, as we have seen, makes it ‘fit’ into a specific world. What are the exact properties of this ‘fitness’? As John O’Leary-Hawthorne and J.A. Cover phrase it, “substances [/monads] are created, contingent, causally active individuals while concepts are eternal, necessary, passive items in the mind of God.”153 The usage of haecceity makes the same individual concept in the divine intellect applicable to different possible worlds, making each possible instantiation of a concept contingent. God enacts one contingent creation using a world-specific haecceity (just as Scotus’s usage of haecceity makes possible the same species concept applied to several individuals; as stated before, Leibniz replaces ‘species’ with individual and ‘several individuals’ with several worlds). We can appreciate the work this does for Leibniz’s project by briefly considering what would happen if we were to exclude Leibniz’s usage of haecceity

from his philosophy. To reject the concept of haecceity in Leibniz’s metaphysics (making it *this* Adam vs. Adam in another possible world) is to claim that there is no underlying identity true of the Adams of different possible worlds. This means, namely, “there is no notion of transworld being.”

O’Leary-Hawthorne and Cover identify the trouble with this picture. A partial reconstruction of their argument runs as follows. We can consider the anti-haecceity claim that the description of an individual can be fully given by its possibility in a single world, as said individual cannot exist across possible worlds. Such a claim means that there could be no possible world in which two things with identical properties (ex: qualitative properties) in their world exist; if it is *two* individuals rather than one, they must have some internal difference, and with no haecceity these individuals must present their full notions in the world we are hypothesizing.

This claim, however, Leibniz never endorses, and in fact seems to reject. Leibniz writes that his principle of the identity of indiscernibles entails that

when I deny that there are two drops of water perfectly alike, or any two other bodies indiscernible from each other, I don’t say it is absolutely impossible to suppose them, but that it is a thing contrary to the divine wisdom, and which consequently does not exist…if two things perfectly indiscernible from each other did exist *they would be two*, but that supposition is false… [italics mine]

This makes it clear that it is possible (or, at least not impossible) for two things to exist in a world in which they are indiscernible; what is impossible in this picture is God’s creation (or choice) of that world. If transworld identity were not a Leibnizian

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154 *Ibid.*, 143

155 “Letters to Clarke,” in *PE*, 334.
metaphysical feature, describing two identical raindrops in a world would be equivalent to describing the one and the same raindrop twice. What makes them two is assumedly their internal difference, importantly not tied to that specific world. As O’Leary-Hawthorne and Cover claim, “this line of thought is intelligible only if one grants that there is a more to a world than the general propositions true of it.”

After reading this passage we can ask: what about Leibniz’s story of divine creations makes possible this world, with two identical raindrops? As we covered in the previous chapter, God’s intellect is infinite, capable of covering both good and bad options. It is the will that is attracted to only the best world (in which everything exists for a reason). This means that our world being the ‘best’ initially requires that some worlds are incompossible (worse), meaning not exhibiting ‘fitness’ and adhering to the principle of sufficient reason (these worlds would include such features as two identical raindrops). That God did not create these worlds demonstrates his goodness. O’Leary-Hawthorne and Cover’s reading Leibniz as supporting transworld identity, or haecceities, rests largely on this point, as they write, “were [Leibniz] to relinquish any version of haecceitism altogether—of the notion of transworld identity as a meaningful one—…the most familiar deployment of the principle of sufficient reason to obtain conclusions about the lack of actual non-identical indiscernibles would break down.” There is a reason this set of individuals exist in this collection/world. Leibniz needs some worlds in which the description of their worldly existence is not alone sufficient to determine their individuality, in order to explain our world as

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156 Substance and Individuation, 159.
157 Ibid.
analyze via the principle of sufficient reason. Taking our world to be the ‘best’ presupposes that God is good because he could (but would never) actualize worse worlds not governed by this principle. The possibility of worse worlds, resting on a usage of individual haecceity, is crucial for Leibniz’s argument for God’s benevolence, and the utility of the principle of sufficient reason as a tool for analyzing our world.

Making clear that haecceity is specific to a world (while identity can be true of multiple worlds), and that Leibniz’s motivation in utilizing such a concept is to sufficiently ground our world and our ability to explain natural occurrences using sufficient reason (thereby linking nature with divine reason), we can then begin to examine exactly how the individual and its haecceity are unified into a created substance, or monad.

We can construct a partial, but sufficient understanding of the simple substances, or monads, that ground the natural world. Three elements of simple substances (aka monads), as Leibniz sees them, are particularly important to keep in mind. In the *Monadology* we read that, “monads [have] no extension, nor shape, nor divisibility...There is also no dissolution to fear, and there is no conceivable way in which a simple substance can perish naturally.”158 Adding to this understanding, in the *Principles of Nature and Grace*, Leibniz writes that, “a substance is a being capable

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158 “Monadology,” n. 3-4, in *PE*, 213.
of action.” From these three attributes we can understand that monads are immaterial, persisting throughout time, and able to act.

A monad’s activity, vaguely speaking for the time being, consists in ‘unfolding’ predicates. The monad which produces a tree, throughout the course of time, unfolds the predicates that make up its corresponding tree, including its location, branch length, bark color, leaf color etc., such that these elements can be predicated of the tree (ex: ‘look at this tree’s branches’). Leibniz maintains that this unfolding of predicates occurs in an orderly way. He writes in *On Nature Itself* of “organisms unfolding themselves through some predetermined plan.” This plan Leibniz also sometimes refers to as a ‘law-of-the-series.’ The series of unfoldings, or generation and corruption of predicates, is lawful and orderly.

Leibniz’s usage of ‘pre-determined’ here refers to a subject’s predicates always being grounded in the notion of the subject, such that these predicates are contained in the concept of the subject. Were we to grasp the concept of the subject in its entirety, we would simultaneously possess all of its predicates. Leibniz asks: “what is it to say that the predicates is in the subject, except that the notion of the predicate is in some way included in the notion of subject?” When we point to a tree, and refer to the tree as a subject, we mean nothing else than the subject of the following predicates: in this soil, tall, in this park, has these branches, etc. This is found also in *The Principle of Nature and Grace, Based on Reason*, as Leibniz explains that, “plants

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160 “On Nature Itself,” n. 2, in *PE*, 156. One can see in this language its affinity to the idea that an individual ‘individuates itself.’
161 “From the Letters to Arnauld,” in *PE*, 73.
and animals, do not come from putrefaction or chaos, as the ancients believed, but from *preformed* seeds...”¹⁶² These seeds (assumedly meaning simple substances, or monads) contain the blueprint of the predicates that we encounter in nature.

The exact logical formulation and use of this idea (that all predicates are contained in the concept of the subject properly conceived) is less of interest here than the work this logical theory does for Leibniz’s metaphysics.¹⁶³ The predicate-in-subject formulation allows Leibniz to say that all predicates of nature can be given a sufficient reason for existence; namely, the subject. Why is this branch this length? Because of it is a predicate of this tree. The subject explains the predicates it contains. It, however, is not identical to these predicates. The subject persists while its predicates come and go (leaves fall off trees).¹⁶⁴ This is the double sense implied by the term *law-of-the-series*. Predicates involve variation, but a stable law governed by the same subject across time explains this variation. By bringing to light the constant motion and limitation of an actualized substance Leibniz sees something similar to Henry of Ghent, who brought attention to the perpetual variation of embodied creatures to justify of the necessity of a divine illumination. Leibniz, however, does not seem to link this variability or lack of power with any deficiency in intelligible content, as the entirety of the world (including the variations internal to each monad) is determined by God’s plan. Henry of Ghent argues for deficient intelligibility through both variations of creatures and of the cognizing soul. He writes of, “the  

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¹⁶² “Principles of Nature and Grace,” n. 6, in PE, 209.  
¹⁶³ For an in-depth discussion on Leibniz’s logic, see: *Leibniz’s Philosophy of Logic and Language*  
¹⁶⁴ The tree ‘itself’ will also die and decay; only the immaterial monad persists.
changeability of the species themselves existing within the soul...because the human soul is [also] changeable and undergoes error, nothing that equally changeable or more so can correct it so that it is not bent by error.”

Leibniz, however, writes that nature must entail “a necessary connection between matter and active force...The nature of things requires such a connection; nature cannot be so impoverished that it lacks a principle of action.”

Nature is invested with the active powers of persisting subjects, unfolding predicates belonging to these law-governed subjects (an explication of monads as ‘active’ is explored later, with reference to appetitions).

Predicates can then always be given a sufficient reason for existence. Their occurrence is neither random nor chaotic, but follow from God’s wise plan. The precise reason why the best world must involve variation of predicates, as opposed to a stable set of identities that compose a stable world, is unclear. Leibniz in one passage argues that,

most distinguished masters of composition quite often mix dissonances with consonances in order to arouse the listener, and pierce him, as it were, so that, anxious about what is to happen, the listener might feel all the more pleasure when order is soon restored...On that same principle it is insipid to always eat sweet things; sharp, acidic, and even bitter tastes should be mixed in to stimulate the palate...Pleasure does not derive from uniformity, for uniformity brings forth disgust and makes us dull, not happy: this very principle is a law of delight.

This is maybe a compelling argument, but a more pressing issue such a position addresses (rather than adhering to the law of delight) is that it allows Leibniz to

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165 “Can a Human Being Know Anything without Divine Illumination?” 120.
166 “From the Letters to De Volder,” in PE, 174.
explain variation over time with reference to divine wisdom. He is able to overturn Henry of Ghent’s objection that variability of creatures entails separation from the divine intellect, by arguing that this variability is akin to a dissonance in a musical composition paid back in a greater consonance (one can see how this line of thinking relates also to the problem of evil).

This linking of variation to divine wisdom is possible because there are no predicates that are separable from their subjects. Anything in nature is only fully understood when it is understood in reference to a subject, or monad. Natural activity for both Henry of Ghent and Duns Scotus was grounded in irreducibly simple elements, accidental to the forms and species of the divine intellect. Leibniz does not allow such a separation. O’Leary-Hawthorne and Cover importantly argue that, “accidents [for Leibniz] must arise within the created order,”168 [italics mine] as well as that, “Leibniz would deny the presumption that accidents are per se individuals whose individuation is not parasitic on the substance in which they inhere.”169 Leibniz affirms in a correspondence that, “everything accidental or changeable ought to be a modification of something essential or perpetual, nor can it contain anything more positive than that which it modifies.”170 Every accident can be predicated of a subject (or monad), and by this predication one can give a sufficient reason for its existence. These accidents can also be explained, more generally, through the order selected by the wisdom of God.

168 Substance and Individuation, 191.
169 Ibid., 262
170 “From the Letters to De Volder,” in PE, 180.
Before continuing with our investigation of the variability of nature as grounded in the principle of sufficient reason, a brief revision of our understanding of Leibniz’s perspective on the concept of a ‘species’ is necessary, as a reader well-read on Leibniz might here object that Leibniz often refers to ‘species’ as concepts which contain a set of individuals when explicating his predicate-in-subject theory. He does this, for instance, in his *Samples of the Numerical Characteristic*, writing that, “the predicate is said to be in the subject, that is, the notion of the predicate is contained in the notion of the subject. For, in a universal affirmative proposition, when I say ‘every man is an animal’ I mean ‘the concept of animal is contained in the concept of every man’ (for the concept of man is to be a rational animal).”\(^{171}\) He takes a similar stance in the *New Essays on Human Understanding*, defending the, “presumption that [things] have some essential and unchangeable nature, as man has reason.”\(^{172}\) Such statements seem to suggest a realist position on the issue of universals.

It seems most helpful, however, to consider such positions in light of the philosophical issues Leibniz was aiming to address with his philosophy, particularly that of morality. That Leibniz explicitly highlights the rationality of man in the previous quote is significant in this context. The rationality of humans serves an important function in Leibniz’s philosophy. He writes in the *Monadology* that rational “minds [are] capable of entering into a kind of society with God...a moral world within the natural world...The glory of God truly consists in this city, for he would

\(^{171}\) “Samples of the Numerical Characteristic,” in *PE*, 11.

\(^{172}\) *NE*, 325.
have none if his greatness and goodness were not known and admired by minds.”

This special status of minds is an important element of Leibniz’s explanation of punishment for sin, and reward for goodness, as the ‘citizen’ status of rational minds in the city of God means they are ruled by his benevolence and fairness, and can recognize and appreciate God for it through the faculty of rationality.

That Leibniz maintains some notion of species finds motivation in his desire to uphold the moral element of souls (rational monads) and ensure (as throughout his philosophy) divine justice. But we need not chalk up this apparent oversight on our part (that Leibniz’s ontology of individual monads actually does rest upon general forms such as species) entirely to a particular motivation, resulting in a position at odds with the rest of his metaphysics. There does seem to be a bit of this at play, but what is most important is that his usage of species here is different from that of the scholastics.

We can first tackle Leibniz’s usage of species that does seem to not entirely fit into the rest of his metaphysical positions. Leibniz defends a concept of nature in which everything that happens does so with continuity. In the preface to the New Essays Leibniz phrases this idea insofar as, “Nothing takes place suddenly, and it is one of my great and best confirmed maxims that nature never makes leaps. I called this the Law of Continuity…” This law should, assumedly, apply to species as well. Leibniz seems to think this as well, such as when he argues that,

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173 “Monadology,” n. 84, 86, in PE, 223-4.
174 NE, 56.
I think I have good reasons for believing that all the different classes of beings whose assemblage forms the universe are, in the ideas of God who knows distinctly their essential gradations, only like so many ordinates of the same curve whose unity does not allow us to place some other ordinates between two of them because that would be a mark of disorder and imperfection.\textsuperscript{175}

The different classes of beings should occur in continuous gradations as well, but there seems to be no clean way to balance this claim with the distinct status of humans as rational. Rational humans, as Susanna Goodin writes, “[are] separate, distinct from all other species.”\textsuperscript{176} This is one way of justifying the claim this essay makes that Leibniz downplays the role of species in comparison with Scotus; his usage of it as a special classifier seems to be used in only one case, and for a particular moral function.

The above Leibniz quote still, however, seems to argue for some conception of classes of beings. Granting this, Leibniz still considers species in a completely different way than Scotus does. Leibniz, in a letter to Arnauld, explains that, “species contain only necessary or eternal truths which do not at all depend on the decrees of God...But the concepts of individual substances...enclose contingent truths.”\textsuperscript{177}

Species only exists in its ‘pure’ sense in the divine intellect, prior to God’s instantiation of individuals in a particular world (i.e. God’s decrees). Individual


substances (corresponding to some class of being) involve contingent truths as well. These are the truths that relate this individual to its world.

As the predicates true of a contingent individual substance are included in the concept of the created individual, there is no separating an individual’s non-relational truths from its relational truths; they are intrinsically bound up in the same individual substance (a point that will be emphasized often throughout this chapter). Because the necessary truths (including its species) are combined with contingent truths, there is no guarantee that our scientific classifications of individuals will accurately and definitively access an individual’s true species. As Leibniz points out in the *New Essays*, classifying an entity such as ‘gold’ means that, “one were to say that the heaviest of all bodies is also one of the most fixed. But all of that is merely provisional, for we might some day find a volatile body—such as a new mercury might be—which was heavier than gold…” [italics mine] Our concepts of species always risk the possibility that they will one day be usurped by new scientific findings (except, of course, with regards to the rational definition of man).

These definitions, then, do no carry the weight that they would if Leibniz were an adherent to a Porphyrian Tree-esque classification of natural entities. Because Leibniz insists that all elements of nature must be sufficiently grounded through inclusion in a monad’s concept, relational and non-relational properties must merge into one and the same individual substance. This is in line with Ishiguro’s defense of

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178 *NE*, 312.

179 Leibniz’s argument for this, in the face of his own remark about the possibility that our definitions of other species may change, is: “In the case of man, I believe that we have a definition which is at once nominal and real. For reason is as internal to man as anything can be.” *NE*, 313.
the status of relations in Leibniz’s philosophy, such as when she argues, that “Leibniz did not believe that one can achieve a complete description of a substance without referring to its relational properties…even when we do not explicitly refer to its relational property, we do so covertly.”  

All entities we encounter, as they were created specifically for this world, include in their concept predicates specifically fitted to this world.

There is always the chance that our taxonomies will have to adapt to new findings, as we do not possess access to the essential features of an individual in-themselves. The notable exception is of course the ‘rational’ attribute of humans, which Leibniz has to maintain we do know definitively. To not have rationality be essential to humans would be to threaten the central work a univocity of reason does; namely, it would threaten the moral status of man, and, centrally, our ability to recognize the principle of sufficient reason (i.e. God’s wisdom) as grounding our natural world. As Leibniz places at the heart of his philosophy: “Thus the sufficient reason, which needs no other reason, must be outside this series of contingent things…this is called God…reason itself assures us that things are made in a way that surpasses our wishes.”

The position argued for above, that Leibniz’s univocity of reason does not halt at the level of species as Scotus’s usage of univocity does, then remains well founded. Without reason extending all the way down to individual monads, as contingent creations, there would be no guarantee that ‘things are made in a way that surpasses our wishes.’

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180 *Leibniz’s Philosophy of Logic and Language*, 101.
181 “Principles of Nature and Grace,” n. 8, n. 16, in *PE*, 210, 212.
We have then begun to see what distinguishes passive ideas in God’s intellect from created, contingent individuals. The central difference is that created individuals are *substantial*. As stated above, we understand monads (simple substances) to be immaterial, persist through time, and be inherently active. Furthermore, because, as we read in Ishiguro, “Leibniz did not believe that one can achieve a complete description of a substance without referring to its relational properties,” the activity of a monad is intrinsically related to the identity and activity of (every) other monad in the world. This activity of monads, as inherently connected to the entire (contingent) series of the created world, is what allows Leibniz to eliminate the concept of pure time.

One of Leibniz’s formulizations of this concept is that, “*time* is the order of existing possibles that exist successively…the state or series of things relates to time…” A monad, persisting through its law-of-the-series, produces successive predicates in the world. Such changes carry reference to the particular world the monad exists in, as its haecceity ‘fits’ it into the created world in a world-specific way. These changes, Leibniz claims, are what we abstract from when we talk about ‘time’ as an independent thing. Time, for Leibniz, must be conceptualized as grounded in individual monads and their activity. We often abstract from these substances into purely relational entities, such as time, but a full description of the world would reveal

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182 *Leibniz’s Philosophy of Logic and Language*, 101.
183 This ‘connection’ of monads also will relate to our discussion below regarding each monad’s ‘expression’ of one another, and how it is this connection which grounds mechanics.
184 “*From the Letters to De Volder,*” in *PE*, 179.
instead a collection of simple substances whose intrinsic notions carry both non-relational and relational elements.

Leibniz similarly grounds space in monadic activity. Whereas time is derived from the successive states of monads, “space is only the order of existing for possibles that exist simultaneously.”\textsuperscript{185} The simultaneous co-existence of predicates of created monads produces the phenomena of space. A slightly more compact definition Leibniz provides is that, “space is nothing but the order of coexistents.”\textsuperscript{186} As numerous monads constitute a world, any given order these monads constitute in relation to one another, produces the phenomena of space. Space can then also be sufficiently explained by reference to the relative positioning of the world’s monads, as ordered by divine wisdom. This means we are addressing the predicates of numerous monads at a given time. Monadic co-existence, and relatedly space, raises the issue of spatial extension, or body and matter according to this system.

The exact status of material bodies in Leibniz’s philosophy is still up for debate. This is not a situation that seemingly will end soon, as Leibniz himself gave contradictory and changing views on the subject throughout his life. Beginning with the introduction of monads as the substantial ground of nature, Leibniz strived to relate this monadological picture with the physical reality familiar to the average reader (and scientist). Such striving often led to conclusions that are seemingly at odds with the idea that immaterial monads are the ultimate ground of the natural world. In his correspondence with Des Bosses he introduces ‘substantial chains,’ a

\textsuperscript{185} “From the Letters to De Volder,” in PE, 179.
\textsuperscript{186} “Remarks on Berkeley’s Principles,” in PE, 307.
cryptic concept that involves, “A composite substance...[acting] mechanically...requires monads, but does not depend on them.”187 This seems to posit a materiality over and above immaterial monads.

The project of connecting monads, as immaterial simple substances, to material bodies is beyond the scope of this essay. Daniel Garber, in his book Body, Substance, Monad, essentially argues that it is an unresolvable element of Leibniz’s philosophy.188 This should not, however, prevent us from considering efficient causation as Leibniz sees it. That he struggled to articulate precisely what this relationship was (between monadic form and material body) does not mean that he was not committed to such a relationship. His transformation of the concept of haecceity seems concerned with exactly this link. If we instead look for a way to get at the relationship between the monad’s role in the teleological structure of the whole world (it being the best, most good, wisest, etc.) and its role in mechanical motion, we can hopefully work around this indeterminate spot of Leibniz’s philosophy.

The question of matter deals fundamentally with the ‘situation’ of monads. Leibniz writes that space is both, “a certain order of coexistence,” and an “order [of] situation or distance.”189 What he seems to be getting at is the placement of a monad in relation to another determines what we perceive to be spatial location. To understand mechanical causation in Leibniz’s metaphysics we must then take a detour through what exactly this ‘situation’ of monads signifies.

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187 “From the Letters to Des Bosses,” in PE, 203.
189 “From the Letters to Clarke,” in PE, 338.
It is here that we can begin to explore in depth how a monad’s law-of-the-series, or activity, expresses both non-relational and relational elements, and what this expression consists in. This will be established by a discussion of a monad’s appetitions and perceptions. Appetitions are what motivate a monad from one perception to another. Leibniz defines appetitions as a monad’s “tendencies,”\textsuperscript{190} and the “action of the internal principle”\textsuperscript{191} of a monad. Appetitions, importantly, accord with the ends desired by final causation (producing the ‘best’ world). Leibniz explains that, “Souls act according to the laws of final causes, through appetitions, ends, and means.”\textsuperscript{192} What these appetitions act towards are perceptions. Leibniz articulates in the \textit{Monadology} that ‘perception’ is not consciousness. Every monad, including the monads of plants and other non-human forms, has perceptions. What precisely are these, and how do they relate to a monad’s position in the world?

We know that monads ‘fit’ together in a particular way, as determined by God. This fitness underlies and sufficiently explains all of the predicates that are unfolded by a given monad. We also know several ways in which the principle of sufficient reason, as univocal to God and creatures, is manifested in the natural world: through the principle of the identity of indiscernibles, the predicate-in-subject form of propositions (which provides a sufficient reason for all natural predicates), and the ideality of time and space (as neither are able to contain a reason in-themselves for

\textsuperscript{190} “Principles of Nature and Grace,” n. 2, in \textit{PE}, 207.

\textsuperscript{191} “Monadology,” n. 15, in \textit{PE}, 215.

\textsuperscript{192} “Monadology,” n. 79, in \textit{PE}, 223.
being created by God). Furthermore, we have mentioned that what allows an individual in the divine intellect to be instantiated into a particular world is its haecceity, which, as we explored early on in this section, is what guarantees that this world is analyzable via the principle of sufficient reason. For this reason, there is no way for finite beings to disturb this compossible order; it is rather a divine decree that this best-of-all-possible-worlds maintain its maximally compossible fitness.

What it means to say that an individual’s haecceity is what fits a monad into a particular world is that the haecceity is the law-of-the-series. This diagramming of the ways in which monads fit together occurs before nature comes into being; it is a result rather of God’s planning and interest in final causes. Because of this, as mentioned, there is not only no conceivable way (for finite beings) to create or destroy a monad, subsequently there is no conceivable way for monads to authentically influence with one another. Were monads to authentically influence each other, the influence of these finite monads would redirect the influence of God. This influence, as it comes from a finite being that does not possess infinite wisdom and good will (benevolence), would then threaten this world’s status as the ‘best.’ Starting here we can start to see the work that Leibniz’s brand of haecceity does, and the very weird consequences it entails. Their ‘fitness,’ or relation to one another, is impressed on them from the time of their creation. Leibniz explains that a monad’s “primitive force of acting [is] itself an inherent law, impressed by divine decree.”

pre-ordained fitness, executed by God using a world-specific haecceity/law-of-the-series.

This understanding will hopefully help us make some sense of Leibniz’s odd claim that “monads have no windows through which something can enter or leave.”194 The way a monad ‘fits’ in the world is not subject to modification. If its role in the universe were to change, God’s wise plan would be disrupted (and his power to create a stable world doubted). If we are to maintain this complex structure, governed by the principle of sufficient reason, how then do monads ‘perceive’? Donald Rutherford defines a Leibnizian perception as, “nothing more than the plurality of modifications that constitute the state of a simple substance at a given moment.”195 The perceptions of a monad are what are produced by its law-of-the-series (or haecceity). How do these modifications/perceptions correlate to anything ‘outside’ the monad?

As the fitness of a monad to its world is particular to that world, its law-of-the-series is determined by the order of that world. Rutherford mentions modifications, which seems to align with our earlier mention of a monad’s accidents. As mentioned, no modification or accident can be separated from the subject of whom they are predicated. Monads, as subjects, sufficiently explain the existence of all their predicates in nature; as Leibniz succinctly puts it: “Accidents cannot be detached, nor can they go about outside of substances, as the sensible species of the Scholastics once did.” 196 One can then consider why monads contain these predicates, or

194 “Monadology,” n. 7, in PE, 214.
196 “Monadology,” n. 7, in PE, 214.
modification/accidents? It seems that they are determined precisely by the haecceity that makes the monad ‘fit’ into this world. They are produced by a law-of-the-series.

This is the thesis proposed by O’Leary-Hawthorne and Cover. They write that, “Haecceity is the law-of-the-series.”197 The particular fitness of an individual to a given world is what determines the perceptions (/modification) it experiences. The perceptions, however, are produced internally by each monad. Leibniz explains that, “we should seek perception in the simple substance…Furthermore, this is all one can find in the simple substance—that is, perceptions and their changes [appetitions]. It is also in this alone that all the internal actions of simple substances can consist.”198 The law-of-the-series produces the changes internal to a monad that are tailored for the particular world it is created for. These changes are the monad’s perceptions.

Laurence B. McCullough defines a perception as “an individual relational accident of a monad.”199 Because the haecceity modifies the individual in a way particular to a world, the concept of that created individual contains world-fitting modifications. These modifications are necessarily related to all the other modifications of the individuals of the same world. This relational modifier is the haecceity. The modifications of a monad are its perceptions.

This eliminates any need for a monad to look ‘outside’ (or have windows, at Leibniz puts it) to experience perceptions appropriate to its world. As Ishiguro writes, “all true relational predicates of an individual can be drawn out of the concept of the

197 Substance and Individuation, 220.
198 “Monadology,” n. 17, in PE, 215.
199 Leibniz on Individuals and Individuation, 35.
individual because it is already a part of it.”\textsuperscript{200} Scotus’s usage of haecceity (\textit{this-ness}) determines a general concept like species (a.k.a. common nature) into \textit{this} individual through irreducibly and primarily diverse properties (inaccessible to abstractive cognition, and external to the concept of an individual’s species). We can now see how Leibniz intensifies the power of a haecceity. Leibniz makes the individuating haecceity \textit{internal} to the concept, allowing the nature to individuate itself, as the created individual in-itself contains all the relational modifiers that ‘fit’ this individual into a particular world. There is nothing external, and therefore nothing in our natural world untouched by God’s wisdom and the effects of final causation.

Some more examples may help clarify this point. The example Leibniz often gives is of different perspectives of the same city. He prefaces this example with a remark that falls in line with our discussion so far: “This interconnection or accommodation of all created things to each other, and each to all the others, brings it about that each simple substance has relations that express all the others, and consequently, that each simple substance is a perpetual, living mirror of the universe.”\textsuperscript{201} This kind of terminology establishes Leibniz as developing an early concept of perspectivism, in which each monad’s particular way of fitting in the world produces perceptions, or modifications, specific to that monad’s positioning in the world.

\textsuperscript{200} \textit{Leibniz’s Philosophy of Logic and Language,} 99.

\textsuperscript{201} “\textit{Monadology},” n. 56, in \textit{PE}, 220.
This perspectival element is what motivates Leibniz to use the following metaphor. He refers to different perspectives on the same city, writing that when this city is,

viewed from different directions appears entirely different and, as it were, multiplied perspectival, in just the same way it happens that, because of the infinite multitude of simple substances, there are, as it were, just as many different universes, which are, nevertheless, only perspectives on a single one, corresponding to the different points of view of each monad.202

Each monad’s haecceity modifies it to relate to the same world, but these modifications are internal to the monad. Each monad’s perceptions, then, are localized to a single perspective of the world, though all these perspectives are fundamentally related and synchronized, as each monad’s haecceity modifies it to fit into a shared world. Leibniz names this relation one of, “universal harmony, which results in every substance expressing exactly all the others through the relation it has to them.”203 [italics mine] We should not take this last point for granted. The entire last chapter was spent considering what makes one world ‘the best’ and motivates God to create it. It was precisely the relation of maximal fitness that determined this.

We have established that each monad is located in a particular position in the world. This position is determined by how it ‘fits’ into (or relates to) its world. A monad expresses this fitness via its haecceity/law-of-the-series, which produces the modifications of a given monad. These modifications, expressing the monad’s relation to its world (in harmony with the perceptions of every other monad, all from different

202 Ibid., n. 57
203 Ibid., n. 59
perspectives), thereby allow the monad to ‘perceive’ the world, even though the source of these perceptions is internal to the monad. Monads, by these perceptions, are able to mirror and express the world without needing ‘windows’ to look outside.

This fundamental relation of every monad to one another also led Leibniz to another consideration of sufficiently explaining nature. Leibniz was concerned with the problem of, as he phrased it, the two labyrinths. These are labyrinths are mentioned in an essay entitled *On Freedom*, where Leibniz writes of, “two labyrinths of the human mind, one concerning the composition of the continuum, and the other concerning the nature of freedom, and they arise from the same source, infinity.”²⁰⁴ We will focus on the composition of the continuum. Because monads only perceive the world from their perspective, it is an abstraction of all the particular substances and their activity. One perspective of a city cannot capture all the intricate details that constitute it; only God has that kind of infinite vision. For this reason, a monad’s perceptions are a making composite of various simple substances; the activities of the world’s monads are made into a composite perception from a finite (limited, abstract) perspective.

Matter, in the framework of the *Monadology*, is an abstract conception of the ground of nature: immaterial monads. We perceive ‘matter’ due to our imperfect (finite) cognition of nature. Considering that this abstraction involves an indeterminate collection of monads, along with the principle of continuity mentioned above, we can make sense of Leibniz’s claim that, “composites are analogous to

simples. For everything is a plenum, which makes all matter interconnected.”205 To examine just this interconnected matter would be an interminable project. Leibniz writes to Arnauld:

the continuum is not merely divisible to infinity, but every part of matter is actually divided into other parts as different among themselves as [two separate diamonds sharing a name]. And since we can always go on in this way, we would never reach anything about which we could say, here is truly a being, unless we found animated machines whose soul or substantial form produced a substantial unity independent of the external union.206

The way Leibniz sufficiently grounds an abstract continuum is by using his modified version of the scholastic concept of substantial form (i.e. monads). Leibniz explain in A New System of Nature that, “it was necessary to restore, and, as it were, to rehabilitate the substantial forms which are in such disrepute today, but in a way that would render them intelligible, and separate the use one should make of them from the abuse that has been made of them.”207 This ‘rendering’ intelligible is precisely the difference(s) we have covered throughout this essay between monads and Scotus’s conception of the individual versions (i.e. substantial forms) of the same nature.

Leibniz’s usage of monads (substantial forms) here, and as we have seen above, contributes an important criticism of Cartesian mechanics. Pure extension admits of no necessary connection to souls, or minds. Leibniz argues that one could never separate extension from the organizing principle found in monads. This is true across all formulations he gave of materiality; matter cannot exist on its own. As

205 “Monadology,” n. 61, in PE, 221.
206 “From the Letters to Arnauld,” in PE, 80.
207 “A New System of Nature,” in PE, 139.
Leibniz writes to Arnauld, in line with our above discussion of appetitions and perceptions, “[Bodily movements] are only consequences of the notion of an individual substance, which contains all its phenomena in such a way that nothing can happen to a substance that does not come from its own depths, though in conformity to what happens to another.” All appetitions and perceptions are internal to a monad, and they occur in harmony with the appetitions and perceptions of every other monad, according to God’s wise plan.

It is worth mentioning that much of Leibniz’s conceptualization of this argument came from the microscopic sciences of Anton Von Leeuwenhoek. Leeuwenhoek found microscopic organisms and protozoans in pond water using a microscope. A pond is an analogy Leibniz often uses with reference to the infinite divisibility, and inseparability from substantial forms, of matter. Leibniz clarifies that,

I do not say that the body is composed of souls, nor that body is constituted by an aggregate of souls, but that it is constituted by an aggregate of substances. However, the organic bodies of substances included in any mass of matter are parts of that mass. So in a fish pond there are many fishes and the liquid in each fish is, in turn, a certain kind of fish pond which contains, as it were, other fishes or animals of their own kinds; and so on to infinity. And therefore there are substances everywhere in matter.209

He uses this analogy again in the Monadology, writing: “each portion of matter can be conceived as a garden full of plans, and as a pond full of fish. But each branch of a plant, each limb of an animal, each drop of its humors, is still another such garden or

208 “From the Letters to Arnauld,” in PE, 78.
209 “Comments on Michel Angelo Fardella,” in PE, 105.
Not only is the continuum infinitely divisible, it is inherently grounded in the simple substances which are programmed according to God’s plan. As Leibniz wants to claim, “there is nothing fallow, sterile, or dead in the universe, no chaos and no confusion except in appearance, almost as it looks in a pond at a distance.”

This is also why Leibniz believes that ‘natural machines’ infinitely surpass human-made ones. The mechanical world is grounded in non-mechanical occurrences (perceptions and appetitions). To take the infinite richness of nature at face value is to miss the important ground that serves as its organizing principle. Leibniz makes clear that, “perception is inexplicable in terms of mechanical reasons, that is, through shapes and machines...we should seek perception in the simple substance and not in the composite or in the machine, Furthermore, this is all one can find in the simple substance—that is, perceptions and their changes.” The pre-programmed activities produce the effect of mechanical interaction (the exact identity of this effect depending on the period of Leibniz’s theory of corporeality one examines). As monad’s law-of-the-series (haecceity) produces perceptions and appetitions according to an internal law, one must look to the structure of individual substances to fully grasp the rationale for natural occurrences.

210 “Monadology,” n. 67, in PE, 221.
211 “Monadology,” n. 69, in PE, 222.
212 “Monadology,” n. 17, in PE, 215.
Leibniz’s grounding of mechanics in metaphysics does not, however, necessitate a distrust of the mechanistic (or any of the other natural) sciences. It was, as mentioned above, Leibniz’s aim to reconcile the mechanical and the metaphysical worldviews. It is worth noting that based on the knowledge of the world we have established throughout this discussion, we know nothing about the particular (contingent) events that we perceive in nature. Though metaphysical truths ground mechanical ones, metaphysical truths can offer us only general truths about the world as a whole (adhering to the principles of fitness and sufficient reason), and the general structure
of the individual substances with which this world is composed (adhering to a pre-programmed law-of-the-series).

Mechanical knowledge of nature is not untrustworthy or ‘not real’ knowledge for Leibniz. And yet, he has explicitly argued that the actual world is not a mechanical structure, but a metaphysical one. How can both be true? Leibniz utilizes his brand of haecceity to advance a philosophy of mechanical knowledge consistent with his metaphysical claims. A monad’s perceptions, though abstractions, are grounded in the other monads of its world. They can then be truly said of the world, even though they do not grasp the full nature of things. Leibniz often writes things along these lines, such as, “we acknowledge that all corporeal phenomena can be derived from efficient and mechanical causes…whenever we deal with the immediate and specific efficient causes of natural things, we should take no account of souls or entelechies, no more than we should drag in useless faculties.”213 Knowledge about nature can be derived from our perceptions, as they themselves are grounded in the structure of the world God has chosen.

We can employ Scotus’s concept of ‘virtual knowledge’ to explore further what Leibniz takes knowledge of mechanics to be. Scotus used the virtuality of being to claim natural knowledge of God, but it had an equal effect on the concrete, individual occurrences of nature. Our scientific knowledge cannot reach far enough to establish determinate knowledge about the specific and particular nature of the ultimate differentiae of creatures. What we know about ‘first intelligibles’ (i.e. genus, species) is

213 “A Specimen of Dynamics,” in PE, 126.
virtually true of these differentiae, however, as being can be considered in a finite, individual sense. For Leibniz, our scientific knowledge cannot reach far enough to establish determinate knowledge about the specific and particular nature of each monad. We can still obtain truths of these natures, but they are only virtually true, not actually true.

The difference between virtual knowledge of differentiae, for Scotus, and virtual knowledge of monads, for Leibniz, rests on the difference of univocal term true of the world. As reason is univocal for Leibniz, we can be certain that our knowledge derived from perceptions correlates (albeit abstractly) to the concrete activity of monads. With a univocity of being, any knowledge of ultimate differentiae was prohibited by the final causes of God’s creations halting at the level of species. In Leibniz’s case, final causation extends to the entire scope of nature (everything has a reason); this importantly includes efficient causation/motion.

Under this reading, it is not perceptions that cause the next perception of each monad; efficient causation does not operate independently of final causation. It is rather the law-of-the-series that produces perceptions, and this law is determined according to the final end of the monad, as contributing to the best-of-all-possible-worlds. It is not quite clear how much, or if at all, Leibniz differentiates between efficient and material (mechanical) causation. It seems safe to assume that mechanical sciences are abstractions of numerous monads’ efficient causes (their particular movements throughout time). The mechanical sciences assume real, genuine material causation and interaction, but this cannot be what Leibniz sees. If monads were to influence each other they would usurp the influence of God
impressed upon them when they were created for this world. Mechanical science is still ‘true,’ however, just as natural theology was ‘true’ for Scotus. The difference is that, for Leibniz, a particular monad’s efficient motion is roped into God’s plan, because each monad have its own final cause (their own contribution to the world) (where Scotus multiple individuals shared a final cause, or species), and so we can pursue virtual knowledge of particular efficient motions through the study of mechanical causation. In Scotus’s case, only abstract knowledge of common natures could be said to be virtually true of concrete individuals. Leibniz, arguing that final causes are precisely what produce efficient motion, can claim that scientific knowledge can study efficient causation (without exhausting what is ‘true’ of each monad’s concept), as these particular modifications are no longer irrelevant to God’s plan or the compossibility of essences. Moreover, this inclusion of efficient causation in God’s plan seems concerned with making space for theologically legitimating the mechanical sciences.

Efficient causation then occurs parallel to and in harmony with final causation. A monad’s law-of-the-series produces perceptions particular to that monad’s situation in relation to other monads of its world, signifying its perspective in relation to the rest of the world (which, due to its world-specific haecceity accords with, or ‘mirrors,’ the ‘outside’ world without requiring any interaction with another monad). This production of perceptions is what Leibniz is pointing to when he refers to monads as, “spiritual automaton…in the soul everything happens through effort [conatus], that
is, through desires in accordance with the laws of the good.”214 These desires are assumedly a monad’s appetitions (its motivations from one perception to the next), and these occur, as explored above, in accordance with the goodness (fitness) of the world, testifying to God’s wisdom and benevolence.

Leibniz also points to this in the *Theodicy*, again signaling the importance of a monad’s haecceity (a.k.a. law-of-the-series) for producing perceptions. There he writes that, “every simply substance has perception, and that its individuality consist in the perpetual law which brings about the sequence of perceptions that are assigned to it…the body also for its part adapts itself to the wishes of the soul by its own laws, and consequently only obeys it according to the promptings of these laws.”215 We can comprehend this passage with the elements of Leibniz’s philosophy we have covered here. We mentioned in passing above that space for Leibniz is the co-existence of monads. Bodies, being spatially extended (at least, phenomenally, if we stick to the view that immaterial, unextended monads serve as the substantial ground for all of nature), then correlate to the ‘outside’ world monads perceive in any given moment. Monads, as Leibniz puts it, “represent [most] distinctly the body…whose entelechy it constitutes.”216 The body of a monad is simply composed of the perspective most distinct to a monad at any given moment. As these perspectives are precisely the perceptions a monad produces according to its haecceity (or law-of-the-series), the motions and affections of the body are produced by a monad’s internal perceptions.

214 “Comments on Spinoza’s Philosophy,” in *PE*, 279.
216 *Monadology* 62., in *PE*, 221.
The mechanical movements of a body, then, are inherently entwined with the spiritual motion (automation) of its corresponding monad. The perceptions produced by the appetitions, governed by a monad’s final cause (i.e. its fitness and contribution to the perfection of the entire world), make up Leibniz’s mechanical world. This is why Leibniz insists that the body and the soul are parallel due to a ‘pre-established harmony’; they are not really separated at all. Leibniz connects much of our discussion so far when he explains that,

*everything happens mechanically in nature, but the principles of mechanism are metaphysical,* and the laws of motion and nature have been established not with absolute necessity, but from the will of a wise cause, not from a pure exercise of will, but from the fitness of things.\(^{217}\)

Natural laws are importantly contingent, dependent on God’s creation of a specific world. This contingency, and, relatedly, bestness, is to be found throughout nature, as efficient and final causes are inherently connected. Jeffrey K. McDonough elaborates on this relationship, explaining how a monad contains the potential to be viewed both from a perspective of efficient causation and one of final causation. A monad considered alone admits of neither causal order. Looking simply at the law-of-the-series (or haecceity) of one monad, McDonough writes, allows us to “abstract two adequate patterns from the distribution of causal powers found in the world…efficient-causal order [and] teleological order.”\(^{218}\)

An analogy may help in understanding this claim. If we imagine a puzzle, it is composed of numerous pieces. Each piece has a specific shape that fits into the shapes

\(^{217}\) “Against Barbaric Physics,” in *PE*, 319.

immediately next to it. In this way, they express most clearly (from the perspective of a single piece) the shape of their piece. One could abstract from this the general shapes of the outside world, as the indents and outdents, though a part of the same piece, express also the shape of the surrounding pieces. This is the efficient causal order, pertaining to the ‘body’ and shape of the puzzle piece’s location.

One could also consider how the puzzle piece relates to the general picture of the puzzle of the whole. If the puzzle is a portrait of Leibniz, one could abstract from a single puzzle piece and consider how this piece contributes to the makeup of Leibniz’s portrait. This would be abstraction in the direction of final causation.

This example is, however, a bit imperfect, as puzzles are atemporal. The motion of a clock is also a helpful reference with respect to temporality. The motion of the gears is the efficient causation of the watch. These gears, however, only move in this way in order to fulfill a final cause: telling the time. From the inside of the clock, however, the gears are blind to the full effect of the contribution they make to the final cause, or even the specifics of the final cause itself. By using clockwork-like monads, Leibniz is able to claim that his pre-established harmony, between final and efficient causation, is well founded. Monads, chosen for their perfect fitness (compossibility) to this world, produce perceptions that signify its perspective, with regards to the other monads of its world. These monads also, simultaneously and by the same law-of-the-series, contribute to the entire world, as accommodating and fitting in with the entire structure of the world, arranged according to God’s wise plan.

By tracing how Leibniz developed Scotus’s philosophy, we have seen how scholastic concepts are utilized in conjunction with the increasingly popular
mechanical outlook of the 17th century. A haecceity no longer only expressed essence as the level of species, but now was internalized to an individual concept (through a transformed conception of compossibility), whose individuation required nothing outside of itself, as it was individuated in a way particular to a given world. This particularized haecceity is a law-of-the-series, which internally produces perceptions that express that individual’s perspective on the given world. The perceptions of a given perspective occur across time, and as such correspond to the motions of the natural world. Because of the intertwined nature of final and efficient causes and the univocity of reason, mechanical science, or our abstractions of efficient causes (the motions of a monad as it travels its law-of-the-series), is virtually true monadic activity.

This development, however, was not just with an interest to make metaphysics ‘keep up’ with modern science. If this were the case, Leibniz could have just adopted Cartesian metaphysics (among other philosophical systems). The development of the concept haecceity was also likely motivated by a concern to keep scientific developments consistent with theological and social concerns. By having a law-of-the-series-following-monad (Leibniz’s version of a substantial form) underlying all motion and natural events, all study of mechanics and efficient causes become necessarily related to divine foresight and planning. Leibniz’s critique of Descartes often focuses on the existence of purely extended matter. This matter, for Descartes, also can assume any possible form, and so is not determined by God. Considering the principle of sufficient reason, one can imagine why Leibniz takes such issue with this. What would be the reason for uniform, extended mass? It would be a glaring
oversight on God’s part to not inject his wisdom into the full structure of the world. This is precisely the issue Leibniz raises when he accuses Descartes of, “[making] himself very suspect by rejecting the search for final causes.”

Leibniz is explicitly interested in having final causes present in the material world, while maintaining a space for mechanical science. This is clear by the fact that the mechanical sciences are only virtually true of the ultimate ground of nature: individual substances. They do not exhaust the truths of the natural world; the ultimate ground of nature is dependent on theological and metaphysical principles. As mechanics depends on these principles, no part of the mechanical world is unaffected by God’s plan, and so each part expresses divine wisdom.

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219 “Two Sects of Naturalists,” in PE, 282.
Afterword

We began our discussion with Henry of Ghent, who argued that what defines a finite essence is its imitation of the divine essence. Because God is an uncreated being, to create these essences is to make them substantially distinct from their uncreated essence, and unable to express this essence authentically within a created realm. To attain pure knowledge of these essences requires a ‘divine illumination’ to wash away the existent attributes which conceal their true being.

Duns Scotus offers a different formulation that allows for natural cognition of created beings. Scotus insists that any relation to God must be recognized posterior to the creation of these essences. What makes an essence possible for God to create is not its imitation of divinity, but the compossibility of the simple notae (metaphysical constituents) with which the essence is composed. Creation, then, does not involve any necessary separation from the ‘truth’ of an essence. Scotus then claims these essences possess less-than-numerical-unity. This formulation allows the same common nature (species/essence) to produce multiple individuals, each of which can authentically express their common nature. Individuals are individuated by a haecceity (a thisness), which makes them this instantiation of a common nature. The example given was of a written musical note. The same note can be authentically performed by multiple performances, but each performance has a particular character that defines it as this performance, and there is no way for the written note to find expression in the material world except through these individual performances.

Our natural cognitive abilities are then able to form true concepts of created beings. Because there is no substantial distinction between a finite essence and the
created individuals corresponding to this essence, our intellect is not prohibited from abstracting universal truths of these beings. This knowledge of being we are able to obtain also allows us to grasp a natural knowledge of God. Being, Scotus argues, is common to everything that exists, meaning it is common to creatures and God. We cannot naturally obtain knowledge of God in full, but, because God is an infinite being, the knowledge we can derive of an infinite being is virtually true of God. This ‘virtual knowledge’ is knowledge of something through the common concept of being. Virtual knowledge does not exhaust the truths of whatever we are investigating, but, qualified properly, it can be said to be true of it. We also have similar knowledge of the properties that defines an individual’s haecceity. These ‘ultimate differentiae’ are in-themselves inaccessible to our abstractive cognition, and we must halt at the level of species when inquiring about creatures in nature.

Leibniz, writing in a different context, is concerned with reconciling elements of these theological systems with the mechanical sciences prevalent during his life. We mentioned four concepts of Scotus’s that Leibniz (explicitly or implicitly) transforms to fit a mechanical worldview: compossibility, haecceity, univocity, and virtuality. Leibniz makes compossibility not just pertaining to the consistency of an essence’s internal constituents, but argues that a compossible world is one in which all the individual substances created are able to co-exist in a compatible way within the world; this entails that each monad mirrors each other in its notion, and can co-ground an orderly and stable set of moral and natural laws.

The haecceity of a monad is its law-of-the-series. Each monad is a bundling of non-relational attributes and relational attributes particular to its world. These
relational attributes are what make the monad compossible with the other monads of the world. The law-of-the-series prescribes a production of appetitions and perceptions that ‘fit’ the monad in the world in such a way as to maintain and contribute to the structure of this world as the ‘best.’ Scotus’s haecceity was what made a given individual of a species this individual instantiation of that species. Leibniz’s version of haecceity is what makes an individual notion instantiable in different possible worlds; it is what makes a non-relational individual concept in God’s intellect this individual instantiation of that concept in a particular world.

That this world is the ‘best,’ according to Leibniz, also requires a change in the term of univocity employed. Leibniz claims that ‘reason’ is what is common to both God and creatures, and claims that nothing in this world exists without a reason for its existence. This means that, whereas for Scotus final causality only extended as far as the level of species, Leibniz argues that each part of the world contributes to the final cause of the world as the best-of-all-possible-worlds. This importantly includes the efficient causation (Leibniz uses this term in reference to ‘motion’) of the monads as they traverse their law-of-the-series.

Because efficient causation and final causation are co-dependent in Leibniz’s metaphysics, it is possible to undertake a scientific inquiry of occurrences in nature ‘below’ the level of species. The science Leibniz wants to make room for here is mechanics. While the ontological status of material bodies is unclear and unstable in Leibniz’s thought, science about mechanics is generally taken to be an abstract cognition of the motions of individual monads. This science is then true of the absolute ground of nature (monads) in a virtual sense. Mechanics is a true science,
but doesn’t fully capture the subject of its inquiry (each monad’s law-of-the-series, grounded in metaphysical principles that reflect God’s wisdom). Mechanics is made room for, but in a way that does not threaten the power of God or the reason for one’s belief in God (mechanics does not capture the entire truth of the world; this is realized only through metaphysical and theological principles).

We also mentioned in the forward that there is a second element of interest in the progression from Scotus to Leibniz. Scotus justified natural cognition and the presence of intelligible content in nature not simply with a passion for naturalism, however, but with concern for legitimizing the work of theologians. Leibniz similarly increases the importance of natural events in comparison to his scholastic predecessors, by linking efficient and final causation, but does this with an interest in incorporate the science of mechanics into a metaphysical and theological system. Both Scotus and Leibniz demonstrate Latour’s notion of ‘enlisting nonhumans’ to increase the presence of their religious ideas (lengthening their network). From this perspective, we discussed the following progression:

Henry of Ghent employed little of nature and relied on a divine illumination to justify knowledge of God and divine truths. Scotus, perceiving a looming threat of skepticism, justified natural cognition by arguing that nature is able to express the divine truths. Leibniz, perceiving the threat of mechanical sciences and purely extended matter distinct from any divine planning, intertwined final and efficient causation (through the transformation of the four concepts mentioned above) and justified the mechanical sciences by grounding them in metaphysical and theological principles. By doing so, Leibniz aimed to reconcile the scholastic teachings and the
'new' sciences and philosophies. Both Scotus and Leibniz enlisted nonhuman entities to promote their theological arguments. Between Scotus and Leibniz we also see the ‘turn’ Koyré identified as signaling the onset of modernity, as Scotus’s world was precise only at the level of species, whereas Leibniz framed the entirety of nature as precisely planned by God and compatible with quantitative reasoning (particularly, though unfortunately not discussed here, Leibniz’s calculus) and the mechanical sciences. Latour also notes that the traditional concept of modernity involves, “two entirely distinct ontological zones: that of humans beings [and] non humans.”

Scotus and Leibniz combine human (cultural, religious) and nonhuman (scientific, naturalist) ends often and intentionally. Their ends motivate not every ‘enlisting,’ or every quantitative or naturalist ‘turn,’ but by following the ways in which Scotus and Leibniz utilized nature for non-scientific ends it is apparent that such ‘turns’ do not necessitate the associations that are often thought alongside the concept of ‘modernity’

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