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Worlds Apart: An Interpretation of Leibnizian Perceiving

Author
Hansen, Michael John

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Worlds Apart:

An Interpretation of Leibnizian Perceiving

A dissertation submitted in partial satisfaction of the

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in Philosophy

by

Michael John Hansen

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ABSTRACT OF THE DISSERTATION

Worlds Apart:

An Interpretation of Leibnizian Perceiving

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Michael John Hansen

Doctor of Philosophy in Philosophy

University of California, Los Angeles, 2019

Professor John P. Carriero, Co-Chair

Professor Calvin G. Normore, Co-Chair

This dissertation interprets Leibniz' notion of perception through abilities, agency, and action. In chapter 1, I characterize the differences between kinds of Leibnizian perception by considering their relationship to different abilities. I focus on lower cognition, where Leibniz distinguishes bare perception from sensation by their degrees of distinctness and memory. I read this relationship, between kinds of perception and qualities of perception, through actions. I begin with complete lacks of distinctness and memory and how they relate to stupors as an inability to act. I then turn to a range of incrementally more advanced cases of perceptions and actions to highlight the role of distinctness and memory in each. The cases reveal how differences in kinds of action depend on differences in kinds of perception in Leibniz' system. My approach breaks with traditional readings that invoke consciousness to account for the

differences, and it builds in some ways on readings that lead with representation. I also comment on the prospects of such an abilities based approach for 21st century theories of perception.

In chapter 2, I articulate the point of view or perspectival nature of Leibnizian perception through expression and agency. I establish some conditions that Leibniz sets on perspectival expression for individual perceivers, and on the particular way that perceptions belong to their perceivers in Leibniz' system. I argue that spatial, geometrical notions of perspective, though useful, ultimately give way to a deeper, agential notion for Leibniz. I make a case for including the agential side perception in POV, beyond the phenomenal flow of perception. I then articulate how agency is unique and fundamental to Leibniz' notion of perspective or point of view, both in internal action and in the activity and passivity of external action.

In chapter 3, I ask about the limits of perceivers in Leibniz' system—where they arise and where they don't. I set the question adjacent to the celebrated mill argument. I consider readings of the argument that invoke action, and build on them to include questions about how action relates to interaction in different kinds of perceivers. One question concerns the lack of perception in primary matter, and another concerns the lack of perception in an aggregate of secondary matter. After milling through some considerations, I settle on a notion of organic unity, underpinned by a notion of action, that can draw lines between Leibnizian perceivers and non-perceivers.

The dissertation of Michael John Hansen is approved.

Gabriel Jae Greenberg

Alexander Jacob Julius

Peter Myrdal

John P. Carriero, Co-Chair

Calvin G. Normore, Co-Chair

University of California, Los Angeles

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Preface and Acknowledgements

Leibniz' system can seem awkward and remote to today's philosophical interests, especially about perception. Russell describes the impression well: "I felt – as many others have felt – that the *Monadology* was a kind of fantastic fairy tale, coherent perhaps, but wholly arbitrary" (*Critical Exposition* xiii). However, like Russell, I think that Leibnizian perception is actually quite at home with many of the same interests of today's philosopher. In that spirit, I have pursued an understanding of Leibnizian perception.

For example, Leibniz often writes that perceivers are each like a "world apart."[1] He also writes to de Volder that they are "concentrated worlds": "Different [perceivers] express the universe differently, each from its own way of viewing things; it is their duty to be so many living mirrors of things, that is, so many concentrated worlds" (AG 177). In other places, he calls them universes: "Just as the same city viewed from different directions appears entirely different and, as it were, multiplied perspectively, 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" (M 57).[2] The phrase "world apart" invokes one of Leibniz' least believable

[1] See DM 14; Letters to Arnauld AG 76; "New System," AG 143, 145; Letters to Des Bosses AG 206;
[2] In his "New System," Leibniz compares them to "little gods," noting what they lack in comparison to God (AG 140). And in "Monadology," he declares that "each monad would be a divinity" if it weren't for its limitations qua finite creature (M 60). Indeed, each monad, together with God, is at the center of its world.

doctrines: the pre-established harmony. However, I think the phrase also captures something compelling for the 21st century reader.

Leibniz himself moved effortlessly across eras, often praising past philosophers for their contributions. He counsels Foucher in his letter: "You would oblige the public by conveying . . . selections form the academy and especially from Plato, for I recognize that there are things in there more beautiful and solid than commonly thought" (AG 5). And Leibniz even extends his kinship back to the Presocratics: "[Leibniz' position] was [also] the opinion of Parmenides and Melissus, according to Aristotle. For these ancients were much more solid than people believe" (NS, AG 141). I have interpreted Leibniz in this dissertation in the same spirit.

The differences that Leibniz outlines between kinds of perceivers offer us different worlds of perception. Between the stupors of bare monads, the distinct objects perceived by the souls, and the image of God reflected in minds, each tier of perception offers a new kind of world. In chapter 1 I characterize some of those differences. Likewise, different perspectives or points of view in individual perceivers amount to something comparable to worlds apart. Each unique perspective completely multiplies the world that we share, making unique copies, which are themselves worlds apart. I characterize the points of view in those worlds in chapter 2. The boundaries of these worlds, and their apparent interactions, and how their parts relate, presents unique puzzles—I pursue one of them in chapter 3. By reading the phrase "world apart" in terms of kinds of perception, and their perspectives or points of view, Leibnizian questions and answers can still grip us today.

The action or segment of my life that is this dissertation has boundaries that, while well founded, are nevertheless only phenomena. Actions like these are in some sense as immortal as the substances that they belong to, and as unfinished as the life of a substance at any one moment.

Insofar as my thoughts are distinct in states of this work, I hope that they also bear marks that reveal the wider universe of this project.

I would like to acknowledge, and thank, many for their help in this work. Thanks to God. For a miracle to be accepted to graduate school. For sustaining me throughout my studies. For taking me into consideration in particular as a part of his decrees for the universe, as a father cares for his child, and for including the passing states of this dissertation as a part of it.

Thanks to my family, in its many generations. For the sacrifice of my ancestors, for a future lined with the same, interlinked and sealed together as different views on the same world. For my parents and their love, for my siblings for the same. Without these I have no dissertation, among many other things.

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ground, the sky, and the air in between. For figs and palms. For PCH. For returning my wallet left at the gas pump, cash intact. For hosting me between its neighborhoods. And for "the innumerable set of breaking waves heard by those who approach [its] seashore" (DM 33)—may its waves be infinite, and may its substances be remembered frequently from my point of view, and distinctly again, whenever I approach the city of angels.

Chapter 1 – Bare Perception and Sensation in Leibniz

Monads and their perceptions are at the heart of Leibniz' system: "this is all one can find in the simple substance—that is perceptions and their changes" (M 17, G VI 609).[1] So it should come as no surprise that when Leibniz differentiates kinds of monads, he does so in terms of their perceptions. For a time, Leibniz readers thought of monads as versions of Cartesian minds. Leibniz' innovation was to introduce unconscious perceptions to his monads, among other features. Hence, the less conscious the monad the lower in kind it would be in Leibniz' system. I think there are good reasons to read Leibniz differently. Here, I focus on one such reason: Leibniz divides the monads not in terms of their conscious perceptions, but in terms of the

[1] For in line citations, I use the following abbreviations for Leibniz' standard texts (full listing are found in the References section): A = German Academy of Sciences (ed.) *Gottfried Wilhelm Leibniz: Samtliche Schriften und Briefe*, 1926; AG = R. Ariew and D. Garber (eds. and trans.) *G. W. Leibniz: Philosophical Essays*, 1989; G=C. I. Gerhardt (ed.) *Die Philosophischen Schriften von Gottfried Wilhelm Leibniz*, 1978; L = L. Loemker (ed. and trans.), *Gottfried Wilhelm Leibniz: Philosophical Papers and Letters* 2nd Edition, 1969; DM = G. W. Leibniz, ''Discourse on Metaphysics,''1686; M = "Monadology," 1714; MC = "Meditations on Cognition, Truth, and Ideas," 1684; NE = *New* Essays 1704; PNE = "Preface to the New Essays" 1703-05. Unless otherwise noted, translations follow AG.

quality of their perceptions. For Leibniz, quality is a matter of distinctness and memory, and differences in quality then ground differences in kinds of perception, and so differences in kinds of monads. Hence, by understanding these qualities, we will understand Leibniz' distinction, and the best way to understand these qualities is through their relationship to abilities. I focus on one difference in kind between simple, bare perception and sensation.

I begin with an introduction to Leibnizian perceptual states and a brief note about traditional readings. I then begin to present my abilities centered approach, which I introduce through my reading of the notion of cognition found in Leibniz' "Meditations." I then explore how Leibniz uses stupors to characterize bare perception and what this means for memory and distinctness. Finally, I show how different abilities require different things from the memory and distinctness of their perceivers within Leibniz' picture, and so support his distinctions among different kinds of monads.

I. AN INTRODUCTION TO LEIBNIZIAN PERCEPTUAL STATES

I will start by helping myself to a minimal and partly traditional taxonomy given in the "Monadology." Here, kinds of perceivers and kinds of perception seem inextricably tangled. For now, I will embrace this entanglement. There are minds, souls, and bare monads, which "think, sense, and have perceptions" as their respective perceptual ceilings (M 17, GIV 215). All three kinds are monads, and all three activities are perception for Leibniz.[2] Minds like yours and mine can do all three, souls like my dog's can both sense and perceive, while bare monads

[2] It seems plausible that Leibniz, in his rehabilitation of Aristotelian entelechies, follows a classical method of dividing souls in terms of their characteristic activities (and the principles for those activities). Ultimately, all monads are *sui generis* in much the same way that Aquinas' angels are, and there appear to be as many kinds of monads as there are points on a line. But I hope to show that the scale of perception still admits to interesting and useful divisions to be explored.

merely perceive. In this chapter I focus on the distinction between the bare monads and the souls, between bare perception and sensation.

Perception is the most general mental state for Leibniz. He characterizes it thus:

> "The passing state which involves and represents a multitude in the unity or in the simple substance is nothing other than what one calls *perception.*" (M 14, G VI 608).

This passage can appear extremely odd to 21st century readers. To grip it, it is often taken in context with other parts of Leibniz' system.[3] But given the central position that perception plays in Leibniz' overall system, I want to do more than situate it in terms of other Leibnizian doctrines. I also want to give a reading that can capture something natural about "what one calls perception." There is much to say about the multitude, the unity, the involvement, and the representation. But here I will comment only on "the passing state."

Current usage of the term allows a perceiver to be in multiple perceptual states at once.[4] One might say that the state of seeing a tabletop as brown and circular is a combination of a state of seeing brownness and a state of seeing circularity. Some of these states can combine, while others resist combination, such as seeing a full visual field of red and a full visual field of green at the same time. Whatever the story is for permissible combinations, on this usage the possibility is assumed that perceivers can be in multiple states at once. Questions then ensue about how or whether the states can be bound together, and what kind of unity a composite perceptual state could have.

Leibniz' usage of "state" is different. It is still true that there are many states for a perceiver. Leibniz is happy to discuss how monads perceive through a series of states, "the

[3] For example, see Duncan (2012), Landesman (2012), Lodge and Bobro (1998).
[4] See Bayne and Chalmers (2003), Burge (2010), Lande, (2018), Palmer (1999), Triesman and Gelade (1980).

change or passage from one perception to another" (M 15, G VI 608). So in this sense of being one in a series, the states of a perceiver are many. But Leibniz' usage is different when it comes to any individual state within a series. For Leibniz, perceivers are only ever in one state at a time.[5] There is "the" state of the monad (*L'état passage*), which is the state of the monad as it passes through its series. Each state, though, can be very complex. In fact, Leibniz packs an entire universe into each one. So if we ask what the object of a monad's perception is, there is a sense in which the answer is always the same: the entire universe.[6] So the state has to involve a lot of complexity. Furthermore, if the state is of the whole universe, one wonders why a monad would ever need more than one state at a time. He has many reasons for this radical position. I will just sketch some here.

In Leibniz' physics, there is an interconnection of all the fluid motion in the plenum. Since there are no gaps in a plenum, motion in one part of the universe will have effects throughout the entire system:

> "Everything is a plenum, which makes all matter interconnected. In a plenum, every motion has some effect on distant bodies, in proportion to their distance" (M 60-61, G VI 616-17).

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[5] Leibniz' favorite example is perceiving all of the waves at the beach, which makes a nice proxy for all the waves of the plenum itself: "This is almost like the confused murmur coming from the innumerable set of breaking waves heard by those who approach the seashore." See "Discourse on Metaphysics" §33. As you approach the waves, and the roar you hear grows louder, Leibniz hopes to convince you that there are indeed parts to your perception that correspond to the parts in the waves. The fact that you are hearing a roar should remind you that there are many smaller noises that make it up. "In order to hear this noise as we do, we must hear the parts that make up this whole, that is, we must hear each noise of each wave . . . for we must be slightly affected by the motion of this wave, and we must have some perception of each of these noises, however small they may be, otherwise we would not have the noise of a hundred thousand waves, since a hundred thousand nothings cannot make something" ("Preface to the New Essays" ¶5, bold added). Roars don't belong to any single drip of water. You've heard a drip in a puddle before, or the rain as it escalates from a few drops to a downpour. Roars are the product of a multitude, an overflowing of many tiny motions, and tiny noises

[6] This commitment will make it challenging to recover a sense of "what one calls perception" for Leibniz. I hope to show how that will go.

Leibniz believes a motion anywhere will propagate to a motion everywhere. To illustrate, it can be helpful to think in terms of an interconnection of all matter through gravity rather than motion. Far away planets pull on us where we are now, and we also pull back on the far away planets. When it comes to a state of motion for a composite, then, the state involves something like a snapshot of a whole physical universe.[7] Likewise in the metaphysics, there is an analogous story for the perceptual states of the monads:

> "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 perceptual, living mirror of the universe" (M 56, G VI 616).

Here again, each monad has relations that express a complete snapshot of a whole universe. These relations, we learn, are perceptual. In fact, there are no other candidates: "this is all one can find in the simple substance—that is, perceptions and their changes" (M 17, G VI 609).

Of course, it seems very strange to say that I am perceiving anything beyond what's in my room right now, let alone perceiving the far away stars and planets at every moment. Very much like gravity, Leibniz holds that the further away things are, the less prominent they will be in the perception of the monad. So "monads all go confusedly to infinity, to the whole."[8]

But this relation is merely a clue about what that will mean for perception. If each individual perceptual state encompasses an entire universe, it is puzzling to claim that this basic relation "is nothing other than what we call perception." Leibniz' position may be more or less

[7] Leibniz describes states as "passing," but it will be convenient sometimes to discuss perceptual states as if they are single frames in a movie reel. This is only an idealization. Ultimately, there is no discrete smallest state for any monad, just a continuous series of perception. What is important for this project is to note that there are two dimensions to that continuity. One dimension is between different states in a series, the other is within a single state of a series.

[8] *Monadology* §60.

plausible for his physics and metaphysics. But it leaves us wondering about what perception really is. Distance has a nice role to play in motion in a plenum or in gravitation of bodies, but how will it account for different kinds of perception?

II. A NOTE ON TRADITIONAL READINGS

The difference between kinds of monads and their perceptions is relatively unexplored in the literature. Where it does come up it is often influenced by Bertrand Russell's reading, where the perceptions of the monads are analyzed in terms of an exhaustive set of monadic predicates belonging to each one.[9] Much of this view has fallen out of fashion, but Russell's account of the differences in the minds, the souls, and the bare monads in terms of consciousness has been influential.[10] On this Russellian view, perception for each monad is of the whole universe, but only some of the universe is consciously available to the monad. The unfortunate upshot of this kind of reading is that, since Leibniz thinks that the world is ultimately just a bunch of monads, the piece of paper or computer screen I am reading from is really just a set of minds, fundamentally not unlike my own. This reading makes it easy to dismiss Leibniz and his theory of perception as a nonstarter.

Montgomery Furth also writes of the monads as having the kind of very strong resources that Cartesian minds have.[11] But Furth develops a puzzle about how to individuate individual monads on this view. All monads have their perceptions, and their perceptions are of everything there is. What is left to distinguish them? He settles on using the differences in consciousness to

[9] Russell (1900).
[10] For readings with a similar approach, see Kulstad (1982), McRae (1976), Wilson (1992).
[11] Furth (1967).

individuate them. Monads all perceive the whole universe, but because you and I see the paper in different degrees of conscious clarity, my series of perceptions can be distinguished from yours. This also allows him to divide the kinds by what they could be conscious of. Minds like yours and mine perceive everything but they are only conscious of the things in the room. This will work well enough to distinguish you and me, but in the case of lower grade monads in the piece of paper, this seems far-fetched. Furth's approach also leaves much of what Leibniz says about different kinds of perceptions at the lower levels unexplored. I will provide a different set of resources to establish these differences.

In contrast, Allison Simmons' reading shifts the focus away from consciousness in Leibnizian perceptual states and places it on representation.[12] Simmons also succeeds in treating some of what Leibniz can say about the perceptions of lower monads like souls, though the perception of the bare monads is still unaccounted for. A main point for Simmons is to show how Leibniz can explain conscious perceptions through representational perceptions. If it succeeds, this position releases the hold of consciousness as the dividing feature of monads. However, the eventual upshot is that the differences between sensation and bare perception depend on notions of clarity and distinctness that are tied up with a second-order representational theory of consciousness, which would leave us back in a version of a consciousness based reading.[13]

I think that consciousness based readings of these distinctions miss something important about Leibniz' approach, and they make Leibniz's theory less plausible. Here I will offer a start

[12] Simmons (2001).

[13] Simmons, 53. Simmons responds to the worry that her reading of distinctness is uninformative, 57-8. In short, to be distinct on her view is to be notable, which might reduce to being potentially conscious. I will not decide here whether Simmons' reading escapes this worry. I take inspiration from Simmons' reading, and I give a different illustration for the way that *abilities* can do the work without consciousness. My reading will allow us to say something about bare perception, too.

to something different. It is more plausible to read Leibniz as describing a world full of organisms at every level with different perceiving abilities than to read him as building a world from unconscious minds. Further, it hews closer to the project Leibniz outlines in his text, where qualities of perception are given in terms of abilities. It is true that Leibniz did much to introduce unconsciousness into these discussions, and that he often goes uncredited for it. But the difference that I hope to articulate between bare perception and sensation depends on different abilities of monads and what those abilities require from the quality of perception, not on their conscious experience.

III. An Abilities Centered Reading of Perception

Early in his career, in "Meditations on Knowledge [*Cognitione*], Truth, and Ideas" (1684), Leibniz distinguishes many kinds of *cognitio*. He rests his distinctions on different perceptual or cognitive abilities. I will make a lot of this abilities centered approach in this chapter.

Traditional Readings of "Meditations"

It is common to read "Meditations" as fragmented from Leibniz' other work on the perceptual lives of monads. "Meditations" is supposed to begin with a special interest in human knowledge, while elsewhere Leibniz is concerned with the perceptual lives of all kinds of monads. For example, the distinctness named in "Meditations" is supposed to be the kind that humans enjoy, which is supposed to be different than the distinctness that beasts have in

"Monadology." It is true that Leibniz often speaks this way. Moreover, within "Meditations," it is typical to read Leibniz as working with *cognitio* and *scientia* as two disjoint kinds of knowledge. Consider Ariew and Garber's translation:

> "What we have translated as *knowledge* is *cognitio*, knowledge in the weak sense, something close to understanding, acquaintance, or even cognition. It is to be distinguished from *scientia*, which is knowledge in the strict sense and which normally entails certainty and truth."[14]

Thus, "Meditations" is typically read as a work on human mental life, which itself has a cleavage in the middle when it comes to *scientia*. In contrast, I want to take a more continuous reading between the two texts, centered on how they rank different abilities.

First, the distinctions in *cognitio* we get from "Meditations" are of a piece with the distinctions that Leibniz makes in other works for the perceptual lives of non-human animals. This will become clear as I develop my reading of distinctness and memory throughout the chapter. Second, the *scientia cognitio* distinction is mostly absent in "Meditations."

"Scientia" appears rarely in "Meditations." Some appearances are trivial. For example, where Leibniz explains that our use of symbols involves either a knowledge or a belief about what our symbols hide.[15] The point seems to be that one can use symbolic reasoning with both the strongest (*scientes*) and weakest (*eredentes*) connection to the analysis of the symbol. Others are couched in meta-discourse about a conditional proposition in an argument.[16] There is a non-trivial appearance of *scientia* when it comes to a difference between nominal and real

[14] AG 23.
[15] "scientes aut eredentes nos eam habere in potestate." G IV, 423.
[16] "Verum sciendum est, inde hoc tantum confici: si DEUS est possibilis, sequitur quod existat" G IV 424; "sciendum est" G IV 426.

definitions—the imperfection of nominal definitions gets highlighted.[17] But on the face of it, the only work that *scientia* seems to do early in the essay is to mark off *perfectum scientam* from other knowledge.

But how should we read perfect knowledge? Leibniz signals early and plainly in the essay what he has in mind. He outlines the various kinds of knowledge or cognition that he will investigate in his opening sentence, where he calls the highest form perfect:

> "if knowledge [*cognitio*] were, at the same time, both adequate and intuitive, it would be absolutely perfect" (34). [18]

So I think it is straightforward to read *scientia* as nothing more than the most perfect form of *cognitio*, identified in his opening salvo of "Meditations." On this reading, rather than there being a major cleavage in the taxonomy, it's all *cognitio* that concerns Leibniz, and it comes in different degrees of perfection. There remain difficult questions about the relationship between *cognitiones* and *ideis* and *notiones*. But when it comes to a relation to *scientia*, Leibniz is committed to a continuum of *cognitio* with scientia at one end of the smooth spectrum.

Of course, this doesn't tell us much about what *cognitio* is, let alone a perfect version of it. For now, I will simply translate *cognitio* as "cognition," and note that perfect cognition is related to *scientia*. I will do more to characterize a few kinds of lower cognition later in this chapter.

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[17] "Nec definitiones nominales sufficiunt ad perfectam scientiam, nisi quando aliunde constat rem definitam esse possibilem"G IV 425.

[18] "Est ergo cognitio vel obscura vel cl a r a, et clara rursus vel confusa vel d i s t i n c t a, et distincta vel inadaequata vel a d a e q u a t a, item vel symbolica vel i n t u i t i v a: et quidem si simul adaequata et intuitive sit, perfectissima est" G IV 422, underline added; "et quidem si simul adaequata et intuitiva sit, perfectissima est." G IV 422.

An Abilities Reading of *Meditations*

As mentioned above, "Meditations" starts with a compressed catalogue of distinctions:

> "Cognition is either obscure or clear, and again, clear cognition is either confused or distinct, and distinct cognition either inadequate or adequate, and adequate cognition either symbolic or intuitive" (MC, G IV 422).[19]

As it stands, this is nothing but a set of assertions. Sometimes asserting the truth clearly enough can help to establish it—but this is too short for that. The criteria for these distinctions aren't far behind. I have abridged them here for convenience:

> "A notion which is not sufficient for recognizing the thing represented is *obscure*."
>
> "Cognition is *clear* when I have the means for recognizing the thing represented."
>
> "Clear cognition . . . is *confused* when I cannot enumerate one by one marks [*nota*] sufficient for differentiating a thing from others."
>
> "A *distinct notion* is . . . connected with marks and tests sufficient to distinguish a thing from all other similar bodies."
>
> "Individual marks composing [complex notions] are sometimes understood clearly but confusedly . . . such cognition . . . may be distinct, yet *inadequate."*
>
> "When everything that enters into a distinct notion is, again, distinctly known, or when analysis has been carried to completion, then cognition is *adequate.*"

[19] Note that where Ariew and Garber have used "knowledge" for *congnitio*, I have used "cognition."

> "We don't usually grasp the entire nature of a thing all at once, especially in a more lengthy analysis, but in place of the things themselves we make use of signs . . . I usually call such thinking . . . *blind* or *symbolic*."
>
> "When we can [consider all of a notion's component notions at the same time], or indeed insofar as we can, I call cognition *intuitive.*" (MC, G IV 422-3)

Here, Leibniz organizes his discussion around the names (italicized) for different kinds of cognition. But to understand the system he presents, we will do better to organize our approach around the differentia shared between kinds of notions. Notice that the differentia are all built around abilities:

Obscure vs. Clear – divided by recognizing objects.

Confused vs. Distinct – divided by distinguishing/differentiating objects through marks.

Inadequate vs. Adequate – divided by distinctly knowing marks.

Symbolic vs Intuitive – divided by simultaneously considering all component notions.

It is striking that abilities support the different kinds of notions in his architecture. So far, I have abridged Leibniz' essay to present its formal distinctions and criteria. This abridgment was done to expose the role that abilities should play in his picture. But understanding that role requires paying attention to the actual abilities and examples that Leibniz details.

Recognizing Flowers for Clear Cognition

> "For example, if whenever I remember some flower or animal I once saw, I cannot do so sufficiently well for me to recognize that flower or animal when

presented and to distinguish it from other nearby flowers or animals." (MC, G IV 423 / AG 24)

Some animals can't tell the difference between a flower and any other surface to land on. In that case, the animal will have an obscure notion of the flower. But some animals can *recognize* flowers, and better than some humans can. Bees, for example, recognize flowers in some sense when they search them out to land on them. But will this sense of recognition work for Leibniz?

Is the bee *re*cognizing a flower, or just cognizing it upon first contact? Maybe it doesn't matter to the bee whether it's encountered the flower before, it is simply set up to cognize flowers when they are nearby. We can say that the bee reacts to flowers—the perceptual system of the bee is set up for flowers, though maybe not for other objects. Maybe other bugs don't recognize flowers as anything but surfaces to land on (but recognizing surfaces wouldn't be that much different than recognizing flowers). But bees have a special relationship to the flowers—their system stands at the ready to perceive them. So in this sense, the bee might be said to recognize flowers.

But the text starts with *remembering* the flower, and then transitions to testing that memory in the presence of the real thing. It seems unlikely that bees in their nests at night remember the flowers that they saw that day in the same way that I can remember a flower I once saw while I am sitting on my couch. Still, as noted above, in the perceptual life of the bee there is something about flowers in the bee's system that accounts for its ability to recognize flowers in their presence. This aspect of the bee might be read to satisfy the remembering necessary to recognizing.

But to have the relevant ability, beyond recognizing the flower, Leibniz also requires one to "distinguish it from other nearby flowers." *Distinguishing* seems like a further step. If the bee recognizes a rose, is that enough to tell it apart from a daisy? Having a detector that lights up in the presence of a rose would let the bee land only on roses. But does it require a further step to know that a daisy is *not* a rose? Does the detector light up "yes" when pointed at a rose, and "no" when pointed at a daisy, or does it simply not say anything in the presence of the daisy? Or vice versa, perhaps the bee has a not-rose detector, that lights up for every object that the bee approaches, and it can only land peacefully when the non-rose alarm is off. But either way, the criterion seems to require the ability to recognize *x* to translate into distinguishing *x* from non-*x*s as well.

What is it that the bee recognizes? Perhaps the bee recognizes a certain *type* of flower in the garden. It would be helpful to be able to find the type that offers the most pollen. Recognizing daisies or roses might be an ability that some bees have, and smarter bees might be able to recognize more kinds of flowers. Instead, the bee might recognize an *individual* flower in the garden. A favorite flower, with its sweetest smell and thickest pollen, seems to present a different kind of ability.[20]

But recognition could be of individual features of the world of the bug:

> "We recognize colors, smells, tastes, and other particular objects of the senses clearly enough, and we distinguish them from one another, but only through the simple testimony of the senses."

[20] An ability to recognize types or individuals can come apart, depending on the means used for recognition. Types might be recognized through a set of properties that they share (as in descriptivist theories of reference). An individual might be recognized through a relation to a particular thing in the world (as in rigid designation).

So while objects like flowers and animals started things off, qualities like "red" are also recognized through the senses. Bees seem to share enough in common with our senses to share that ability. So on this reading of the recognition ability, it seems available to less sophisticated monads than the human kind.

Moreover, since Leibniz allows qualities into his example of recognizing, it seems unimportant that recognizing goes with objects like flowers or animals. A bee could recognize a certain color independently from any object. Whatever recognition is *of*, the notion will be clear.

Distinguishing Gold using Marks for Distinct Cognition

> "Like the notion an assayer has of gold, that is, a notion connected with marks and tests sufficient to distinguish [*discernere*] a thing from all other similar bodies." (MC, G IV 423 / AG 24)[21]

A bee can have prolific abilities to recognize flowers, and even to distinguish them from others, but it can still remain confused about the flowers that it lands on. To rise from a confused notion to a distinct notion of the flower, the bee needs a further ability to use marks to distinguish the flower.

Leibniz is committed to the universe having marks that monads can grab onto. "The thing does indeed have such marks and requisites into which its notion can be resolved."[22] "It is certain that the notions of these qualities [of things we see, smell, or taste] are composite and can

[21] AG translate "discernere" both as differentiate and distinguish." The relevant ability that goes with discernere will depend on how one reads Leibniz.

[22] It is possible to read this as a condition that might not be met for all objects. On that reading, clear knowledge might only be available for some parts of the universe that have the needed marks. However, this is a very unlikely reading, given Leibniz' many other commitments about the order and detail of the world.

be resolved because, of course, they do have causes." So the monads and the world are made for each other, the marks in the universe are available to the monads to cognize all of it (though in varying degrees of success). Here we don't need to get too deep into Leibniz' metaphysical commitments about causes, marks, kinds, and individuals. It will be enough to say that the world comes with marks that will enable a monad to cognize it, but crucially, only insofar as it has the abilities to manage those marks. In recognizing flowers, the perceptual system is sensitive to marks. To differentiate items, we need a different relationship to marks.

Consider the marks in gold and different abilities to cognize them. Leibniz lists some of the marks that gold has: "heaviness, color, solubility in *aqua fortis,* and others, which are among the marks of gold." Not being an assayer, my abilities to manage those marks leaves my notion confused. I can rely "the simple testimony of my senses" to make use of the marks that are there just well enough to *recognize* gold and *distinguish* it from other minerals that aren't as heavy, or aren't the same color. But not in the right way to *differentiate* it.[23]

So what is it to differentiate gold? This ability is supposed to contrast with the recognizing and distinguishing abilities that my senses have. Differentiating has a different relationship to marks: Leibniz explains it as an ability to "enumerate" them. The marks are "explicit," presumably in contrast to the implicit relationship that my senses have to the color and weight of the gold. The assayer cognizes the gold in such a way that he can perform certain tests to discover the marks. Leibniz connects this relationship to the marks with "unable to explain their judgments and reply to questioning."

[23] Maybe this is because recognition to a particular bypasses the marks, straight to an individual… "the simple testimony of the senses" vs "explicit marks." Are they simple because they involve one feature, or are they simple because they are of individuals?

Taking Stock of "Meditations"

Intuitively, many acts depend on a connection to something like a mark. The ability to perform a kind or nice act depends on your reason for doing it. This seems to be the case for both what the bee does, as well as more advanced acts. If I am kind in order to get ahead in the eyes of others, I have failed to truly be kind. Likewise, performing an act with moral worth might require doing it from duty (with a good will) instead of just in accordance with duty. For Leibniz' approach to more basic actions and perceptions, this will mean articulating how different kinds of perception relate to the marks in the world. I think the best way to do that is to consider how they affect perceptual abilities.

The details about the difference between sensing marks and having tests to use them aren't critical to the project here. What is important to notice is that the overall strategy involves looking at how a monad is able to perform certain cognitive abilities like recognizing, distinguishing, or differentiating based on its different relationship to the marks available in the universe. I read the force for these distinctions and criteria as resting on understanding the abilities that Leibniz assigns to them.

IV. BARE MONADS: SIMPLE PERCEPTION AND STUPORS

Discussing the nature of the simplest bare perception is difficult to do from scratch. Thankfully, Leibniz offers examples. He gives analogies between bare perception and human fainting, sleeping, and being dizzy. Stupefaction seems to be the genus for these cases, when

"the soul does not differ sensibly from a simple monad" (M 20, G VI 610). He characterizes a stupor as:

> "a state in which we remember nothing and have no distinct perception; this is similar to when we *faint* or when we are overwhelmed by a *deep, dreamless sleep*" (M 20, G VI 610).

I will focus first on the examples before getting to the characterizations.

Both fainting and sleeping can lead one to think that the difference between the souls and the bare monads is about unconsciousness, or even about non-perception. But we will see otherwise.

Suppose a stupefied monad is a non-perceiving monad. Then trivially, when stupefied, one is neither remembering nor distinctly perceiving (whatever those come to). Non-perceiving is not much of an option for Leibniz, since monads always perceive. Hence, it is more attractive to say that it is unconsciously perceiving instead. So perhaps a stupefied monad is just an unconscious monad, and Leibniz holds that consciousness is a requirement on remembering and distinctly perceiving. This would preserve Leibniz' position that monads always perceive, just that the bare and stupefied monads do it unconsciously. However, reflecting on Leibniz' cases will lead us in a much different direction. Rather than pursue unconsciousness as a means to characterize stupors and the bare perception of bare monads, I want to pursue the stupors through their relation to memory and distinction on their own terms.

Let us pay closer attention to the cases and features that Leibniz' points out for his bare perceptions. When I am stupefied, what is happening with my memory? For Leibniz, memory seems to be an interstate affair, where a latter state bears some relationship to a former state:

"memory provides a kind of sequence in souls." (M 26, G VI 611).[24] When I remember seeing my red shirt in my closet yesterday, my remembering state makes reference back to a seeing state. A mere repeating of the seeing wouldn't be enough. Seeing my red shirt, then seeing it again, doesn't seem to count as *remembering* my red shirt. Some further relationship must exist between the states. Perhaps in bare perception, as in stupefaction, no such relationship obtains.

Imagine a monad with a rather short memory capacity between states, but a strong ability to distinguish parts within single states, the way the mythology goes for goldfish. With a short enough memory, such a monad might be on the verge of a stupor, at least in terms of what it can do. In a single perception, the goldfish might be able to identify some feature to aim for. But so much of what can be aimed at depends on longer relations between states, even for a very weak sense of aiming. How much would such a monad be able to pursue in a state if it couldn't link it appropriately between states? Or else, perhaps the goldfish's state is fuzzy and indistinct to it now *because* it has a weak memory. The state itself may be more or less distinct, but knowing that one is looking at the same rock, or even at a persisting thing, could be lost on the goldfish due to a lack of context between frames for that thing.

Likewise, Leibniz describes sleep as "overwhelming" the monad. In the same vein, he describes a dizziness that can bring on fainting. What explains this overwhelming feature of stupefaction? I think it can be done partly in terms of the distinctness of the state.

[24] Leibniz also says that memory "imitates reason, but which must be distinguished from it." (M 26, G VI 611). He uses different abilities to draw a consequence to characterizes the difference between the reasoning of minds and the memory: "The consequences beasts draw are just like those of simple empirics, who claim that what has happened will happen again in a case where what strikes them is similar, without being able to determine whether the same reasons are at work. This is what makes it so easy for men to capture beasts, and so easy for simple empirics to make mistakes . . . they are only connections of imagination, transitions from one image to another, as though things were linked in fact, just because their images are linked in the memory;" (PNE, G V 41-61, AG 293-306).

When spinning in circles, a great deal gets perceived very quickly. While spinning, "there is a great multitude of small perceptions in which nothing is distinct" (M 22, G VI 610). So one way toward stupefaction seems to be through bombardment: an excess of perceptions assail the monad, and their number and lack of distinctness overwhelm it. Leibniz explains, "when we continually spin in the same direction several times in succession, from which arises a dizziness that can make us faint and *does not allow us to distinguish anything.*" (M 22, G VI 610). Consider how the chaotic road noise in heavy traffic might push one toward a stupor. When the traffic is moving smoothly, I distinguish the cars and their movements around me. But in the confusion of heavy traffic, with motorists cutting across lanes, honking horns, and slamming on brakes, it becomes more difficult to distinguish all the things that I'm perceiving. Likewise, spinning around in circles fast enough makes it nearly impossible to distinguish the locations and origins of the sounds and colors being perceived. Things all mush together. And if they mush too much, I might become stupefied.

Even falling asleep seems to be fit this model of stupefaction. On the face of it, sleeping seems much different than dizziness. Falling asleep is quiet and restful, while dizziness seems violent and disturbing. Yet one can still be overtaken by sleep. And the end result seems fairly comparable to dizziness: we have a monad unable to make distinctions in perception and so, unable to do much. This also points us away from taking consciousness as the major determinant in Leibniz' examples. It's the ability to distinguish perceptions and to relate them in memory that is impaired on the way to sleep, not the awful feeling of dizziness or the pleasant feeling (or lack of feeling) of sleep that interferes with our activities.

Ultimately, Leibniz also caches out distinctness in terms of contrast: "if, in our perception, we had nothing distinct or, so to speak, in relief . . . we would always be in a stupor.

And this is the state of the bare monads" (M 24, G VI 611). It seems that this kind of contrast can come as memory between states, or as distinctness within single states. In either case, a stupor could be due to a lack of either. In the next section, I will take memory as a relation between perceptual states, and distinctness as a quality of a single state to show how both features feed into the monad's ability to *do* anything.

Finally, death is also an example of a long stupor according to Leibniz. Perhaps one can't do much in death.[25] However, this example seems less persuasive as a datum to draw from, than it is a consequence of Leibniz' position on perception and monads.

V. SOULS: "SENSATION IS SOMETHING MORE THAN SIMPLE PERCEPTION"

Leibniz claims that "sensation is something more than simple perception . . . we should only call those substances *souls* where perception is *more* distinct and accompanied by memory" (M 19, G VI 610). In the previous section I asked how a lack of memory or distinctness can account for stupors and maybe even constitute them. But what do memory and distinctness contribute to a perception? More precisely, why does Leibniz think that their addition could constitute a different kind of perception that he calls "sensation"?

So far I have discussed the stupor-like states of bare perception in terms of memory and distinctness, but I have left memory and distinctness largely unanalyzed. They are rich and difficult notions in their own right, and so, too, for Leibniz. Some of their story depends on the role of sense organs in Leibniz' picture.[26] But I leave that thread for another work.

[25] "With the common people, [Cartesians] have confused a long stupor with death," *Monadology* §14.
[26] Leibniz claims that "nature has given heightened perceptions to animals from the care she has taken to furnish them organs that collect several rays of light or several waves of air, in order to make them more effectual by bringing them together" *Monadology* §25.

Unfortunately, Leibniz offers relatively few texts treating memory and distinctness directly. He treats them briefly in his Discourse on Metaphysics §24, and he utilizes them intermittently throughout the *New Essays*. Perhaps his most focused treatment occurs in his "Meditations on Cognition, Truth and Ideas." As noted above, this reveals his abilities centered approach. I will now extend that approach by exploring the various grades of perception between a complete stupor and the activities that go with Leibnizian sensation. I do this by reflecting on cases. For each case, I outline the relevant perceptual activity and then ask what it would require from Leibniz' distinctness and memory.

In his letter to Bierling, Leibniz signals an agnosticism about the lower grades of perceptions and monads: "a mind endowed with reason, or a soul endowed with sense, or a soul-analogue endowed with some *inferior grade of perception and appetite*. For the latter, the term 'monad' alone suffices, since *we do not know its various grades*."[27] But I am more optimistic about some of the grades. Here I intend to explore some of those various grades within Leibniz' framework. Leibniz met with Leeuwenhoek on his visit to Holland in 1678 and looked through his microscopes, so it seems natural to begin with cases from the microbiological world.[28]

Illustrating with Cases

The first case sketches stupid movement. This movement requires only blind perception: a perception with a pattern to follow, distinctly defined and stored in memory, but requires nothing distinct or remembered about anything beyond the pattern. The second case sketches

[27] Emphasis mine. *Letter to Bierling*, 12 Aug 1711, Translation by Rutherford.
[28] See *The Collected Letters of Antoni Van Leeuwenhooek*, volume 17, Eds. Lodewijk C Palm, Huib J. Zuidervaart, Douglas Anderson, Elisabeth W. Entjes, CRC Press, Aug 6, 2018.

less stupid movement. This movement requires threshold detection: a perception with a minimal relation to a feature of the world, distinctly detected and compared to an internally stored standard. The third case sketches guided movement. This movement requires either a finer level of distinctness in threshold detection, or comparative memory. The fourth case sketches movement in relation to objects. This movement requires recognition and distinguishing of objects. Perceptions that recognize and distinguish objects require representing objects that persist over time.

Case 1: A Simple Bacterium. Consider a certain bacterium living in a pond. On Leibniz' view, the bacterium has a monad with a series of perceptions. Is the bacterium a bare monad in a Leibnizian stupor, or is it a soul with sensation? How much memory and distinctness would Leibniz think it had? On my reading, it will all depend on what it can do.[29]

Many bacteria can move.[30] Moving, always or in random intervals and speeds, straight ahead or in random directions, or even in complicated patterns of directions and speeds needn't involve a very impressive perceptual state from the organism. The movement might *in effect* follow strategies to look for food, evade danger, or avoid or break out of corners to keep on moving. How much distinctness and memory are required to do this?

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[29] I want to distance my reading from sensorimotor theories of perception from the late 20th and early 21st century. These theories take a conception of action as a *constituting* feature of perception, especially for vision in space. Some have tried to find its roots in Berkeley, though I am skeptical.

Leibniz' discussion of perception and the abilities and activity of monads presents an altogether different set of questions and positions than these recent pictures do. The Leibnizian approach that I am developing here investigates the quality of perceptual states by reflecting on the perceiver's abilities, but it doesn't make the same kind of constitutive claim as the sensorimotor theories.

[30] The voluminous *Bergey's Manual of Systematic Bacteriology* catalogues the state of the science concerning actual bacteria. Treatments of memory in organisms are also highly sophisticated in the 21st century. Psychology works with major divisions between priming, sensory memory, short-term, long-term memory. Distinctness has more or less fallen out of use. Here, I proceed in a speculative project about the abilities of these organisms within Leibniz' system.

Leibniz could account for these states of bacteria without including anything distinct about food, mates, danger, or corners. The bacterium simply moves according to a pattern.[31] The pattern can have some relationship to the success of the organism, but the pattern itself can be given quite apart from any relationship. To move according to a pattern, the state can include a preprogrammed set of instructions: *whip, hold, whip, hold*. The pattern need not include anything about the causes or purposes of the whipping. Moreover, these movement types require no feedback from the state of the bacterium. There is no need for maintenance from the organism to keep it on course. The bacterium needn't check to see how well it has traced the pattern, and it doesn't make corrections to its course to better match it. It simply executes the pattern without regard to any of these features. States about the location of actual food, for example, are well beyond its powers. Our bacterium might whip its flagellum until kingdom come, all the while pressing itself against a barrier, with nothing about the barrier incorporated into its state.

Hence, this kind of perceptual state requires nothing distinct about the world around the bacterium. It only requires an independent set of rules. It is true that the pattern must be more or less explicit: a specific combination of whips, tumbles, holds, turns, or whatever maneuvers the bacterium does. But the state is not a state of whipping toward the food, or even of whipping straight ahead. It is simply whipping.

Further, these states need no memory relations between them. The bacterium needs a pattern, but each stage of that pattern can be had independently from the last. Of course, these versions of minimal distinctness and minimal memory can be done more or less parsimoniously. One can imagine a bacterium that comes built with a lifetime long pattern of iterated whips,

[31] Of course, all monads have a set series of perceptions built in from the start. But Leibniz describes the differences in the kinds of series as they "unfold," which is the topic I develop here.

while a different bacterium might have a single whip state that it plays on repeat. Either way it gets done, moving according to a pattern only requires distinctness and memory in some independent pattern. Nothing distinct about the wider world is distinct in a state, and nothing needs to be carried between states.

Case 2: Another Bacterium. Consider now a bacterium that moves with a different relationship to features of the world. Many bacteria have ways of relating to concentrations and gradients of chemical substances, temperature, pressure, gravity, illumination, magnetic and electric fields, or other features of the world around them.[32] The nature of these relationships can be philosophically and scientifically controversial.[33] Suppose that our bacterium does relate to an oxygen concentration, in some way to be discussed, and that it moves relative to it.

Moving relative to the oxygen concentration can call for different kinds of perceptual states. On a simplest picture, the state includes an internal standard with a threshold about concentrations of oxygen. That standard can be as simple as a binary *too much*, *not too much*. When the concentration around the bacterium crosses the threshold, the creature starts to move.

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[32] Blakemore and Frankle (1981).

[33] For example, see Dretske (1986). Dretske introduces magnetotactic bacteria to the philosophical literature: "Some marine bacteria have internal magnets (called magnetosomes) that function like compass needles, aligning themselves (and, as a result, the bacteria) parallel to the earth's magnetic field." Moving in a straight line toward the pole means moving downward, where oxygen concentrations that are dangerous to the bacteria are lower than they are at the surface. Dretzke uses them to introduce puzzles about how a naturalized theory of representation can allow for perceptual errors. For example, nothing if you "fool" the bacteria with a magnet, nothing is wrong with the bacteria's magnetosome, but something would be wrong with the direction the bacterium moves. Dretske takes the example from scientific work by Blakemore and Frankle.

Ruth Millikan (1989) takes up Dretzke's example. She argues that by introducing the right notion of biological function to the representational story, the puzzles more or less disappear. She holds that it is intuitive that the bacteria represent the oxygen, not the magnetic poles, which comes out that way on her biosemantic picture.

Tyler Burge (2010) argues that it is not at all intuitive that the bacterium represents anything. He makes a distinction between sensory information registration and perception. The former need not involve a robust sense of representation at all. He classifies the bacteria as having sensory information registration.

Any direction will do. Anywhere is better than here! After all, the bacterium could get lucky and end up in a better part of the pond.

If that's the story for the bacterium, all that is needed would be a perceptual state comparable to a threshold: *too much, so move*. On this picture the level of distinctness in the perception, as measured by what the organism's abilities presuppose, would still be fairly minimal. The bacterium isn't noticing very much about the universe around it, and when it does, it is in broad terms (too much or not too much) for a single feature (oxygen). This kind of movement seems to be underwritten by the ability to distinguish at least that much. The state could be more or less fine it it's detection, and it could issue in faster or slower motion for different concentrations. Still, the family of distinctness for these kinds of states concerns only a detected threshold.

Memory for such a bacterium could be had in the form of a stored internal standard. Storing a concentration of intolerably high oxygen resembles the stored patterns in the first bacteria case. The standard itself doesn't change in relationship to the world around it. However, the standard does concern the oxygen outside of it rather than just an independent pattern. Instead of just plain whipping, it is whipping on a condition of detecting something. But it needs no memory in the form of stored information about what is actually detected.

Case 3: Yet Another Bacterium. However, if the movement is guided away from oxygen, actually aimed or directed in some sense away from the oxygen rich areas, things will need to go differently in the perceptual state. One option for guiding the motion of the bacterium can come through a contrast in the body of the bacterium. Suppose there is more oxygen on one side of the bacterium's body than on the other. The contrast in the parts of the body might be distinctly registered in the perceptual state. With this distinctness, the bacterium could discern a direction

to move in. Different bodies can be more or less detailed here. A body with just two parts could register *too much* oxygen from one, and *not too much* from the other. If the total state can include which side is which, it can produce an aimed direction to move. Bodies with more parts or with finer thresholds could do better. But they all share the same kind of distinctness: they detect oxygen as being too much. So on this option, the characteristic movement is guided on a state by state basis. But nothing beyond stored standards is needed from memory.

Yet another option for guided movement comes through a relation between simpler states. The contrast can come between states as the bacterium moves. On this option, we can keep our anywhere-is-better-than-here model for each state from *Case 1*, but what begins as movement in any direction can gain some direction through a comparison between states. Simple *too much* indicators won't do. *Too much*, followed by *not too much*, even if related with memory, would give random directions until the bacterium registers *not too much* and stops moving. But if the bacterium's states capture different degrees of a concentration instead of a binary detector, the comparisons of memory between the degrees will allow the bacterium to settle on a direction to move. A longer memory, and a finer grain to the degrees of oxygen, would give a surer direction. However well it is done, we have here a stronger way to achieve guided motion with different kinds of distinctness or memory.

Case 4: Animals. Consider now a dog that can move in relationship to its environment. "For example, if we show dogs a stick, they remember the pain that it caused them and they flee" (M 26, G VI 611). Bacteria move, sometimes in relation to oxygen concentrations. But mistreated dogs flee from sticks. Here there are two different activities, and they have different requirements for the distinctness and memory of their perceptions.[34]

[34] Prey animals also flee. Their danger detectors can be hyperactive, going off at the snap of a twig when there is in fact no danger. This can serve the rabbit's fitness in various ways. I take this as a different

Fleeing *because of* something like an oxygen concentration is different than fleeing *from* something. In a single state, the dog needs to make a stronger contrast in order to flee. If the dog had a binary stick detector akin to the bacteria's oxygen detector, it might reflexively flee in the presence of sticks. But this can't be the kind of activity that Leibniz has in mind for the dog. Bacteria escape oxygen concentrations regardless of whether they have been mistreated by them. Distinguishing the stick well enough to flee from it requires more. Further, sticks are more complicated than oxygen concentrations. The dog doesn't flee from a high concentration of stick registered in its state. It flees from a stick as an object, distinguished as one in its state.[35]

Given these conditions for its activity, what must be going on in memory between the states of the dog? The guided form of activity for the bacterium required a very basic form of memory. Normal interruptions in the series of oxygen concentrations for the bacterium can break its chain of action. But for the dog, a solitary state with a distinct stick, a blip on the radar, likely won't be enough to get it moving. Moreover, the stick being out of sight won't always be enough to get it to stop moving. To get the dog's kind of motion, the memory relation between its states needs to reflect the persistence of the stick. As Leibniz describes the sensation of the dog:

> "We observe that when animals have the perception of something which strikes them, and when they *previously* had a similar perception of that thing . . . they *expect* that which was attached to the thing in the preceding perception" (M 26, G VI 611, emphasis added).

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activity than fleeing from sticks. The rabbit flees from danger, whether there is danger or not. The dog flees from a persisting object.

[35] This is not to say that the dog requires a stick concept in any sophisticated terms. Just that it's perceptual system countenances objects as different than concentrations.

Hence, these animals remember their previous states and they anticipate future ones. Unlike any of the bacteria, the dog can put its states together in a different way. It can endure breaks in the series, depending on how long it's memory is. Being able to relate perceptions as the dog does will go well beyond the powers to distinguish and remember from any of the bacteria above. Ultimately, to be able to flee from the stick, the dog will need to be able to pick it out. Picking it out will require a cooperation of distinctness and memory in the perception.

By reflecting on these cases, a picture begins to emerge that illustrates what Leibniz has in mind for his differences in perception. Each kind of ability requires a different family of distinctness and memory from the perceiver. The dog's perception can count as sensation because it achieves a distinctness of objects as objects, and a persisting kind of memory of them. The bacteria move, but even when they have guided motion, they lack these more advanced qualities, which is reflected in the lower grades of memory and distinctness in their states. The bacteria's activities are more akin to the stupor like states of being dizzy, fainting, and sleeping.

How bright are the lines between these organisms, activities, and perceptions? Leibniz is very often pleased to settle on infinite gradation.[36] It is possible that each creature in his system will have its own special kind of distinctness and memory to support its own particular life activities. On my reading, it is clear that each ability at least comes with a difference in distinctness and memory, which are the features on which Leibniz claimed to rest the distinctness in the first place.

[36] For example, he writes to Bernoulli, "I confess that there are parts in cheese in which there appear to be no worms. But what prevents there from being other smaller worms or plants in those parts in turn, or other organic things that are *sui generis*, and so ad infinitum, so that there would be nothing in the cheese free from such things?" Leibniz, "Letter to Bernoulli," January 1699 in AG, 170.

VI. FURTHER QUESTIONS

An Issue with Pure Stupors

If the bacterium is moving, is this not some kind of action? And if so, the bacterium appears to be in less than a pure stupor. This raises an important issue for Leibniz. The text is divided on this point:

> "we should only call those substances *souls* where perception is more distinct and accompanied by memory" (M 19, G VI 610).[37]
>
> "For we experience within ourselves a state in which we remember nothing and have no distinct perception" (M 20, G VI 610).[38]

So in one breath Leibniz says that stupors have *no distinctness* at all. But in the next breath, he says they are *less distinct*. Complete stupors would pose a problem for perception being an activity, and everything always moving. But if it is just a matter of degree, is there any sense in looking for a substantive cut between the sensations of souls and the perceptions of bare monads? Of course, there could still be interesting distinctions here to make, just as different colors blend together at the edges. But there is more reality in the monads than in colors, and perhaps less tolerance for fuzziness.

There may be a way forward. Whether the bacterium counts as being in a full stupor or not, we can emphasize that although the bacterium does have a minimal ability to move, the bacterium lacks another ability to really track anything in the world.

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[37] "qu'on appelle AMES seulement celles dont la perception est plus distincte et accompagnée de memoire."

[38] "un Etat ou nous nous (sic) souvenons de ríen et n'avons aucune perception distinguée"

For the perception of the bacterium, there is no guarantee that the oxygen concentration that it is moving in relation to is the same thing in the world in each case. And to the bacterium, it doesn't matter. Consider being in a state of fear, and fleeing There may be two kinds of fear. There is the precise kind, fear and fleeing from a certain individual source of fear. And then there is an imprecise fear, a wholesale panic about everything, or maybe about nothing. In the precise fear, one aims to flee from the source. In the general case, one simply must flee. Fleeing in this complete, inarticulate sense doesn't seem to care what it is one is fleeing from. If I am surrounded by predators everywhere in the bushes, I would do better to get a sense for how many there are, and their locations, so I knew where to flee. Or else I could simply flee from anything that presents itself immediately in a single state, screaming at every new predator that appears, not caring if it is the same or different.

Part of the more precise fear is had in the surprise that occurs when it is a *new* predator that jumps out this time. But one can imagine being so frightened that the only thing to do is run, and it doesn't matter how many predators there are in the bushes, or whether they are the same or not. This is what the simple bacterium seems to do. It takes the state as a whole rather than distinguishing much within them. And it seems to move without much regard for the previous state. With such diminished resources, it seems like the perception and movement of the bacterium is of a different kind than more advanced animals. It certainly isn't distinguishing a certain flower.

A Problem about Preprogramming and Pre-established Harmony

My primary goal has been to show that Leibniz takes an activity centric approach to perception, and that by taking this activity approach seriously—by working out various activities and what they require from distinctness and memory—we can understand Leibniz' difference between perceiving and sensing. We can better see how it depend on distinctness and memory, and through activity we can learn more about what his notions of distinctness, memory, and perception are in general.

The strategy has been to identify a perceptual ability (e.g., recognizing) and then use it to draw a line between certain kinds of perception (e.g., obscure or clear perception). That's fine, but if we are to understand the line or gain insight, we need to account for *why* the notion or perception is or is not sufficient for the perceptual ability. In this same spirit, I have used cases of different actions to outline the differences in perception on Leibniz' view. A quick recap:

Action	Perceptual Ability	Kind of Perception
Blind motion	Stupefaction	Bare Perception
Guided motion	Detection and Comparison	(of different kinds)
Fleeing	Object Recognition	Sensation

So far I have taken the details about different kinds of distinctness and memory, as well as different kinds of activity, as more or less obvious. This was enough to sketch out Leibniz' picture and to establish his divisions based on the requirements of the activity. Lines emerged between perceiving persisting objects and perceiving other features of the world.

However, there is a complication for actions and abilities in Leibniz. Take the humble bare monad with its confused (indistinct) and unremembered series of perceptions. What

prevents the humble monad from having a series of perceptions that generates motions identical to the dog's motions? Of course, dogs move faster than bacteria, but that shouldn't be an issue here—allow the bare monad to move as quickly as the dog. Suppose we preprogram the perceptions of the bacterium so that it finds itself in exactly the same places at the exactly the same times as the dog does, always moving away from certain sticks. In this situation, isn't the stupid motion of the speedy bacterium the same as the motion of the dog? If so, what is so different between their series of perceptions?

This question is especially pressing for Leibniz. First, the series of perception for each monad is *always* in some sense pre-programmed. So being preprogrammed, by itself, can't make the dog any different. Second, there is no real influence between monads for Leibniz, so there can be no recourse to some causal interaction with the stick for the dog's case. Any sensitivity of the dog to the stick is already in some sense encoded into the perception itself. So it won't do to simply say that the dog reacts to the stick while the bacterium doesn't—both have a series of perceptions that in effect puts them in the same places relative to the stick. So what resources does Leibniz have to distinguish the motions of the bacterium from the motions of the dog, if they are in the same places at the same times?

Perhaps Leibniz would say that the difference is given through counterfactual positions of the bacterium and the dog. While it is true that the actual positions of the two creatures line up, it is not true that they will do so counterfactually. If the stick were to show up at a different time or place in the universe, the dog would flee from it, while the bacterium wouldn't. On Leibniz' picture then, the dog's perception would encode the stick as the same stick in different possible locations, as well as in different actual locations. But how is this sense of *possibility* to appear in

the perception of the dog, given Leibniz' commitments to the determined series of all perceptions in each monad, and to the internal nature of all perceptions?

Perhaps instead Leibniz could say that the principle that governs the series of the bacterium's perception is different than the principle that governs the series of the dog's perception. Take each creature's series of perception and treat them as a mathematical function from state to state, and again from state to motion. If we can define the function extensionally the bacterium and the dog would, indeed, share the same function. However, if the function is not defined purely extensionally, perhaps there could be a difference in the principle that governs each. But what would that governing principle amount to?

Likewise, actions like moving are more than just motions to places at times. Especially so for Leibniz, since time and location is downstream from the series of perceptions to begin with. What makes the difference between the actions of the dog and the actions of the bacterium? First, on my abilities reading, I can take the stupid movement of the bacterium, and the fleeing movement of the dog, to be obviously different actions, requiring different things from the distinctness and memory of the respective perceptual states. But there is more to say about the connection here. Starting on the action side of the relation to perception, it seems plausible to say that action is not an extensional notion for Leibniz. Some fleeing is fleeing *from* a stick, while preprogrammed movement is just moving. The bacterium might mimic the motions of the dog, but this doesn't mean that its movement is fleeing. Some kinds of fleeing requires what we have already seen from the distinctness and memory of the perceptual states of the dog. That is, without making the stick distinctly represented and persisting in one's perceptual states, just being in the right places at the right times won't count as fleeing. The same goes for recognizing, and a host of other activities.

Notice, this account of action is somewhat delicate for Leibniz. It might seem attractive to say that you flee from the stick because it is the one that had causal influence on you. Fleeing *from* the stick could require that kind of causal connection to it. But this can't be so for Leibinz. All of this relationship has to be written into the perception of the dog, carried from the inside, as it were. However, this just points out to use why the stick must be distinct and remembered to the dog in order for it to do what it does.

Kinds of Memory in Leibniz

I have argued that memory must be more than a repetition of perceiving, and that is must be a relation between states. Hume provides a nice foil. He gives a picture of memory in the beginning of his *Treatise* where memory is a certain faculty by which perceptions are copied, namely the way that ideas are copied from impressions. Hume hold that "the perceptions of the mind are *double*, and appear both as impressions and ideas" (2-3). There is a "great *resemblance* betwixt our impressions and ideas in every other particular, except their degree of force and vivacity," and in most cases, they "*correspond*" to each other. Memories fall on the less forceful and vivid side of perceptions:

> "We find by experience, that when any impression has been present with the mind, it again makes its appearance there as an idea; when in its new appearance it retains a considerable degree of its first vivacity . . . the faculty, by which we repeat our impressions in [this] manner, is called the MEMORY" (8).

The copying loses some force and vivacity, but doesn't empty it of them entirely, as it does in the imagination which produces perfect ideas.

Leibniz likely can't agree with Hume on any of these points on memory. First, in terms of overall directions, Leibniz and Hume go two different ways. Leibniz thinks that adding memory to a perception is an upgrade, something that adds order to them. Hume thinks that memory issues in copies of perceptions that are less forceful and vivacious than the originals met with in impressions. Of course, Hume's explanation seems plausible for his dimensions of force and vivacity. Normally, remembering a tiger seems to leave out a great deal form the original perceiving of the tiger. If force carries a motive element, remembering a tiger does much less to get me out of my seat than seeing one. And the details of the tiger seem less available, or else less present in memory than they do in the original seeing.[39]

But in Leibniz' terms of ordering perceptions, memory offers a context to perceptions that they are otherwise missing. Seeing the tiger jump out has less effect on me if I remember that there is a very thick tempered glass wall between us. Certainly, such memories are hard to maintain completely—I'll probably flinch as the tiger jumps. But if the tiger keeps jumping at the glass wall, I can remember how the glass wall works, and my flinch may get smaller and smaller.

Second, Hume takes memory to be a faculty that copies all the original impressions. Leibniz allows for a lowly monad with a series of perceptions and no memory relations between

[39] There are questions one can ask about Hume's account of copying. First, how does the counting of perceptions go with the correspondence claim? If there is a correspondence between all of them, it would seem that I could never have an idea without a corresponding impression. So as I repeatedly remember the time the tiger jumped at me, running it back in my mind, again and again, do all the ideas of the jump correspond to a single original impression? Or am I using the same idea each time? If I watch a video on loop, am I getting new impressions?

And what of impressions that seem to go unremembered? Perhaps Hume thinks that the boundaries of memory limit the extent of original impressions, so that the inability to remember would go with the inability to receive an impression. But this would be very strange, indeed, considering the view he has of ideas as diminished impressions. Perhaps all impressions are instantly copied by the memory faculty. But why does my mind have two perceptions of the tiger instantaneously, but of different degrees of force and vivacity? The same concerns hold for the faculty of imagination, where the simple impressions are copied and arranged.

them whatsoever. This highlights both a difference in the range of perceptions for Leibniz (very small creates have them). But it seems an open question the extent to which a memory relation operates on souls and minds for Leibniz. I have entertained the possibility that a disruption of memory between states is possible to produce a stupor in minds on occasions. If that is right, memory need not be always relating for Leibniz. The way I have read Hume, memory (or another faculty) needs to copy all incoming impressions at all times. Lapses in memory, then, might be a matter of degree for Hume. But a degree of what? It is unclear whether force and vivacity are to be used to account for both the diminished quality of the ideas produced by memory as well as the smaller role they play in mental life. Some kind of attention or prominence in mental life might do the job.

Leibniz and the 21st Century

Where does this approach put Leibniz in 21st century discussions of perception? My remarks on the powers of the bacterium and the powers of the frog are somewhat general compared to today's finer distinctions. There are many questions to ask: is Leibniz a representationalist, a sense data theorist, or any other such -ist? What of perceptual feature integration and singular reference? Of course, these are different than Leibniz' questions. Here I will focus on just one question that isn't Leibniz': how does his cut compare to some current ones?

Ruth Millikan's treatment of the bacteria leads her away from a simple correlation model for representations. The actual correlation in the bacterium isn't to the oxygen concentration, but to surrounding magnetic fields. Magnetic fields by themselves don't pose any threat to the

bacterium. It's the oxygen concentration that's dangerous. Hence, Millikan introduces a notion of biological function underwriting the state of the bacterium. Hence, the state of the bacterium is described as perceiving the oxygen due to the biological function that explains it, not as representing the magnetic fields it is correlated with. So, this kind of perceptual state depends on a correlation + function.

Millikan's picture allows for a lot of perception happening in the world among living things. Perhaps trees are perceiving when they respond to the direction of the sunlight that they need. This kind of talk seems to fit with Leibniz' world, teeming with living monads that perceive the world. Simple correlations in the plenum are too weak on Leibniz' picture, too.[40] Like Millikan, he invokes a vital, organic picture for perceptions. But if this is right, not much could be made of a diction between bare monads and souls. It would be a smooth gradation between kinds of living perceivers in terms of the distinctness and memory of their perceptions.

Others reject this view. Tyler Burge, for example, thinks it is wrong to afford the bacterium the same sense of perception that occurs in other animals. He makes a cut between sensory information registration and real perception that has a distinctive kind of representation. The way I see it, this picture depends on two things. Burge writes:

> "Perception is marked by having accuracy conditions as part of the nature of the kind."[41]

and

> "The formation of perception involves a type of objectification. This objectification is a process that systematically contrasts phenomena that encode proximal stimulation, at various levels of abstraction, and phenomena that

[40] But see Benson Mates on Leibniz' expression relation: any correlation there seems to work.
[41] Burge (2014), 400-401.

> represent specific environmental entities. Objectification is marked by processes embedded in exercises of perceptual constancies. These are perceptual capacities to represent some environmental particular or attribute as that particular or attribute under a large variety of proximal stimulations, and from a large variety of corresponding perspectives.[42]

Comparing Leibniz in regard to this first feature, in some sense all perceptions for Leibniz, even the stupors (or near stupors), are true or accurate, and trivially so.[43] They capture the whole universe, after all. If one failed to include that somehow in the state, it wouldn't be a member of the same universe. This pairs with the early modern view that to have a perception in mind, one has to have something real. Failures to perceive aren't half failures, they are complete in the sense that there is no perception going on at all.[44]

But when it comes to objectification in perception, I think Leibniz has more in common with Burge than with Millikan. It is an important difference that the frog is able to perceive objects outside of it *as objects outside of it*. The bacterium is confined to representing things that happen in its body, while the frog has clear representations of persisting things beyond it. Moreover, it is an *ability* to distinguish this flower from another that depends on a notion of it being a persisting object out there, much like a Burgean constancy. This is where I argue Leibniz draws the line between the sensation of souls and the perception of bare monads. The

[42] Burge (2014), 400-401.
[43] See Mates (1986), 41.
[44] However, in another sense, one might read the qualities of confusion in the states as a kind of accuracy condition.

ability comes with a difference in a kind of perception for Leibniz, and so with a difference in a kind of monad.[45]

[45] Of course, this notion of objectivity in Leibniz is just inter-subjectivity. The flower is made of monads, and sensing it comes along with the powers of discrimination that require a certain brand of memory and distinctness. Here, the subject matter is between monads.

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Chapter 2 – Point of View in Leibnizian Perception

Leibniz often describes his monads in terms of points of view. However, his descriptions typically remain a loose metaphor, and the lesson from the metaphor is rarely clear. Here, I want to do better than settle for a metaphor from Leibniz. Points of view concern something about perception. But what exactly is a point of view in Leibniz's system, and what does it show us about his approach to perception?

In this chapter I introduce questions about Leibnizian point of view (POV) using some relevant texts. I roughly follow the order of introduction that Leibniz himself duplicates across various writings. I work out my own interpretation, centered on actions and abilities. I then sketch some natural approaches to the question, noting where I see them appear in secondary literature. I try to develop those interpretations and comment on their prospects for understanding Leibnizian POV.

I. READING POV THROUGH EXPRESSION

Leibniz is fond of connecting his substances with points of view, but he is less than forthcoming about the nature of that connection. He leans on provocative comparisons to mirrors and city views to illustrate his idea. For example, in *Monadology* he writes:

> "Each simple substance has relations that express all the others, and consequently, each simple substance is a perpetual, living mirror of the universe. Just as the same city viewed from different directions appears entirely different and, as it were, multiplied perspectively, 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" (M 56, G VI 610).[1]

We see the same city comparison in *Discourse on Metaphysics*:

> "Every substance is like a complete world and like a mirror of . . . the whole universe, which each one expresses in its own way, somewhat as the same city is variously represented depending upon the different positions from which it is

[1] For in line citations, I use the following abbreviations for Leibniz' standard texts (full listing are found in the References section): A = German Academy of Sciences (ed.) *Gottfried Wilhelm Leibniz: Samtliche Schriften und Briefe*, 1926; AG = R. Ariew and D. Garber (eds. and trans.) *G. W. Leibniz: Philosophical Essays*, 1989; C = Couturat, Louis (ed.). *Opuscules et fragments inedits de Leibniz,* 1903; DM = G. W. Leibniz, ''Discourse on Metaphysics,''1686; G = C. I. Gerhardt (ed.) *Die Philosophischen Schriften von Gottfried Wilhelm Leibniz*, 1978; L = L. Loemker (ed. and trans.), *Gottfried Wilhelm Leibniz: Philosophical Papers and Letters* 2nd Edition, 1969; M = "Monadology," 1714; MC = "Meditations on Cognition, Truth, and Ideas," 1684; NE = *New Essays* 1704; NS = "New System of Nature" 1695; ONI = "On Nature Itself" 1698; PNE = "Preface to the New Essays" 1703-05; PNG = "Principles of Nature and Grace" 1714. PT = "Primary Truths" 1686; T = *Theodicy* 1710. Unless otherwise noted, translations follow AG.

> viewed. Thus the universe is in some way multiplied as many times as there are substances, and the glory of God is likewise multiplied by as many entirely different representations of his work" (DM 9, G IV 433).

So Leibniz makes a connection between mirroring and point of view.[2] In this section, I want to establish that connection, which will serve as the foundation for what is to come.

The first step Leibniz takes in both metaphor passages is to connect the expression relations between substances to substances being mirrors. In "Monadology," he infers the latter from the former: "each simple substance has relations that express all the others, and *consequently*, each simple substance is a perpetual, living mirror of the universe" (emphasis added to the illative.) In "Discourse," he puts the two points side by side: "every substance is like a complete world and like a mirror of the whole universe, which each one expresses in its own way." So Leibniz claims that the expression relation holds between all substances, and that because substances relate to all the others the relation yields "complete worlds" or "different universes" for each substance.[3] Leibniz' second step is to compare these different worlds to different perspectives on a city. The worlds of substances are "only perspectives on a single one [world]," as views are only

[2] How seriously should we take the comparisons in these passages? Leibniz hedges his language. Substances are mirrors, or are at least *like* mirrors. Cities and universes multiply "as it were," and "in some way." Monads express the universe "somewhat as" viewers represent a city. This hedging might signal the reader not to take the comparisons too seriously, and we would do well not to overburden them. But at the same time, Leibniz is persistent in making comparisons in this idiom. And in between his hedging, he takes a more confident stance. "Just as" cities appear and multiply, "in just the same way," substances relate to universes. I think there is something important here in Leibniz' system for us to uncover, and good reason to try to take a lesson from the metaphors.

[3] Leibniz' phrase "worlds apart" signals his doctrine of preestablished harmony, one of his most difficult doctrines to believe. But in this context, I think I can provide a reading of "worlds apart," "complete worlds," and "different universes" that is more fetching. Different perspectives are very much like a world of their own, with a kind of non-causal relation to all the others. By reading "world apart" in terms of perception and perspectives, I think we can avoid the most difficult parts of one of Leibniz' most exotic positions about harmony and instead emphasize a highly plausible claim about the nature of perspectival perception.

perspectives on a single city. So, in two steps, both starting with mirroring, Leibniz arrives at points of view. Both steps need elaboration.

There is simply too much to say about Leibnizian substances and their expressions here. My interest in this chapter is in characterizing Leibnizian points of view, so I will let that limit the inquiry. Leibniz characterizes the expression relation in this way:

> "One thing is said to express another if it has properties that correspond to the properties of the thing expressed. . . . There are various kinds of expression . . . what is common to all these expressions is that we can pass from a consideration of the properties of the expression to a knowledge (*cognitionem*) of the corresponding properties of the thing expressed." ("What is an Idea," G VII 263).[4]

So when Leibniz claims that a mirror expresses a city, he is committed to the proposition that one can, in principle, know the properties of the city by considering only the properties of the reflection in the mirror.[5] But what about this relation helps to explain point of view?

A First Notion of POV

A mathematical analogy can help to introduce Leibniz' steps in his metaphors. On a plane, all points are related to one another through distance relations. So in a sense, any point reflects

[4] Translation from Mates 1986, 34:

> "Exprimere aliquam rem dicitur illud, in quo habentur habitudines, quae habitudinibus rei exprimendae respondent . . . . et quod expressionibus istis commune est, ex sola contemplatione habitudinum exprimentis possumus venire in cognitionem proprietatum respondentium rei exprimendae. Unde palet non esse necessarium, ut id quod exprimit simile sit rei expressae, modo ha bitudinum quaedam analogia servetur." (G VII 263).

[5] It is telling that Leibniz doesn't say that it is all the properties if the city that can be recovered. Expression proper, then, need not be universal. However, for Leibniz, the thoroughgoing relationship between the substances that express all the others will result in full recovery of all information between expressions.

(i.e., has distance relations to) all the others. Furthermore, one can reckon the positions (or relative distances) of the points on a geometrical plane by using an origin or privileged point to reckon from.[6] There will be different descriptions of the points on the plane depending on which point, taken as an intersection, one uses as origin. Thus, relative to each point, there is a description of the positions of all the others on the plane. These descriptions resemble perspectives on the plane, and in this sense, there is a different perspective on the points on the plane for each different point taken as an origin. So we could take the plane to be analogous to a world, and take the different descriptions of it as perspectives on that plane.

Likewise, a physical analogy can help us read Leibniz' steps in his metaphors. In a plenum, all the motions of bodies are linked to one another through physical relations. One can likewise reckon all the motions in a plenum relative to a single body. But Leibniz knows that there is an equivalence of hypotheses for describing these motions, such that the one can describe all motions in a plenum relative to any body.[7] Hence, the total motions in the universe can be described differently, depending on which body one chooses to relativize from. And each different description, or set of motions of bodies, will give a full description of a universe in motion, though each description is really just one perspective on the motions of a single plenum.

Of course, geometry and physics are more complicated than this in Leibniz' system. But these simplified examples allow us to introduce an initial take on his notion of point of view. Both

[6] If the origin is taken absolutely among all points, the notion of perspective will be slightly different. One can give all the distances between points relative to the same origin, something like a ground plan for a building. Or one can give the relative distances between points, where there is an index for a different perspective from each point.

[7] He references the equivalence it often. For example, "and as for absolute motion, nothing can fix it with mathematical rigor, since everything terminates in relations. This makes for the perfect equivalence of hypotheses, as in astronomy, so that no matter how many bodies we take, we may arbitrarily assign rest or a particular degree of speed to any body we choose, without being refuted by the phenomena of rectilinear, circular, or composite motion." (New System, G IV 477-87, AG 145)

examples satisfy the expression relation. In the mathematical case, one can know the distance between any two unprivileged points by measuring their distance and angle relative to an origin and then computing the distances among the rest. In the physical case above, one can know the motions (speeds and directions) of all the external bodies by considering their speeds and directions relative to an origin body (since they all relate). Hence, any point or body expresses all the others, and they do this in some sense, from a perspective.

POV for Substances

As it stands, the above examples offer only mathematical and physical analogies for perspectives. Particular instances of an expression relation (between locations of points and planes, or between motions and bodies) produce certain kinds of relative descriptions, which are analogous to perspectives. But it is important to notice that Leibniz has something more in mind. In both metaphor passages, the expression relations *between substances* are not necessarily akin to distances between points or to motions among bodies. On one hand, expression is a more general notion than either example allow, and on the other, expression *between substances* introduces special considerations. By tending to expression between substances, we will find a more robust version of point of view or perspective to explicate.

One way to see how substances add something important to POV is to consider how things go when they are missing. In the geometry and physical cases, without substances, the resulting perspectives can overlap. If points on a plane express all the others, and that's all there is to the story, there are various ways to proceed, depending on what one takes as fundamental in their geometry. Suppose points are defined as the intersection of two lines. If we have three lines that

intersect each other at the same place, then we will also have three points—one at each intersection—sharing a single place. So, taken in this sense, the points will overlap. This has ramifications for perspectives. There will be multiple perspectives at that place, depending on which intersection that we privilege. But somehow this seems confused. Are there really three points sharing a single place? Taken another way, it seems that all we really have between the three intersections is a single point, and that places themselves are really no different than points. In this case, our notion of viewpoint would depend on place rather than intersection.

Likewise, we see a comparable situation for the motion of bodies. Suppose we take body purely extensionally. Of course, Leibniz himself doesn't take body this way, but he does entertain that view in his response to Sturm, who does.[8] On Sturm's view, bodies in extension will have distance relations to all the others, but what of their motions? Using only the resources of extension, "[Sturm] says that *motion* is only the successive existence of the moving thing in different places" ("On Nature Itself" 13, G IV 504-16, AG 162). In response, Leibniz claims that from such an impoverished definition of motion, in a plenum, it follows that there would be no criterion of distinction between bodies.

> "At the present moment (and furthermore, at any moment whatsoever) a body A in motion would differ not at all from a resting body B, . . . there is no clear criterion in bodies for distinguishing them, since in a plenum, there is no criterion for distinguishing between masses uniform in themselves unless one is provided by motion."

[8] Leibniz requires both place and a kind of force at a moment: "in the present moment of its motion, not only is a body in a place commensurate to itself, but it also has a conatus or nisus for changing its place" ("On Nature Itself" 13, G IV 504-16, AG 163).

So, if one is a plenum theorist (which Leibniz thinks Sturm must be, since he has no void to appeal to for distinctions in matter), Sturm's definition of motion will fail to distinguish bodies that share a single place. Put in one way, many bodies would overlap, and so would the perspectives they anchor on the motions of the physical universe.

With time, Leibniz grew more confident in this point. He repeats the argument in his 20 June 1703 letter to de Volder, calling it "an invincible argument." This time, he puts it in terms of expression:

> "Things that differ in place must express their place, that is, they must express the things surrounding, and thus they must be distinguished not only by place." (G II 248-53, AG 175).

Hence, it is clear that in his POV metaphor, Leibniz in after a more robust expression relation than we have seen so far. And so the perspectives outlined in the geometrical and extensional body cases above are likewise impoverished to account for his notion of POV. In both cases, one can add an additional piece to the story to eliminate these kinds of overlapping. Just as Leibniz thinks there is more to motion than successive existence across places, Leibniz thinks there more to the perspectives of substances that will prevent this kind of overlapping.

A second way to see that substances make a contribution to POV is to consider how expressions belong to substances, or in the analogy, how reflections belong to mirrors. In the metaphor passages, Leibniz repeatedly says that mirrors "multiply" the city. A reflection in a mirror, in some sense, duplicates the thing it reflects, though that sense needs to be spelled out. I want to work out how expression between substances is a proprietary affair, and in the analogy, how this is very much like reflections belonging to mirrors.

Consider how mirrors express the world "in their own way." One way to think of a reflection is as a token, independent from the mirror that has it. In this case, swapping mirrors in a single location gives us two tokens of the same type of reflection, nothing changed but the time and the mirror. But if we consider the mirrors as living, in the way Leibniz encourages us to, we will draw different conclusions. Using living viewers, suppose we bolt a telescope to a fixed point to view the heavens (supposing the earth is not moving, and ignoring the micro-differences in the lens as time moves). In some sense, you and I as viewers share the same view when we look through the telescope, and there are two tokenings of that same view. But in another sense, my view is quite different than yours, owing to the fact that there are two of us. One of us can't produce these different views alone by looking through the telescope twice, the second time on someone else's behalf. In this sense, one needs to do the viewing for oneself. Thus, views are multiplied in a more robust way than the tokenings of the same type of view. It is in this second sense, that Leibniz takes his point of view metaphor. Just as we saw that expressions are multiplied perspectively, views that belong to substances will likewise multiply views in a deeper way than retokenings. Thus, expression is a proprietary notion when it comes to substances, a thing that belong particularly to the mirror that holds the reflection.

So, this kind of duplication must be something more than a retokening, it has to belong to substances. But it must be more than a hollow requirement of belonging to a unique substance. The proprietary aspect of an expression to a substance should also offer expressions that are "entirely different" views of the city. Considering the analogy, as a location of a perspective changes, absolutely everything in the expression from that location is affected by the change. Nevertheless, the expression must be of the same universe.[9]

[9] So, in order to duplicate a universe, it must be the same city being reflected. Seeing L.A. from one view, and New York from another wouldn't multiply a city, since there are two objects to begin with. So

Expression, Speech, and POV

Why should expression have anything to do with point of view? Take speech, for example. Leibniz says that "speech expresses thoughts and truths" (WI, G VII 263). So there are properties of speech that correspond to the properties of thoughts and truths that allow us to recover the thoughts and truths from the speech. Hearing the name for a city allows me to recover a thought about that city. But different perspectives, for names at least, don't seem to matter for the expressing speech or the thing expressed. Changing locations while speaking the names of cities doesn't seem to matter for the thought about the city. Likewise, changing speakers or hearers of the same name doesn't seem to change the thought, either. The same name here and there, in my mouth and in yours, will express one and the same thoughts and truths about the city. So

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it is important to Leibniz that the city is the same between perceivers. Another condition on multiplication requires that it produce unique reflections. In order for the metaphor to succeed in explicating point of view, there must be multiple *unique* expressions of the city. These can't be mere tokenings of the same expression for Leibniz, because the uniqueness of each belongs specially to an individual substance (unlike a word that can be shared between speakers). Hence, though two mirrors might be interchanged in a single spot and angle in space, the fact that the reflection belongs to a different mirror in each case is enough for Leibniz to conclude that it is a distinct reflection. In geometry, one wonders whether the same point could inhabit the location of another without giving up its identity, or in physics, whether a body can ever be in the same exact place and time as another. But when it comes to expressions between substances, Leibniz is committed to there being one unique perspective corresponding to each substance, and to the perspective being inseparable from the substance it belongs to. Simultaneously, the POV changes everything in the expression, and yet leaves absolutely nothing out.

This commitment is nowhere more evident than his description of God's plan:

> "[God] views all the faces of the world in all ways possible, since there is no relation that escapes his omniscience. The result of each view of the universe, as seen from a certain position, is a substance which expresses the universe in conformity with this view" (DM §14, G IV).

So we can see how Leibniz can use expression between substances to account for his notion of point of view. Expressions aren't jealous of their object, but they multiply it uniquely. Just as one sees in perspectives on a city. Thus, expression is a perspectival notion.

expressions of these kinds are mostly independent from points of view.[10] Likewise, Leibniz' example of models and algebraic equations share this independence from contextual elements. A small model of a city represents the city regardless of how I turn the model, and algebraic equations written or uttered in different locations or from different speakers/writers express the same curves.

So perhaps perspective is a matter of different thoughts being expressed by the same speech, depending on the perspective that the speech is given from, a kind of indexical notion. In that case, if I express a different thought than you do with the same speech (something like having a different set of descriptions to fix the referent), it could be a matter of perspective that accounts for the difference. We have different perspectives on those words, which is shown by our having different thoughts in using them. But this would add perspectives in the wrong place, so to speak. It would give us multiple things expressed (thoughts) for a single expressing thing (speech). For Leibniz' metaphor, what we need is multiple expressions for the same thing expressed. Moreover, unlike, say, a Russellian theory that allows for different uniquely identifying descriptions to fix the reference, Leibniz will require a complete list of descriptions in order to properly express the object.[11] And with an exhaustive list of descriptions, we will be left wondering, again, what Leibnizian expression has to do with point of view.

Instead, suppose we try to establish perspective by using two different words for the same city. But this only offers a thin sense of a point of view, since presumably, I can learn your word and you mine.

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[10] It is possible that expression should be taken as a particular utterance here, or that thoughts are particulars, and so must be done by one at a time, in which case the point of view talk might come down to being expressed by one speaker at a time. But this would be a weak notion of perspective to afford to Leibniz grand metaphor.

[11] Another dissimilarity: Russell's *On Denoting* view allows for ordinary objects to be parts of propositional functions. But Leibniz here takes thoughts and truths to be the things expressed by speech, rather than ordinary objects.

Perhaps then, there is a kind of indexical element in Leibniz' expression relation. Even when I use a name for a city, perhaps it is related to the thing expressed via a context.[12] But still, changing the referent based on context doesn't seem to capture very much of what Leibniz has in mind for perspectives. What we need is a change in content based on speaker. The meaning of "you" changes depending on who I am pointing at, and "I" changed depending on who says it. One sense of meaning (character) doesn't change. But another does (referent).

Expression for Leibniz is about correspondence of some kind. Correspondence suggests that there is a two-way street between the properties of expressing things and things expressed. Similarity would offer such a two-way street. But Leibniz is explicit in denying the need for similarity. Instead, he insists on the knowability of the properties of the thing expressed by considering the expressing thing (and not necessarily vice versa).[13]

However, this emphasis on this direction of knowability in the expression relation makes Leibniz' geometrical example very puzzling. Two dimensional delineations ostensibly lose some properties of the solids that they correspond to. This loss is particularly important to vision science, where perhaps *the* primary inquiry is to explain how a perceptual system overcomes the fact that two-dimensional retinal images are underdetermined as to their distal causes, as well as how perceptual states are underdetermined by their corresponding retinal images.

If it were just a matter of perception, we could read Leibniz as discounting distance and size as real properties in expression. Because distance and size are phenomena, for Leibniz, this approach might have some appeal. However, this still won't cover cases where different shapes

[12] Before fully appreciating the implications of twin earth, Putnam considered a view of indexicality in all language. See Putnam 1975.

[13] What counts as a property here is difficult. Does it include the distance the mirror is away from the city, and the angle it takes on the city?

cast a shadow with the same profile. And when it comes to his geometry, Leibniz' distance at least won't be so easy to discount.[14]

In other texts, Leibniz uses his geometrical examples to support the dissimilarity claim, which can be taken independently from his asymmetry claim. We see in *Theodicy*:

> "It is true that the same thing may be represented in different ways; but there must always be an exact relation between the representation and the thing, and consequently between the different representations of one and the same thing. The projections in perspective of the conic sections of the circle show that one and the same circle may be represented by an ellipse, a parabola and a hyperbola, and even by another circle, a straight line and a point. Nothing appears so different nor so dissimilar as these figures; and yet there is an exact relation between each point and every other point. Thus one must allow that each soul represents the universe to itself according to its point of view, and through a relation which is peculiar to it; but a perfect harmony always subsists therein." (*Theodicy* 357.)

Here, the dissimilarity between the expressing thing and the thing expressed is clear. Likewise, the mathematical exactitude of the relation is clear enough. But it still seems to go the wrong direction. One circle can produce a variety of projected delineations, and one delineation can be produced by a variety of different circles. An object casts a single shadow, but a shadow can belong to many objects.[15]

It seems that Leibniz thinks that the information in a projected delineation contains more than meets the eye. Just as we saw that a motion requires force to go along with place, it seems

[14] In a projective system like Desargues', this might be ignored. Leibniz was aware of Desargues' work, but chose to include a metric in his own geometrical approach.
[15] Of course, this won't be the case if there is a moving light source.

there is something needed to add to a projective delineation, too.[16] Similar to the case of motions and forces, I think we will see what is added to expression by considering the actions of substances: "the very substance of things consists in a force for acting and being acted upon" (ONI, G IV 504-16, AG 159).

II. Reading Perspectival Expression through Paintings

Allison Simmons signals for a literal reading in "Changing the Cartesian Mind" that seems to be about space:

> "The important consequence of a substance's simplicity is that it must represent complex things from a single point of view. While it is tempting to think that the single point of view is something like a center of consciousness (or Kantian unity of apperception), and while this may be how it manifests itself in higher monads, this cannot be what Leibniz fundamentally has in mind. After all, entirely unconscious lower monads have a single point of view too. I think Leibniz means the point of view talk quite literally: a simple substance represents the world as if it were positioned at a single point in it: 'mathematical points are the points of view from which [simple substances] express the universe' ('A New System of Nature,' G 4:483/AG 142). In corporeal representation, by contrast, spatially distinct parts

[16] Also, the object is a product of the perceptions in the first place, not the other way around. It doesn't even require inter-expression to get objectivity: if you were alone, you would still express that solid completely, even if you do it confusedly

> of the res repraesentans represent spatially distinct parts of the res repraesentata, so that the res repraesentans has no single point of view of represented thing."[17]

To work this out, consider the progress made by Renaissance painters in representing three dimensional scenes on two dimensional surfaces. On this reading, a point of view is a point in space, and the view is the resulting two-dimensional representation. Leibniz was aware of the artists' progress:

> "*All individual created substances are different expressions of the same universe* and different expressions of the same universal cause, namely God. But the expressions vary in perfection, just as different representations or drawings of the same town from different points do" (PT, C 520).

So thinking about paintings and drawings is supposed to help us understand viewpoints. Leibniz thinks that drawings of a city "vary in perfection" depending on the point that you draw from. Perfection will play a large role in the story, but eventually I think we will see that the painting comparison is more of a metaphor than the city view comparison. But what could perfection amount to on a mathematical reading of POV? Is the view with the church tower in it more perfect than the view that shows off the cobblestone street instead?

Photographers and artists both aim for certain aesthetic principles in their representations. Some of those principles have to do with the perspective point (framing the objects according to pleasant proportions relies partly on perspective together with direction), though not all (deciding which elements to bring into focus, for example). Besides getting the right objects into the frame, maybe it's about getting them to be the right size on the page. Leibniz seems to think in these terms when it comes to explanations for things:

[17] Simmons 2001, 41-43.

> "Although a painter can present the same palace through drawings that use different perspectives, we would judge that he made the wrong choice if he brought forward the one which covers or hides parts that are important to know for a matter at hand" ("On Copernicanism and Relativity of Motion," C 592).

Here, Leibniz offers a sense of importance to rank the perfection of different views on a palace. But this only pushes the question back. What makes one view more important for a matter at hand? That is, what makes one perspectival representation more perfect than another?

It is tempting to think of perspective as excluding things that are included in the ground plan. For example, Timothy Crane thinks a POV necessarily has to leave something out.[18] This is a difficult approach for reading Leibniz. If it means some object of perception not showing up in one POV, this approach won't do. Leibniz can say that it is unclear or unremembered in a POV, but it has to be there in some sense or other. Further, it seems strange to define things in terms of their objects alone. This seems like a mistake, since one might find all the same objects available from two different spatial perspectives in the room (the chair, desk, and computer can be seen both from the door and from the bed). It's not just that the objects are in the POV, it's that they are in it in a certain way. Some worry about occlusion from a point of view. I think occlusion shouldn't bother Leibniz' basic notion. Light rays might be prone to occlusions, but that's just a feature of one element of a physical world. X rays go through bodies, but Leibniz may not even need these rays to do it. His perceiving relation seems to go through objects. But it may work to treat perspectives as diminishing certain objects more or less from different points. There is some justification for this view in Leibniz' nearest greatest principle: "can only be distinct for a small

[18] Crane 2015.

portion of things, that is, either for those that are closest, or for those that are greatest with respect to each monad" (M 60, G VI 616).

In this vein, some have taken confusion to be purely a function of perspective.[19] The further away one is, the less distinct the objects in the scene become. However, I think this is a mistake. Distinctness for Leibniz has a character all its own, and adds more to the story than the placeholder we see it as here. I will return to this point on my own interpretation.

To continue the spatial drawing interpretation, perhaps a perfect drawing would have no perspective at all:

> "Like that between a drawing in perspective and a ground plan. For there are different drawings in perspective, depending upon the position of the viewer, while a ground plan or geometrical representation is unique" (To Arnauld).

The ground plan can be taken as a perspectiveless representation of the object. In this sense, a ground plan seems more perfect than a drawing in perspective, since it can't fail to present all aspects of its object at once.[20] On the other hand, a ground plan fails to present the most important items in any privileged light for any matter at hand. So perhaps taking a perspective on the object is vital to ordering what is important about it.[21]

I think Leibniz discounts spatial and mathematical approaches in his *New System*:

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[19] Furth 1967.

[20] It isn't obvious that there are such views in Leibniz' system. If the elements of the universe are themselves perspectives, and the objects that they compose are built between them, there is no object to begin with. However, God's plan for the universe seems to hold this position, in some sense or other.

[21] There is a concern about taking space as the primary tool to explicate POV in Leibniz' system. On many readings of Leibniz, space is downstream from substances and their relations, leaving objects to be built up, in some sense, between spaceless substances to begin with. How this goes will depend on one's reading of metaphysical priority in Leibniz' system. Perhaps the spatial relations offer us perspective in virtue of their spaceless yet perspectival elements of reality that underlie them. But I only conjecture that this might be so.

> "We could call them metaphysical points: they have something vital, a kind of perception, and mathematical points are the points of view from which they express the universe. But when corporeal substances are contracted, all their organs together constitute only a physical point relative to us. Thus, physical points are indivisible only in appearance; mathematical points are exact, but they are mere modalities. Only metaphysical points or points of substance (constituted by forms or souls) are exact and real, and without them there would be nothing real, since without true unities there would be no multitude" (NS, G IV 482-3).

So, it seems that it is true that mathematical points are where expression is done. But the relation between the point of view and the place that it is done deserves more attention.

It can be true that they express the universe from a mathematical point. But there is more to the point of view talk than this. First, not all perception is as exact as that. The point where I express vision is binocular. Perhaps there is an idealization of a cyclopean eye, which is a mere modality. But what of a spider with its multiple eyes, or a fly with its compound eyes. Or an organism that perceives without any kind of vision. We don't even need a foreign animal to make the point, what about the point of expression from my stomach after overeating?

I might try to locate an exact mathematical point at the center of each organ, and then tell a story about how they come together at a single mathematical point for the animal that they belong to.[22] But in order to do this, it would be very surprising to find mathematical principles about centers of mass to locate the dominant monad of my body (pineal gland's notwithstanding). Instead, a different story about the way that organs function relative to the function of the whole

[22] It is possible to consider each locus of perception to belong to a dominant monad for an organ, and to claim that all the organs feed into a single center. Pauline Phemister 2017, has approached this view, considering the body of the monad to be related to the point of view.

perceiver would seem more appropriate. But this would be to leave the mathematical and physical points behind in favor of a different set of considerations for the point of view.

III. Reading Expression through Action

In Section I, I introduced a Leibnizian notion of POV through kinds of expression. I claimed that when a substance expresses the universe "in its own way" there is a sense of perspective that is unique to each substance, seen in the way that their expressions "multiply perspectively" in individual substances. In section II, I discussed one way to account for that expression through mathematical and physical points, and found it wanting. In this section, I will develop my own reading of perspectival expression, where I will interpret it through the actions and abilities of individual substances.

One reason to take the perspectival expression that belongs to substances in terms of action is that Leibniz himself does. He begins by introducing happenings:

> "*Each Singular Substance Expresses the Whole Universe in Its Own Way* . . . it expresses, however confusedly, everything that happens in the universe" (DM 9, G IV 433).

Happenings aren't exactly actions, but actions aren't far off. He goes on:

> "In fact, nothing can happen to us except thoughts and perceptions . . . we attribute what we perceive in a certain way to other things as causes acting on us." (DM 14, G IV 439).

So in Leibniz' system, substances act and they express happenings. In another idiom, they perceive and perceive things that act on them. Hence, it seems natural enough to take expression as an

action for Leibniz. For example, as we saw above, my act of looking through the telescope not only gives a new tokening of the view, but it also belongs to me is a proprietary kind of way. So one welcome result of treating expression between substances as perception, and perception as an action, is that this kind of proprietary multiplication in expression can be supported by the way that actions belong to their agents.

There is one sense of action that allows an action to float around independent from any particular agent.[23] We can analyze these actions in terms of possibilities. If, for example, the gas stove in the kitchen gets left on, and there are two roommates nearby with the ability to turn it off, it seems possible that either person could stand up and do the deed. These possibilities can lead us to believe that the stove presents an action to be done, namely turning off the gas, and the action itself doesn't much depend on who does it. Specifying the action in this way leaves it up for grabs between actors, offering a kind of perspective between an act and agent. So in this sense of possibilities, the action overlaps possible agents like certain points overlap a place on a plane. And on this reading, the perspective one agent has as a potential actor is similar to the perspective available from extension alone. It is sharable, at least in terms of possible actions. If we consider acts in actual terms, rather than possibilities, if one of the agents performs the action and the other doesn't, these facts offer us something more that is akin to a perspective as well: in a universe of possible actions, there are different descriptions of them depending on who they actually belonging to.[24]

[23] Leibniz won't be attracted to this view. "Accidents cannot be detached, nor can they go about outside of substances, as the sensible species of the Scholastics once did" (M 7).
[24] It is controversial whether to take "actual" as an indexical term among possible worlds. But I believe that the point about unique descriptions of the world doesn't have to trade on a possible world semantics for analyzing counterfactuals.

However, in Leibniz' system, actions are so thoroughly integrated with their universe, and with the particular perspectival universe of their actors, that things will have to go differently. Before appealing to Leibniz' metaphysics to support this view, we can get the flavor from a more specific example. In one sense, when I cross the Rubicon on a ferry, I'm doing the same kind of thing that Julius Caesar did in January of 49 BC. In this sense, my action is mine, and Caesar's action is his, though we share the same kind of action. And just as before, a retokening of the action provides a sense of perspective, but one too weak to be Leibnizian.

Caesar's famed action seems like so much more than an agent moving his body across a certain river at a certain time. Fully describing the action requires the political context, the ramifications of doing it. That, too, seems possible to duplicate, though as a more specific type of action than simply crossing the Rubicon. If I lead an army across a boundary, maybe of water, in similar political circumstances, perhaps then I am closer to Caesar's original. We can imagine getting more and more precise about the circumstances, until we arrive at an end, a completely fine-grained description of the act involving all of the circumstances. This would still leave retokening open, if one could duplicate the surrounding features. But there is a sense of Caesar's act that requires more than a token difference between his crossing and mine. For Leibniz, this specification of the act won't be complete until it belongs to a single agent, a species all its own. Ultimately, every action is in its own unique circumstances, and has its own set of unique ramifications on the world, and belongs to one particular agent.[25] Even Caesar's stunt double, if Caesar himself were to stay in his tent on that momentous day, crossing at the same time and place with the same soldiers, even with the same plans to change Rome, couldn't do the same thing that

[25] This is related to Leibniz' denial of transworld identity. The abilities and actions of each monad as their own, regardless of which world is actual, and no other's. Thus, our Adam partakes of the fruit, and other Adams' partaking of the forbidden fruit is not the same species of action or ability. (However, note that Leibniz is also committed to abilities being exercised.)

Caesar did—all he can do is a stunt-double's version.[26] So on Leibniz' understanding of particular actions, it seems that each is different depending on who does it, each is done "in its own way." So just as we say that only Nixon could go to China, only you can do what you do, and likewise for all actions and actors in the universe. Each does it "in their own way."[27] Hence, we have a stronger notion of perspective in action: each action belongs to its agent uniquely, thereby making truly unique duplications of it for each agent.

Hence, Leibnizian substances bear a close relationship to action. He says that "a substance is a being capable of action" (PNG 1, G VI 598), and that "actions and passions properly belong to individual substances [*actiones sum suppositorum*]" (DM 8, G IV 433).[28] The metaphysics of that relationship in either direction is, admittedly, complicated:

> "As it is well known from the debates of the metaphysicians, this is no clear or easy matter. To the extent that I have made the notion of action clear to myself, I believe that the widely received doctrine of philosophy, that *actions pertain to supposita,* follows from that notion and is grounded in it. Furthermore, I believe that we must grasp the fact that this also holds reciprocally, so that not only is it the case that everything that acts is an individual substance [*substantia singularis*], but also that every individual substance acts without

[26] This offers us reason to accept my interpretation of Leibnizian perception in Chapter 1 in terms of abilities. If one considers perceptions as something like an internal movie (ignoring issues about continuity between frames), a set of representations rather than represent*ings*, one could imagine putting the stunt-double in Caesar's place to watch the same film. It seems plausible that either man could watch that movie with no difference between them, or else only a trivial difference between the tokenings of the watching and the man sitting in the theatre. But in terms of action, this seems less possible.

[27] The priority relations between actors and their actions here are difficult. On one hand, it might be that two otherwise identical actions are actually distinct because they are done by different actors. On the other hand, it might be that two different actors are unique because they do different actions. For my purposes, the priority won't matter so much as there being a deep connection between action and actor, for whichever reason.

[28] So on Leibniz' account of internal action, composites don't ever act. On other views, this can appear strange. Leibniz thinks that composites like armies of companies don't ever properly do anything.

> interruption, including even body itself, in which one never finds absolute rest." (DM 9, G IV 433)

So Leibniz thinks that by tending to what actions are, we will see that they bear a special relationship to substances, and vice versa. Besides the above attempts to motivate the view with momentous actions of world historical significance, I will now take this metaphysical connection for granted. But my interest will be in explaining how these actions belong to each substance "in its own way," and thus account for the certain uniqueness that belongs to Leibnizian perspectives.

Expression and Internal Action

Leibniz distinguishes between internal and external actions.[29] In "Monadology," we read:

> "This is all one can find in the simple substance—that is, perceptions and their changes. It is also in this alone that all the *internal actions* of simple substances can consist" (*M* 17, G VI 609 italics original, underline added).

[29] It is likely that internal actions map to the immanent action of substances, and that external actions map to the transeunt actions that Leibniz describes in "On Nature Itself," which in turn map onto primitive active force and primitive passive force:

> "The *immanent actions* of substances . . . that the mind thinks and wills, that we elicit in ourselves many thoughts and volitions, and that there is a spontaneity that belongs to us . . . the *transeunt actions of created things* . . . the interaction between substances or monads arises not from an influx, but through an agreement derived from divine preformation, accommodating each thing to things outside of itself while each follows the inherent force and laws of its own nature." ("On Nature Itself" 10, AG 161).

and

> "The creature is said to *act* externally insofar as it is perfect, and *to be acted upon* by another, insofar as it is imperfect" (*M* 49, italics original, underline added).

There are a variety of factors involved, to be explored below. The internal external distinction will divide the exploration. For each side of the distinction, I will show how action relates to perspectival expression.

The internal action of the monad is somewhat mysterious, but it is related to point of view:

> "Each monad is a living mirror or a mirror endowed with internal action, which represents the universe from its own point of view" (PNG 3).

Mirrors, inanimate, might be said to act in the sense that they reflect light. Reflecting, a special case of expressing, can be understood as an action, something a mirror does. But this sense of action seems far from the kinds of action that we reserve for life forms. Even simple bacteria seem to act in a distinctive though simple way, that is markedly different from what the rocks do (including the very shiny ones). Likewise, the things that a corpse does seem more like the things the rocks and mirrors do than those done by a living thing. In the case of *living* mirrors, when a substance gets involved, we can find a special kind of expression. Hence, living mirrors seem to reach for a most primitive version of action in the living sense. Leibniz models that kind of action in terms of perception in the following way:

> "The monad's natural changes come from an *internal principle,* since no external cause can influence it internally" and "the action of the internal principle which brings about the change or passage from one perception to another can be called *appetition*" (M 11, 15 italics original).

So internal action is had in the perceptual life of the monad as it goes from perceptual state to perceptual state, as it acts, according to its internal principle.

Action from a principle needn't be sophisticated. The continuous passing of a series of perceptual states is characteristic of all substances. In the previous chapter, I discussed the way this change might go for different kinds of substances in a Leibnizian system. In a stupor, a substance acts as it proceeds through its memoryless, distinctnessless perceptions.[30] Trivially, this counts as internal action from a principle in Leibniz' system.[31] Beyond that trivial satisfaction, the principle might result in action as simple as a bacterium swimming, or floating, stupidly around a pond. In more advanced substances, acting from a principle has to do with memory (which Leibniz sometimes calls a principle of its own), which can result in something like reacting to a stick. Sometimes this can be something as weighty as reflecting on reasons, recognizing them, and acting from them.[32] For Leibniz, all of these acts fall on the same continuum of action from a principle, with more or less demanding internal principles in each case. In the most basic case, in a stupor, the bare monad acts internally by proceeding through its set of perceptions.

Further, this action must be from an *internal* principle. The sense of internal here concerns the difference between one substance and another. Leibniz seems to think that a substance can't properly act on another substance.[33] It is such a basic idea, that it is difficult to grip. But we can put it in stronger relief

[30] Thus, Leibniz is committed to the states being non-identical, despite being indistinguishable to the monad undergoing them.

[31] Part of this relates to his presumption about change: "I also take for granted that every created being, and consequently the created monad as well, is subject to change, and even that this change is continual in *each* thing." (M 10).

[32] Memory and particular memories belong to individual substances for Leibniz, and reason and particular reasons do too. A similar question arises for current theories of each. For memory, this seems natural enough on some theories of memory: e.g., as Shoemaker takes memory, one can't remember from another's point of view. Likewise, on some readings, reasons have to belong to the reasoner in some sense in order to count as reasons for them.

[33]

by considering this in terms of appetites. Leibniz talks about appetition in terms of tendencies, wills, and final ends:

> "the appetite cannot always completely reach the whole perception toward which it tends, but it always obtains something of it, and reaches new perceptions" (M 15).

And

> " God has . . . *will,* which brings about changes or products in accordance with the principle of the best . . . And these correspond to what, in created monads, is . . . the appetitive faculty" (M 48)

And

> "Souls act according to the laws of final causes, through appetitions, ends, and means." (M 79)

Appetition, along with its many features, deserves more attention than I can offer here.[34] My primary interest in in Leibnizian perception, not appetition. But by considering, in broad outline, how a substance undergoes the natural principled change in its series of perception, we will better understand how action is internal, and also how it meets Leibniz' requirements on perspective.

Consider the bacterium that perceives gradients of oxygen around it. The bacterium has a tendency to, a will for, or a final cause of escaping the oxygen. Whatever the particulars of the faculty, it is done by aiming at something distinct in its perception.[35] But if it were to somehow aim at something in the perceptions of a different bacterium, there is a sense in which it couldn't obtain anything in that perception. Of course, two substances can perceive the same object, but aiming at that actual perceptions (rather than their object) of another substance wouldn't matchup

[34] One path to establishing this in Leibniz is to consider the way that "organs that collect several rays of light or several waves of air, in order to make them more effectual by bringing them together t organs focus rays of light to "make them more effectual" (M 25). Effectuality seems to invoke a similar notion of final ends that we get from appetites.

[35] If it had nothing distinct, if I were in a stupor, it is difficult to say what it would be aiming at.

with the active powers of the substance. In Leibniz' vocabulary, each substance tends toward its own perceptions. Thus, the proprietary nature of the actions to substances can be seen by reflecting on a rather generic notion of appetition.

If this is right about the action from an internal principle, the point about the way that Caesar's actions belong to him specifically can be repeated, but in a new vocabulary. Perspectival expression comes to a particular series of activity from an internal principle for each individual substance: "a first subject of activity"[36] or "the source of actions."[37] That is, for any internal action, if it were performed on the basis of some other principle, it would simply fail to qualify as *internal* to the substance in question. As we saw in the Section I, the duplication of a city in expression must be especially unique in order to fully capture Leibniz' POV metaphor. In the case of internal action, there is nowhere to turn to satisfy this uniqueness but to the individual principle belonging to the substance that performs it. In other words, internal actions must be proprietary to their substances—they can't overlap or be shared.[38] Thus, internal action can help account for the

[36] "*A first entelechy* must be found in corporeal substance, a first subject of activity, namely a primitive motive force which, added over and above extension (or that which is merely geometrical), and over and above bulk (or that which is merely material), always acts but yet is modified in various ways in the collision of bodies through conatus and impetus." ("On Nature Itself," AG 162). This text reflects Leibniz earlier view of substance being a unity of substance and organic body, with matter being formed by the substantial soul. It is thought that later in his career, Leibniz takes up a different view of monads. On either view, the same point about activity will play out the same.

[37] "There are only *atoms of substance,* that is, real unities absolutely destitute of parts, which are the source of actions, the first absolute principles of the composition of things, and, as it were, the final elements in the analysis of substantial things. We could call them *metaphysical points:* they have *something vital,* a kind of *perception,* and *mathematical points* are the *points of view* from which they express the universe. But when corporeal substances are contracted, all their organs together constitute only *a physical point* relative to us. Thus physical points are indivisible only in appearance; mathematical points are exact, but they are merely modalities. Only metaphysical points or points of substance (constituted by forms or souls) are exact and real, and without them there would be nothing real, since without true unities there would be no multitude" (New System of Nature)

[38] Thus, Leibniz holds a kind of unity of action principle that underwrites his notion of expression and point of view It has drawn comparisons to Kant's transcendental unity of apperception, and attracted objections from other Leibniz interpreters. On my reading, the unity is centered on a basic notion of action rather than on consciousness, thereby extending the unity down to primitive types of actors.

unique perspective of a substance through its action as a source of its particular action in the universe.[39]

Expression and External Actions

External actions in Leibniz' system pertain to more familiar cases. It is striking that Leibniz situates them in terms of expression:

> "*The Action of One Finite Substance on Another Consists Only in the Increase of Degree of its Expression Together with the Diminution of the Expression of the Other*" (DM 15.)

Thus, external actions take place between substances, and Leibniz wants to analyze them in terms of expression. Further, he breaks up these actions in terms of action and passion, acting eternally and being acted upon:

> "The creature is said to *act* externally insofar as it is perfect, and *to be acted upon* by another, insofar as it is imperfect."(M 49).

Notice that external actions are merely virtual for Leibniz. Creatures are "said to act" and "we attribute" them to monads, due to certain commitments to pre-established harmony. Here we will do well enough by speaking in the vulgar, as if creatures do act on each other and on the wider

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Leibniz sometimes compares this to the first person perspective. Higher cognition revolves around it, but in his letter to de Volder, Leibniz makes an analogy to lower cognition as well: "What I take to be the indivisible or complete monad is the substance endowed with primitive* power, active and passive, like the 'I' or something similar" (To de Volder, AG 176).

[39] A similar conclusion can be had by considering appetition. The action of the internal principle is appetition. It seems odd indeed to consider the striving of one substance as belonging to another. As much as one might want something for another, one's want remains distinct from the source of action belonging to them. Whereas, my own striving couldn't be connected with anything but myself.

world, so long as no efficient causal story between them bears any of the load in the explanation of perspectives. So external action comes in two varieties of its own: "external acts" and "being acted upon" and the difference between them turns on perfection. Why is this the case?

We have already seen texts where Leibniz identifies perfection leading to a difference in perception. We saw that he thinks different drawings of a palace are more or less perfect. That was hard to make sense of using only spatial notions. I think perfection makes more sense in terms of action, especially in terms of powers, and especially when the action in question is a kind of perception. By exploring that relation, we will have a chance to dig deeper into Leibniz' account of point of view.

One can see that being active is a perfection by considering God, who in the tradition is entirely active. This helps us to consider perfection connects to action. When specifying an action, it should be in terms of positive powers. Thus, action and perfection go hand in hand.

It is not obvious how perfection determines whether an external act is active or passive. Perfection for Leibniz is a complicated affair: "*perfection* being nothing but the magnitude of positive reality considered as such" (M 41). But besides perfection per se, perfection's relationship to action will be key to understanding Leibnizian points of view. Leibniz makes the connection between perfection and point of view thus:

> "what is active in some respects is passive from another point of view" (M 52).[40]

So, in order to account for the way that external actions are perspectival, we will need to explain how the activity/passivity distinction (and thus perfection) plays a role. To explain the workings of this feature, we should turn to a more detailed account of perfections for various other acts, especially as they concern perception.

[40] The French is "point de consideration," but the perspectival nature remains interesting.

However, if we accepting an active passive distinction (which I will analyze in the next section), we can see in outline how perspective can enter into the picture. Between two substances there can be a single action, which is taken actively by one, and passively by the other. This new dimension to the story will add something perspectival to each description of the action. If I pat you on the back, there is one occurrence in the universe: a patting. From one perspective, the patting is active, from the other, the patting is passive. So one and the same action is expressed differently, either actively or passively, for each substance involved, from each point of view.[41]

But rather than attempt to wrangle further with point of view at this high level of description, I will proceed instead to the details over the actual perfection (distinctness) that establishes the active/passive distinction, and so give us the perspective we will need.

IV. Reading Activity and Passivity through Perception

Leibniz leads us through a chain of "insofars" through on his way to point of view in *Monadology* §49-§52. I will trace out Leibniz' approach in this section, and it will reveal a sense of POV rooted in perception and action. The first point is about perfection in the distinctness of the perception:

> "The creature is said to *act* externally insofar as it is perfect, and *to be acted upon* by another, insofar as it is imperfect. Thus we attribute *action* to a monad insofar

[41] Notice that it is important for the action to be treated as an object existing between substances in the case of external action. With internal action, the proprietary ownership of the action helped to account for the point of view of the actor. Overlapping the point of view on that end of the action would be a mistake. But multiplying the interaction perspectivally as an object between substances will be exactly what Leibniz calls for.

as it has distinct perceptions, and *passion*, insofar as it has confused perceptions." (*M* 49).

Leibniz thinks that perfection, specifically distinctness, establishes the active/passive distinction. The distinction is perspectival:

> "It is in this way that actions and passions among creatures are mutual. For God, comparing two simple substances, finds in each reasons that require him to adjust the other to it; and consequently, what is active in some respects is passive from another point of view: *active* insofar as what is known distinctly in one serves to explain what happens in another; and *passive* insofar as the reason for what happens in one is found in what is known distinctly in another." (M 52)[42]

By considering these aspects of perfection closely, I think we can arrive at a more satisfying explication of Leibniz point of view metaphor.[43] It is helpful to lead with the "insofars" to see the picture:

1. Insofar as a creature is perfect (imperfect), it acts externally (is acted upon). (M 49).
2. [Insofar as a perception is distinct (confused), perception is perfect (imperfect)] (from "thus" in M 49).
3. Insofar as a creature has distinct (confused) perceptions, we attribute action (passion) to it. (M 49)

[42] In Monadology at least, the active/passive distinction typically goes with perception, while the act externally / be acted upon distinction goes with action. The most basic action in Leibniz' system is to perceive.

[43] Leibniz has a further consideration underwriting perfection: "And one creature is more perfect than another insofar as one finds in it that which provides an *apriori* reason for what happens in the other; and this is why we say that it acts on the other." (M 50). Thus, insofar as one finds apriori reasons in a creature for what happens in another, that creature is more perfect than the other. I will skip this step in his reasoning (Leibniz has a very complicated view of perfection and apriority). However, note that for our purposes in determining his notion of POV, we have something akin to it in M 52 in terms of explanation and reasons.

4. Insofar as what is known distinctly in a substance serves to explain what happens in another, that substance is active (reasons for what happens in one is found in what is known distinctly in another, that substance is passive). (M 52).

To state the insofar relationships in slogans:

1. Perfect˚ → Acts Externally˚
2. Distinct˚ → Perfect˚
3. Distinct˚→ Active˚
4. Known Distinctly Explains Happening in Other˚ → Active˚

I will illustrate these relationships below to show how external action offers us a sense of perspective.

In the previous chapter, I identified perceptual characteristics that went with different kinds of actions: varieties of distinct perception went with varieties of motion, swimming, guided swimming, and fleeing. I want to pursue a similar strategy here. Unlike the previous chapter, this section calls for actions that concern at least two substances. Of course, for Leibniz the only genuine action between substances is from God to each monad. But at the same time, all internal action for Leibniz will concern every other monad in the sense of expressing them all, and all external actions will concern all the monads in the sense of either acting on them or being acted upon by them. For illustration sake, I will simplify somewhat to action between a few created substances at a time. This simplification will allow us to considering the degree of distinctness in perception necessary to perform or describe certain external actions between monads.

Stealing Candy From A Baby [44]

First, consider a simplified, local case of a happening in the universe: a thief stealing candy from a baby. Without invoking much theory, it is plausible to say that the thief acts on the baby and that the baby is acted upon. To explain why, Leibniz would have us put the happening between them in terms of distinctness in perception of the parties. On my reading of Leibnizian perception from Chapter 1, we can see how that might go.

Consider the thief and his part in the happening. In order to execute an action of stealing, the agent must be able to understand something about the patient, in this case the candy and that

[44] A variety of different action structures concern the differences in direct and indirect objects. For Leibniz, the activity will ultimately always be between at least two potential agents. We can see this from considering his argument for perceiving change in the "Monadology." Leibniz gives a short argument for different qualities [perceptions] in the monads in section 8.

1. "If simple substances did not differ at all in their qualities, there would be no way of perceiving any change in things." (M 8)
2. We do perceive changes in things.
3. So, there must be different qualities [perceptions] in simple substances.

Why believe 1, that there is a connection between change and the qualities of simple substances? Leibniz appeals to something like an indiscernibility of identicals in the next section, but here he offers a different argument from the nature of motion in a physical plenum:

1. Suppose for reductio that there were no differences in the qualities of simple substances.
2. "What there is in a composite can only come from its simple ingredients." (M 8)
3. So, there are no differences in the qualities of composites.
4. "As a result, assuming a plenum, in motion, each place would always receive only the equivalent of what it already had, and one state of things would be indistinguishable from another."[44]
5. So, we do not distinguish [perceive] any change in things. But that is absurd.

The motive behind 4 is somewhat clear from the universality of motion discussed in section 1. So, since we do perceive change in things, the things that we perceive must have diversity in them.

But notice, the argument works at both ends of the relationship. Since the things we perceive are diverse, the perceivers themselves must change. In other words, the diversity must be had in differences of perception. Not only are the objects of perceptions diverse and moving, but the perceivers themselves must have a diversity and change in them. Monads make up (in some sense) composites, the (mediate1) objects of the perception are other perceivers. So the argument goes in reverse as well as it goes forward. Not only must there be diversity in the things that we see changing, but the perceiver must also incorporate a diversity as a constituent of the plenum. And there is nowhere to turn for this diversity but to their perceptions: "this is all once can find in the simple substances – that is, perceptions and their changes" (M 17).

the candy that belongs to the baby. If the agent doesn't (or couldn't) understand these things, it would be difficult to call what he does stealing.[45] The required understanding is a kind of perception for Leibniz. The thief has to be able to perceive something about the item, to perceive it as property not his own, in order to be capable of stealing it. Without this perceptual ability, the agent might be able to take the candy, or else move the candy around "on purpose," (either to a certain spot or maybe to any old spot, just to move it). With even fewer perceptive abilities, an agent might merely push things around "unawares." But these less powerful agents merely move or displace the candy, they can't properly *steal* it. So, we can see that the distinctness of the perception will affect the perceivers abilities, and how the perfection of their perception will affect the perceiver's powers to act externally in certain ways.[46]

When it comes to the passive side of the happening, the baby need not perceive much about the candy in order to be stolen from. Very young babies will be oblivious to the candy, even to all persisting objects, and certainly to their ownership of any of them.[47] If we still allow the baby to

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[45] One can also consider stealing from a large corporation, where there is no such person that owns the item. In this case, perhaps distinctly knowing that the item doesn't belong to you would be enough to allow for you to steal. But the patient of the theft would have to be mediated through other channels than a direct personal victim.

Alternatively, one might wish to specify these actions in terms of losing property rather than taking it. In this way, babies that lack the ability to perceive objects as belonging to them couldn't lose them, but adults who can perceive objects as belonging to them could be stolen from by animals.

I don't want to commit to any particular theory of stealing here. Any of them are informative to understanding how Leibniz would take the action in terms of distinctness and apriori reasons to determine the activity or passivity of the action. However, it does appear that Leibniz is committed to thinking of reasons as being preferentially related to agents.

[46] It might appear awkward to consider theft as a power if we take powers to be imitations of God's power, and theft might involve some kind of privation of power along that story. The same point should be available considering gift giving instead of stealing. I chose stealing because, sadly, it seems closer to intuitions about activity.

[47] Perhaps at this point, Leibniz might be interested in saying that no theft can occur between the baby and the man, since the baby lacks a necessary perception of the candy in order to own it. Or else that it depends on the distinctness of the perceptions of its parents to ground the ownership of the candy for the baby. This will depend on the specifics of the metaphysics of theft. It might so happen, that being on the passive side of certain advanced happenings will require some distinctness in order to participate, though relatively less distinctness than the active side does.

own the candy in some sense, with its impoverished levels of distinctness in perception, the baby will have very little to be active about in the happening, and it will be passive in respect to the rest that concerns it. The meager perceptual abilities of the baby don't much figure into what happened between it and the thief, so a lack of distinctness will mean that the baby can't be active in the happening.[48] Simply being there in the cradle may be all the baby can do, and that is all that is necessary to be passive to a crime of opportunity. So in this case, the baby's confused perception would allow it to be passive to the activity of the thief.[49]

However, the distinctness in the perceptions, thus conceived, is not enough to establish the activity and passivity of a happening.[50] It is one thing to establish the *possibilities* of the action or passion, relative to the distinctness of perception for the parties; it is another to establish *why* the

[48] It might be said that a lack of understanding left the baby vulnerable to theft, and if it were to smarten up, it would prevent it. But this will require more, as we shall see.

[49] How should we take happenings between evenly matched perceiving parties? Consider two adults with roughly equal powers of distinctness in their perception of a piece of candy, that belongs to one of them. If they are both clever, they will understand a lot about the makeup and situation of the candy in its environment, but all they need to steal are basic notions of objects and ownership. If they are equally distinct about the candy, does this prevent the candy from being stolen? It would seem not. If both are practiced pick-pockets, they might still be able to pick each other's pockets despite their equal abilities. In some cases, understanding the ability well might allow one to guard against it. But it seems plausible that some activities are asymmetrical in their perpetration and vulnerability, and that no matter how good one is at pickpocketing, that one is still vulnerable to it. But if one party were more clever than the other and perceived something more distinctly about the candy, he might exploit this feature in order to obtain it. A bank heist requires a great deal of distinctness in the perception of the conditions of the vault in order to carry it out.

Alternatively, instead of considering counter activity, consider cooperative activity. Language poses interesting questions. In order for a conversation to happen, both parties will need certain powers of distinctness, abilities to understand words and structures. Both participate in the action because they have these abilities. However, when one is speaking and one is hearing, we see how one acts on the other to convey a thought and one receives the thought. It is not obvious that expressing thoughts is a greater perfection than receiving them, but it seems that Leibniz would probably consider it that way. Alternatively, one might think that entertaining thoughts as a hearer is just as active as expressing them. Assertion seems to add a further layer of activity.

[50] A related worry is about why abilities get exercised. If I have the distinctness in my perception requisite to steal the candy, why is it that I do not? Both this worry, and the one this notes, lead us toward a need for the same kind of piece.

parties are on either side of the distinction in the happening.[51] According to Leibniz, insofar as the thief has distinct perceptions, the thief is active, and insofar as the baby has confused perceptions, the baby is passive. But in the candy case above, all that we established were necessary conditions on the perception for kinds of action for each party. Why does the direction of the happening, whether it is active or passive for the thief and the baby, depend on what is distinct in their respective perceptions? If we can answer that question, we will have the beginnings of an agential point of view between them. But it will take more from distinctness than we have available so far.

Leibniz elaborates on distinctness and action in his fourth insofar. The thief is active because "what is known distinctly in [the thief] serves to explain what happens in [the baby]," and "the reason for what happens in [the baby] is found in what is distinctly known in [the thief]." But to whom is it known? If it is known to God, all things are known from any starting point:

> "God sees all at once the whole sequence of this universe, when he chooses it, and that thus he has no need of the connexion of effects and causes in order to foresee these effects. . . God sees in each portion of the universe the whole universe, owing to the perfect connexion of things. He is infinitely more discerning than Pythagoras, who judged the height of Hercules by the size of his footprint." (*Theodicy* 360, H 345).

Thus, it won't matter much to God which side of the event he begins with. What is known to God in either the thief or in the baby (besides the fact that the thief is active and that the baby is passive, which is the thing that needs to be explained) will be enough for God to understand what happens

[51] It is true that for Leibniz, establishing the possibility of a thing can go quite far. But in this case, he has more resources to account for the external actions of substances that bear on this question.

in the other.[52] Everything is written in both the thief's and the baby's perception, and God has the eyes to read it to completion from either side. So we will need something besides what is distinct to God to parse the requirement.

What is known *to each substance*, what is distinct in their perceptions, is what Leibniz wants to use to analyze the agent patient distinction. What we will need from them is something more than the height of Hercules from measuring his footprint, and something more than the size of his footprint from measuring his height.[53] We will see how Hercules' *act* created his footprint, an explanation from cause to effect.[54]

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[52] Unless what matters is the thief's intention or something like that.

[53] Because of this point, it seems likely to me that approaches trading on Leibniz' complete concepts, when read in terms of 20th and 21st century predicates will strain to capture Leibniz' action centered view. The complete concept should include Caesar's crossing the Rubicon in a rich enough way to capture his actions apart from just his properties.

[54] There is a useful aside here about apriori reasons in Leibniz' system. Leibniz gives us a connection between this kind of explanation and apriority:

> "One creature is more perfect than another insofar as one finds in it that which provides an *apriori* reason for what happens in the other; and this is why we say that it acts on the other." (M 50)

The relevant perfection seems to be distinctness in perception. Leibniz sees apriority as an extension of his distinctions in kinds of perception in both "Meditations" and "Discourse." So, it is not merely intelligibility of the event between the two parties that matters, but the apriori reasons involved in the happening:

> "A reason is a known truth whose connection with some less well-known truth leads up to give our assent to the latter. But it is called reason, especially and par excellence, if it is the cause not only of our judgment but also of the truth itself—which makes it known as an a priori reason" (*New Essays* A vi, 6, 475).

For Leibniz, giving apriori reasons for action will require us to consider the action before experience, but more importantly for our purposes, it will require us to consider an event's causes in order to determine its effects (rather than the other way around). Leibniz sometimes analyzes these apriori reasons in terms of final and formal causes. Likewise, in "Monadology," Leibniz puts the perfections of distinctness and reasons side by side:

> "God finds in each [substance] reasons that require him to adjust the other to it . . . what is known distinctly in one serves to explain what happens in another"

Here, the parallel between reasons and explanations can be helpful:

> "a thing is known apriori . . . , among other cases, when we understand the way in which a thing can be produced." ("Meditations" AG 26)

So if we read these texts as elaborating on the distinctness requirement above, adding that what is distinct to the agent in perception will give a kind of causal explanation about what happens in the patient, we will be able to say more about his analysis of agent and patient.

So, following Leibniz suggestion, what happens in the baby, getting its candy stolen, needs an explanation in terms of distinctness of perception. If we look for the reason in what is distinct in the baby's perceptions, we won't be able to explain much. The reason for what happens in the baby, the explanation, is found in the distinct perceptions of the thief. Thus, what is found in the thief explains what happens in the baby, and the reasons for what happens in the baby is found in the distinct perception of the thief.[55]

This asymmetry in the explanatory power of their distinct perceptions supports Leibniz notion of a perspective on the happening. In the exchange, the thief and the baby have unique roles. Each perspective on the happening, whether one is active or passive to it, is a kind of duplication of the happening. So they share a single happening between them, but their expression of that happening is unique and perspectival. Moreover, it duplicates perspectives in the same proprietary way that we saw before, since it makes essential appeal to the distinctness of the perceptions of each party in the equation. In this way, we can make sense of how the distinctness of a perception affords the substance a point of view on the universe.[56]

Surely, the act of theft among humans is much more complicated than we have seen above.[57] But it serves to outline the basic structure that Leibniz can use to discuss perspective. But this perspective in action is basic to all monads. Much can be said about how it bears out in fundamental physics.

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[55] Take a collision between two bodies. There is an equivalence of hypotheses here as to the initial degrees of motion we attribute to each in our description. We can conceive of one body at rest, and the other as moving, and then calculate the relative changes. One might wish to attribute something like action to the moving body, and passion to the body that begins at rest. However, although Leibniz is committed to active and passive force in order to ground the phenomena of moving bodies, the calculation in terms of physics needs no appeal to agent and patient.

[56] See Levin 1980. There, she has identified the confusion function of a monad with the POV of that monad. However, by considering the way the monad acts in the world, we can provide much more than a function to account for the POV of the substance.

[57] Part of the humor in a comedy where a fool by lucks finds success, or by luck falls into failure, revolves around the relationship between perception and action.

In this chapter, I have introduced Leibniz POV metaphor through his notion of expression. I introduced geometrical and physical notions of perspective, which allow for perspectives to overlap. However, expression between substances are more robust, since they do not allow perspectives to overlap, and they multiply their objects uniquely in "in their own way." I attempted to read this form of perspectival expression through paintings, and found it wanting. I then turned to reading it through action in Leibniz' system. The uniqueness of perspectives was supported by the way that actions uniquely belong to their agents. In internal action, this came to acting from an internal principle, being a unique source of action in the universe. In external action, this came to being on the agent or patient side of a happening, which depends on the distinctness of the perception of each party. In both cases, there is a single theme to Leibniz' understanding of POV. To have a POV on the city is to perceive the city in your own distinctive way, to be the unique source of the action in you, and to be related to the rest of the action in the city as either active or passive, due to the levels of distinctness in your perception.

V. Further Questions

Primitives and Identity

It is unclear where this account of POV and agency leaves the identity of indiscernibles. Do we start with a primitive indexicality associated with agency and thereby derive the identity of indiscernibles? or do we start with the agential elements of a POV and thereby motivate a commitment to the identity of indiscernibles? The questions may have different answers depending on what one takes to be basic in POV. If two individuals share the same phenomenal flow, as it were, it is harder to see how they are two rather than one. But having different agential features on top of that flow might change the game.

A Basic Bacterium

Consider the action of a bacterium swimming in the pond. From the perspective of the bacterium, all it is doing is swimming. The simplest form of swimming requires nothing distinct but an internal command to execute. In this sense, the bacterium is active. But from the perspective of other more sensitive pond dwellers, things can go differently in relation to the bacterium. They might avoid it, or intercept it. These kinds of interaction, being sensitive to the bacterium as it swims stupidly by will constitute acting on it (even if it's just avoiding it), and the bacterium will be acted upon (even if it's just being avoided).

What explains what happened between the monads? Surely there is nothing legible [add in striving for as an axis] to the bacterium in its perception that it is avoided—that isn't distinctly

expressed in that perception, though it is a part of the universe it expresses confusedly. But for the creature that steers clear of the bacterium, in order to actually steer clear, there has to be a distinct expression of the bacterium and a reaction to it. Hence, a form of distinctness allows the creature to perform a kind of action. Hence, Leibniz' claim that it is a degree of perfection that determines the active or passive character of an external action bears out. The creature that can avoid the bacterium exhibits a power that the bacterium lacks.

The Strangeness of Passive Action

This model seems to fit for cases of active actions. But passive action poses a problem. Many intuitive cases of being acted upon don't always seem to be a matter of distinctness. I take being punched in the face, for example, a paradigm case of being acted upon. But distinctly perceiving the fist doesn't seem to change that fact. In this case, distinctness might not be a matter of clearly seeing the fist, but of being the origin of motion for the fist. Punching, unlike seeing, is an action that has a more complex relationship to perceptions. In this case, distinctly perceiving the fist might be a matter of being the source of action for the forming and motion of the first, or at least for the contact of the fist on a surface. If distinctness is taken not as a matter or photographic focus, but as a feature of moving a body, then one could read getting punched by a fist as not having a distinct perception of the fist: one is not in control of it. If, however, I were to throw my face against the fist, that kind of throwing would require me to have a distinct enough perception of my body to originate that kind of motion, and of the first to I could line them up. This might license us to move beyond the visual metaphor for perception, and arrive at a more primitive sense of perception, bound together with agency.

Distinctly perceiving the fist is one thing, but distinctly perceiving the motives and cues surrounding it are another. If I know just how to press your buttons, such that I expect to be punched, that would indeed be a case of doing something. If I am unaware of how my next move might be taken, and see the fist distinctly, but don't understand why, well indeed, that's being acted upon. Being punched, and being hit by an object, are two different things.

When I learn Latin, have I thus diminished the expression of another substance? In many ways, it seems like we have both gained. I have a power to express myself in another language, and a reader can then exercise her ability to read from me.

Leibniz sometimes describes it in terms of writing and reading: "eyes as piercing as those of God could read the whole sequence of the universe in the smallest of substances." (PNE, AG 296). So although all the reasons are written, as it were, in each substance, the degree to which they have eyes to see will depend on how perfect they are.

Complete Stupors

Complete stupors may pose a very serious problem. If a stupor is a lack of activity of any kind, there would be nothing to ground any of these actions on at the basic level. But perhaps it is just that it is entirely passive. But then what is there to distinguish one bare monad from another? Wouldn't they share the same point of view?

There is another problem for full stupors here. Action for Leibniz is a matter of a tendency. The basic tendency of all monads to proceed from one perception to the next is called appetition. But how does one tend toward something if there is nothing distinct in the state, or nothing

continuous between states (distinct and remembered) to tend toward, what is there to reach in the new perception?

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Chapter 3 – Mills, Cheese, and Worms:

Unity in Leibnizian Perceivers

In section 17 of the "Monadology," Leibniz gives a tantalizing argument against mechanical explanations of perception involving a mill.[1] The passage has attracted attention in recent publications,[2] perhaps because of its relationship to questions that are popular in today's philosophy of mind.[3] Some plausible readings of the argument have used notions of action to

[1] For in line citations, I use the following abbreviations for Leibniz' standard texts (full listing are found in the References section): A = German Academy of Sciences (ed.) *Gottfried Wilhelm Leibniz: Samtliche Schriften und Briefe*, 1926; AG = R. Ariew and D. Garber (eds. and trans.) *G. W. Leibniz: Philosophical Essays*, 1989; C = Couturat, Louis (ed.). *Opuscules et fragments inedits de Leibniz,* 1903; DM = G. W. Leibniz, ''Discourse on Metaphysics,''1686; G = C. I. Gerhardt (ed.) *Die Philosophischen Schriften von Gottfried Wilhelm Leibniz*, 1978; L = L. Loemker (ed. and trans.), *Gottfried Wilhelm Leibniz: Philosophical Papers and Letters* 2nd Edition, 1969; M = "Monadology," 1714; MC = "Meditations on Cognition, Truth, and Ideas," 1684; NE = *New Essays* 1704; NS = "New System of Nature" 1695; ONI = "On Nature Itself" 1698; PNE = "Preface to the New Essays" 1703-05; PNG = "Principles of Nature and Grace" 1714. PT = "Primary Truths" 1686; T = *Theodicy* 1710. Unless otherwise noted, translations follow AG.

[2] For example, see Duncan 2012, Landesman 2011, Lodge and Bobro 1998.

[3] For example, see Searle 1980, 1990; Dennet 2001, 2005.

better understand it.[4] Here, I hope to build on those readings by considering an adjacent question about what it takes to be a perceiver for Leibniz. This question will broaden the inquiry, but sharpen the role of action in the mill argument and in questions about the relations between perceivers.[5] I will develop the question in light of perception's relation to action, in line with previous developments from chapter 1 and 2.

I. Two Adjacent Questions in Leibniz about Perception

Where Does Perception Begin for Leibniz?

Perception plays a central role in Leibniz' overall system. His theory of perception is at the heart of his view of qualities, substances, and change. Wherever there is a monad, there is a perceiver, and there are infinitely many monads in Leibniz' universe. This perceiver crowded world is the product of God's wisdom, which requires that the universe be saturated with monads as much as is possible:

> "I don't say that the vacuum, the atom, and other things of this sort are impossible, but only that they are not in agreement with divine wisdom . . . From an infinity of possibles, God chose, in accordance with his wisdom, that which is most appropriate. However, it is obvious that the vacuum (and likewise atoms) leaves sterile and uncultivated places, places in which something additional could have

[4] Rozemond 2014.
[5] The ambiguity between mills and John Stuart Mill can complicate searches on the question. Some have translated it as "windmill," which avoids this confusion, though it isn't clear what kind of mill Leibniz had in mind. We do know that he references water powered mills in other works.

> been produced, while preserving everything else. For such places to remain contradicts wisdom. I think that there is nothing sterile and uncultivated in nature, even if many things seem that way to us." (To Bernoulli, 12/23 January 1699, AG 171).

So God, being wise, wouldn't miss an opportunity to cultivate corners of his universe. This dedication to additions extends to perceivers:

> "From this we see that there is a world of creatures, of living beings, of animals, of entelechies, of souls in the least part of matter." (M 66, AG 222).

God chooses to add a perceiver into the world when nothing is lost by its addition. Of course, the sense of wisdom and possibility here require fine tuning, but he will opt for as many perceivers as that fine tuning will allow. The result is a world full of perception:

> "The author of nature has been able to practice this divine and infinitely marvelous art, because each portion of matter is not only divisible to infinity, as the ancients have recognized, but is also actually subdivided without end . . . Each portion of matter can be conceived as a garden full of plants, 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 pond . . . Thus 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, where we might see the confused and, so to speak, teeming motion of the fish in the pond, without discerning the fish themselves" (M 65-69, AG 221-222).

Perceivers are truly ubiquitous in Leibniz' system, infinite in both number and in kind. In a system so replete with perception, it can come as a surprise that Leibniz also argues that mills lack it.[6] Don't we find a perceiver under every rock for Leibniz? Not exactly:

> "I don't say that bodies like flint, which are commonly called inanimate, have perceptions and appetition; rather they have something of that sort in them, as worms are in cheese" (To Bernoulli, 17 December 1698, AG 170).

Thus, not every patch of the natural world counts as a perceiver for Leibniz. For example, flint, and presumably other rocks, don't count. However, Leibniz still maintains that "they have something of that sort in them." But it is unclear what he has in mind for that sort of something.

We have seen in chapter 1 that Leibniz is committed to very low grade perceivers like bacteria. One option here would be for Leibniz to stress that perception has various grades, and allow a very low grade to the rock. Why not say that the rocks are on the same continuum of perceivers as the worms, just that they are even less advanced, due to having even less distinctness or memory, or other powers of perception. Rocks may be so primitive that their minuscule, yet potentially non-zero degrees of distinctness in their perception mean that they are "commonly called inanimate." But perhaps common verbiage is a mistake, something like mistaking a long stupor for death, perhaps the rocks are just so stupefied.

Although this move to treat rocks and perhaps cheese as proto-perceivers appears open to Leibniz, it is interesting to see that he does not take it. The sense that perception is "in" rocks here is important to understanding Leibniz' system. He illustrates it through the way that the worms are found in cheese:

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[6] He is consistent on this point throughout his career, and on similar points. See *A New System of Nature* AG 142; *On Nature Itself* 13, 14 AG 162-3; *New Essays on Human Understanding* 66-67; *Principles of Nature and Grace* 3.

> "I confess that there are parts in cheese in which there appear to be no worms. But what prevents there from being other smaller worms or plants in those parts in turn, or other organic things that are *sui generis*, and so ad infinitum, so that there would be nothing in the cheese free from such things?" (Letter to Bernoulli January 1699, AG 170.)[7]

So ultimately, there *is* a monad under every rock, or rather in every rock, one just has to zoom in far enough to find it.[8] Leibniz could have told Bernoulli that although rocks don't appear to be perceivers, they do indeed perceive in a stupefied way, but Leibniz instead commits only to the unavoidable presence of perceivers the deeper one goes. Thus, Leibniz is committed to rocks and cheese containing perceivers, though not necessarily being them.

So while Leibniz is committed to a great deal of perception in his system, there are reasons already to see that Leibniz recognizes limits. God's wisdom requires that there be as many as are possible, where possibility provides one kind of limit. But since Leibniz reserves room for rocks and cheese that aren't themselves perceivers, despite being full of them, we are left with a question: what is the limiting principle for Leibniz? Why are some bits of the cheese different than the worms?

A Case Study: Why don't Mills Perceive?

[7] Likewise, Leibniz doesn't assert that the air or water perceives: "And although the earth and air lying between the garden plants, or the water lying between the fish of the pond, are neither plant nor fish, they contain yet more of them, though of a subtleness imperceptible to us, most often" (M 68, AG 222).
[8] It is curious why God's wisdom doesn't require even more monads at every stage of the system. Leibniz has already hinted at the possibility that wisdom requires "something additional could have been produced, while preserving everything else." So perhaps we only find cheese when there would have been a loss somewhere else if it were a worm there instead of just cheese. But the reason for that loss is not clear.

Leibniz gives an argument about a mill's inability to perceive that might be helpful. The questions posed by the mill can be read as revolving around finding that limit for perceivers. Leibniz presents the mill argument thus:

> "We must confess that the *perception,* and what depends on it, *is inexplicable in terms of mechanical reasons,* that is, through shapes and motions. If we imagine that there is a machine whose structure makes it think, sense, and have perceptions, we could conceive it enlarged, keeping the same proportions, so that we could enter into it, as one enters into a mill. Assuming that, when inspecting its interior, we will only find parts that push one another, and we will never find anything to explain a perception. And so, we should seek perception in the simple substance and not in the composite or in the machine" (M 17, AG 215).

So the argument uses a thought experiment to establish that mechanical reasons don't explain perception.[9] Perhaps by understanding the thought experiment, we will be able to answer the question why some parts of the natural world have no perceiver for Leibniz, as we see that mills lack it.

Three parts of the argument—the mill itself, explanations, and perceptions—have each taken the lead in different interpretations of Leibniz' argument. Of course, all three elements are needed to make sense of the argument, but which one bears the load can serve to categorize different approaches.

An Activity Based Reading of the Mill Argument

[9] And also note, a second conclusion about simples and composites.

Some read the mill argument through the material nature of the mill. After all, it is mechanical reasons that aren't supposed to be able to explain a perception, and matter is precisely the kind of thing that is explicable through mechanical reasons. So in this spirit, some interpretations of the argument lead with the mill itself, emphasizing its materiality. Because mills are material entities, they bring on board certain material properties, and these properties can then be exploited in the argument to show their incompatibility with perception.

For example, Marleen Rozemond emphasizes this part of the argument, claiming that "Leibniz thinks perception is not a modification of matter because it is active and matter is passive."[10] Here, I give a gross summary of the sophisticated reading, highlighting the features necessary to build on our question about the cheese.

Leibniz does indeed think that "matter . . . is only passive." (Conversation of Philarete and Ariste, AG 265).[11] And Leibniz also thinks that perception is active, as we have seen in previous chapters.[12] Rozemond's reading, then, brings to the front a crucial feature of perception's relation to action that I have dwelt on in this dissertation. If an action based view of Leibnizian perception is correct, Rozemond's activity centered interpretation of the mill may be enlightening.

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[10] Rozemond 2014.

[11] See also *On Nature Itself* (12-13, AG 163-4). Leibniz outlines some of these reasons in his response to Sturm, who thinks matter should have no motive force at all. He later tells de Volder that he is rather proud of his reasons:

> "In my most recent response to the distinguished Sturm, I have demonstrated by an invincible argument that, assuming a plenum, it is impossible that matter as commonly conceived, matter as formed of modifications of extension or passive mass alone (if you prefer), suffices for filling the universe, but rather it is plainly necessary that we posit something else in matter, at any rate, something from which we can get a principle of variation and a principle for distinguishing phenomena" (20 June 1703, AG 174).

So Leibniz thinks there is something more in matter than extension, there is also a motive force. But this motive force is essentially passive.

[12] It is typical to begin accounts of perception with observations about how it happens to you, as you receptive of the surrounding world. But it is noteworthy that Leibniz treats it as an active power and a perfection, though it has passive elements.

On this reading of the argument, the passive nature of matter plays a key role in getting to the conclusion. By contrasting the active nature of perception, and the passive nature of matter, we will see that perception can't belong to matter. This is because "the qualities of a substance must be intimately connected to its nature by being modifications, limitations of its nature."[13] So Leibniz' thinks, for example, that in order for some matter to be shaped in some way, that shape will have to be a modification of that matter's nature. This is convenient in this case, since matter's nature includes being extended. Matter can be spherical, square, or whatever shape you'd like, since these shapes are just limitations of the extended nature of matter in the first place. And besides being extended, matter's nature is also to be passive. But since Leibniz is committed to perception being active, perception can't be a modification of matter. In other words, no amount of limitation on something that is essentially passive will ever result in something active like a perception.

As I have presented it, this sketch of the mill argument rests it on fastidious doctrinal points from Leibniz about matter, modifications, and perception. But by adding in our question about limits in the cheese case, and by considering more deeply some motivations for Leibniz' positions, we can come to a deeper understanding of how Leibniz thinks about limiting perceivers.

Likewise, if we focus too much on the nature of matter, it would appear that we can't give a good answer to the question about where we find and don't find worms in the cheese. It is one thing for Leibniz to establish the nature of matter and then to rule it out as explanatory of perception. It is another thing for Leibniz to explain why something like a mill, or a bit of cheese, can't perceive. By understanding this further question, by saying what a mill lacks, we will be able to see more clearly Leibniz' answer to the other. Consider two material bodies, a mill and a

[13] Rozemond pp 1.

human body. Of course, since they are both material, both have material properties explicable through shapes and motions. But the human body has perception assigned to it, while the mill body presumably doesn't. So although we can use this reading of the mill argument to establish that neither my body nor the body of the mill is responsible for any perception, within Leibniz' own system we will still have a lingering question: why does my body have perception attached to it while the mill body doesn't? In this further sense of limits, we still won't know why mills don't perceive, so we won't know anything more about when we find cheese and when we find worms. To make progress on that question, perhaps we should consider the argument independently from matter.[14]

Mills without Matter

Besides the motivation to learn more about worms given above, a further reason to consider the mill argument apart from matter is that a reading relying on matter may rely too heavily on a term that is not explicitly used in the passage. The passage cites mechanical reasons and mills, not matter. Of course, the compressed nature of the *Monadology* makes it difficult to object to a few additions to understand it. And mechanical reasons, shapes and motions, are obviously and intimately connected to matter. But it may not be necessary for matter *per se* to figure in the argument. If we consider a reading of the argument apart from the nature of matter, focusing on

[14] Certainly it can be answered that the mill argument is not intended to do more than rule out mechanical reasons as explanatory of perception. This seems correct to me. However, by considering the further question, it may cast light onto the former, in particular, by telling us more about the active nature or perception.

the mill itself rather than on its material constitution, if there is such a thing, what will happen to the conclusion?[15]

We still maintain that perception is, among other things, active, and that qualities don't naturally belong to a substance without being modifications of its nature. Then the question will be about how things turn out for mills, rather than for the matter involved.

Mills move in interesting ways, plausibly as a part of their nature. Perhaps this movement could count as activity. If so, we would have no way of reaching the conclusion above that we drew for matter. But matter also moves, and Leibniz takes motions as a paradigm case of something that *can* be explained through mechanical reasons in his argument: "in terms of mechanical reasons, that is, through shapes and motions" (M 17). So just the fact that the mill moves shouldn't make much difference to this reading of the argument.

But mills don't move just like rocks do, they seem to move in more interesting ways. Rocks fall, but mills grind. Rocks may grind into sand on the seashore, but the motions of the mill are organized around grinding grain. Should the mill's grinding motion count as an activity? So far, if it is explicable in terms of shapes and motions alone, it will be akin to the motions of matter. But if the mill's grinding does count as an activity, then these premises about perception and modification will fail to provide a reason to say that a mill can't also perceive.

But we don't need to decide now whether grinding counts as activity in order to see how changing the terms of the question in the mill argument changes things. The exercise of removing matter from consideration helps to isolate the role of matter in this reading of the mill argument. By removing the nature of matter, and focusing instead on mills, we lost the bright line between the active and passive elements of the item in question. Leibniz thinks that *all* matter is passive,

[15] Leibniz likely thinks of the mill in terms of apparent objects, which depend on thought for their natures.

so if we emphasize matter in the argument, rather than mills, we won't need to worry about whether grinding or other types of moving count as an action or not. But without this bright line provided by the nature of matter, we will need some way to determine whether the mill's grinding counts as an action or not. If it does count as an action, then we will learn something about its nature: we will see that a mill could be modified to be a perceiver. But if it doesn't count as action, we will see that a mill couldn't be a perceiver.

To put the further question into Leibniz' terminology, we may ask why the mill doesn't have a monad, but humans like me do. I think that there are good reasons for Leibniz to claim that the mill isn't properly doing anything when it grinds. And if we can explain why, we will be closer to both a deeper understanding the mill argument as well as answering questions about when there are perceivers in the cheese. To advance the further question, it will remain important to consider the activity of perception in relation to mill bodies and worm bodies.

This remaining mystery, about why the mill doesn't perceive but I do, will be especially pressing for Leibniz. We have seen that every portion of matter has perceivers in it, in the same sense that there are worms in the cheese. So when we inspect the mill, despite Leibniz' claim that we will find nothing to explain a perception, we will also find a bevy of other perceivers. The same is true of my body. So by considering the different ways that the smaller perceivers relate in each, I think we can make progress on both fronts.[16]

[16] And by considering things in this way, we will avoid begging the question when it comes to the worm and cheese question. If I would like to know when I have a *worm* (that is full of worms), and when I just have a piece of cheese (that is full of worms), the answer can't be that worms aren't given by arrangements of matter.

II. Approaching the Questions Through Action

Dialectically, establishing kinds of action through the way that monads interact will be valuable when it comes to answering our questions about limits in perceivers. We saw in chapter 1 that the greater the distinctness and memory of a perception (the more perfect a perceiver is), the more powerful its accompanying abilities. By itself, this particular implication won't help to establish a limit for Leibniz' perceivers. If I say that I am perceiving because I have distinctness while the mill has none, I will be very close to begging the question. But we also saw in chapter 1 that certain actions (e.g., fleeing) depend on having certain abilities of perception as well. For example, being in all the right places at all the right times was not by itself enough to constitute fleeing. So if we can find the things that act in ways which require perceptions, and have independent reason to establish that they are indeed acting, we will have a reason to afford perception to it on this reading of Leibniz.

The Interaction of Parts – Different Notions of Structure in Action

The way that perceivers combine (or fail to combine) for Leibniz is a special case of the way that parts relate to their wholes. Consider the material parts in a machine like a mill. Leibniz invites us to imagine a machine "whose structure" makes it perceive. In a mill, the structure unites the parts together in a network to push each other and to move together in order to grind. Different gears are shaped to fit one another, and they are made of materials with the right kind of strengths and rigidity to push. Thus, if the material parts are to interact, it is thanks to the structure of the mill that they do. Likewise, we see a similar relationship in the structure of a human body. Bones

fit together in joints, somewhat like the teeth of gears, skin cells bind together. This structure of the parts together provides the right kind of rigid material underneath to move as a human body moves. We have already discovered that for Leibniz these material parts by themselves can't be the basis of perception, neither in the mill nor in me.

However, if we consider an analogous point about the structure of the monads contained in each body, and how the sub monads affect the way that action works in the whole, we can discover more, especially about how they relate to action. To explore the question, it will be useful to introduce a distinction in kinds of matter for Leibniz:

> "In bodies I distinguish corporeal substance from matter, and I distinguish primary from secondary matter. Secondary matter is an aggregate or composite of several corporeal substances, as a flock is composed of several animals. But each animal and each plant is also a corporeal substance, having in itself a principle of unity which makes it truly a substance and not an aggregate. And this principle of unity is that which one calls soul, or it is something analogous to soul. But, besides the principle of unity, corporeal substance has its mass or its secondary matter, which is, again, an aggregate of other smaller corporeal substances—and that goes to infinity." (Draft Letter to Thomas Burnett 1699, AG 289-290).

Leibniz makes two divisions here. It is difficult to handle them in turn, because they seem inter-defined, but we can start at one end. First, Leibniz divides corporeal substances and matter.[17] So for Leibniz, when we ask whether the mill is acting or not, we will wonder whether the action of

[17] I will ignore the very interesting questions concerning the development of Leibniz' view of substance throughout his career. In any case, a kind of unity in question will likely persist through any development.

the mill belongs to a corporeal substance. These corporeal substances have both a principle of unity, and mass. I will have more to say about the principle of unity below. But with this, we can now pose our two questions, about the mill and about the worms in these terms. Why does Leibniz claim that the worm is a corporeal substance, while the mill is not? The technical answer, it seems, is that to be a corporeal substance it must have both a principle of unity as well as secondary matter.

Second, matter comes in two varieties for Leibniz. It is either primary matter or secondary matter. Secondary matter is an aggregate of corporeal substances. Hence, secondary matter is very much like Leibniz' block of cheese. As we look closer and closer at the cheese, we continue to find corporeal substance after corporeal substance. Thus, there are many principles of unity in the block of cheese, but it seems there is no principle of unity belonging to the aggregate. So, in this vocabulary, we will wonder why the block of cheese, or any piece of cheese in which it appears that there is no perceiver, lacks the requisite principle of unity to be a corporeal substance of its own.

Primary (or primitive) matter is not so tied up with unities:

> "Primitive matter, or matter taken in itself is what we conceive in bodies when we set aside all the principles of unity, that is, it is what is passive" (Draft Letter to Thomas Burnett 1699, AG 289).

So when we consider the matter in the worms and in the cheese, and when we ignore the perceivers at each level, we will get primary matter. Since there are no principles of unity on this description, and so no perceivers, Leibniz says that it is passive.[18]

[18] He continues to explain that it can nevertheless still involve passive primitive force: "from which arise two qualities: resistance, and tardiness or inertia *[resistentia et restitantia vel inertia]*. That is to say, a body gives way to another rather than allowing itself to be penetrated, but it does not give way without difficulty and without weakening the total motion of the body pushing it."

> "Thus one can say that matter in itself, besides extension, contains a primitive, passive power. But the principle of unity contains the primitive active power, or the primitive force . . . As a result, that which is essentially passive cannot receive the modification of thought without receiving, at the same time, some substantial active principle which would be joined to it; and, consequently, matter considered apart cannot think, but nothing prevents active principles or principles of unity, which are found everywhere in matter, and which already essentially contain a kind of perception, from being elevated to the degree of perception that we call thought. Thus even though matter in itself cannot think, nothing prevents corporeal substance from thinking." (Draft Letter to Thomas Burnett 1699, AG 289-290).

Here, Leibniz addresses our two questions to each kind of matter, respectively. Rozemond's reading of the mill argument rules out collections of primitive matter as perceivers, since they are essentially passive. And indeed, when Leibniz cites mechanical reasons in his mill argument, it will apply to primitive matter's passive power. But our further question about why the mill has no monad assigned to it, the question about the worms and the cheese, should be stated in terms of secondary matter and unity. Why is the mill not like a worm? Leibniz claims that it is because the mill lacks the right kind of unity—the kind that accompanies active principles that are found everywhere in matter. So if we can answer why the mill is not a corporeal substance, why it lacks the unity that comes with active principles in perception, we will be closer to an answer for our further question about the worms.

Candidates for the Principle of Unity

The unity of a substance is not far from the unity of a perception.[19] Particular to the aims of this chapter, there is a unity of action that accompanies perception. We see unity in Leibniz definition of perception: "the passing state which involves and represents a multitude in the unity or in the simple substance" ("Monadology" §14). But there are a variety of ways to take the unity in question.

Consciousness has a claim on unity that the mill or a chunk of cheese might lack, which might meet the bill for Leibniz. However, a unity of consciousness approach has been ruled out by many Leibniz interpreters, and rightly so. Leibniz pioneered *un*consciousness in his approach to perception. So while it is possible that this unity in perception and action might come to bear on our question, it will only go so far. We saw in Chapter 1 that consciousness doesn't do the work of dividing the lower kinds of perceptions. So, considering whether a nation has a unity in consciousness might be appropriate, considering whether a group of worms has such a unity in consciousness seems like a mistake.

So, what is the relationship between the perceivers found in a rock or in a piece of cheese that is different than the relationship between the perceivers found in my body when I act? I think that the difference will come down to a difference in the way that a flock moves and the way that an organic body moves. I will attempt to show this by considering the active feature of its perception which requires a unity of sorts in action. This adds a new layer of interest to Leibniz' definition of perception, where the unity concerns action, and the multitude concerns other

[19] In fact, if perceiving is just another kind of action, the share the same source: "action and unity have the same sources" (20 June 1703 Letter to de Volder, AG 174).

perceivers, the worms in the cheese. Moreover, as seen in chapter 2, particular actions belong to substances in a unique, proprietary way for each. Since this is a condition of the unity of perception for Leibniz, we will be able to ask whether each case meets it, and whether it can be a proper subject of the action of perceiving.

An Organic Principle of Unity Among Parts

Leibniz often puts the requirement for unity in terms of having an entelechy:

> "Although I say that a substance, even though corporeal, contains an infinity of machines, at the same time, I think that we must add that a substance constitutes one machine composed of them, and furthermore, that it is activated by one entelechy, without which there would be no principle of true unity in it." (20 June 1703 Letter to de Volder, AG 175).

So corporeal substances like you and I are full of other substances, and we also each have an entelechy at the head of them. But when we consider the block of cheese, full of worms, there is presumably no such entelechy for the block.

Leibniz explains that certain kinds of unities have no such head:

> "Arbitrary unities, which the mathematicians use, are not relevant here; they are applicable even to apparent entities, such as all entities by aggregation are, for example, a flock or an army, whose unity derives from thought. The same holds for any aggregate, since you will find nothing that is truly one if you take away the entelechy" (20 June 1703 Letter to de Volder, AG 175).

So arbitrary unities won't combine in the relevant way. Leibniz likely takes mills to be merely nominal entities. This takes support from the way that he thinks about their parts. The various gears that push on each other in the mill are generic, in the sense that each gear is not specially devoted to the mill of which it is a part. Perhaps they are gears at all insofar as we treat them that way. So while it is a necessary condition on being a mill that it be a material entity, primary matter in nominally determined arrangements will do the job. On this reading, the various worms in the mill's body make no difference to the mill.

But one may still wonder what the proper kind of unity looks like. One answer, the one I will focus on, concerns Leibniz' unity of organs:

> "If you take mass *[massa]* to be an aggregate containing many substances, you can, however, conceive in it one substance that is preeminent, if that mass makes up an organic body, animated by its primary entelechy" (20 June 1703 Letter to de Volver, AG 177).[20]

So the preeminence of entelechies like yours or mine in these wholes animates an organic body. Monads have relations to each other, and when the relations are organic, Leibniz considers it a proper unity:

> "Through these relations [between monads] things seem to us to make one thing . . . but over and above these real relations one more perfect relation can be conceived,

[20] Leibniz continues: "Furthermore, along with the entelechy, I don't put anything into the monad or the complete simple substance, but the primitive passive force, a force corresponding to *[relatus ad]* the whole mass *[massa]* of the organic body. The remaining subordinate monads placed in the organs don't constitute a part of the substance, but yet they are immediately required for it, and they come together with the primary monad in a corporeal substance, that is, in an animal or plant. Therefore I distinguish: (1) the primitive entelechy or soul; (2) the matter, namely, the primary matter or primitive passive power; (3) the monad made up of these two things; (4) the mass *[massa]* or secondary matter, or the organic machine in which innumerable subordinate monads come together; and (5) the animal, that is, the corporeal substance, which the dominating monad in the machine makes one."

> a relation through which one new substance arises from many substances . . . This addition to the monads does not arise in just any way, otherwise any scattered monads at all might be united into a new substance, and nothing definite might arise in contiguous bodies. But it is sufficient that this thing unite monads that are under the domination of one monad, those which make up one organic body, that is, one machine of nature." (5 Feb 1712 Letter to Des Bosses, AG 199-200).

So by understanding the way that organs relate to a whole, in contrast to the parts of mills or cheese, we will have a way of answering our questions.[21]

When Leibniz says that monads are in an organic relationship, one condition on being so arranged has to do with the infinity of the parts:

> "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" (M 64, AG 221).

[21] Organic unities can be taken through Leibniz' domination relation: "Each living body has a dominant entelechy, which in the animal is the soul; but the limbs of this living body are full of other living beings, plants, animals, each of which also has its entelechy, or its dominant soul." (M 70, AG 222).

Thus, to be *organi*zed, a substance needs to have infinite parts.[22] It is tempting to think that this will require a substance to change its identity if it loses any parts—perhaps perceivers, since they are organic, hold onto their specific organs eternally. But Leibniz denies this:

> "I confess that certain organs of animals, namely the gross ones, are destroyed and broken up. But I believe that something else always survives" (Letters to Johann Bernoulli, AG 171).

So it seems that the organic unity is not constituted by it's parts alone. Instead, there must be something in the whole that can survive changes (though it continues to require infinite parts).

Hence, it seems we have the following differences between kinds of unities. Mills contain an infinite number of perceivers in them, but none of them matter to the constitution of the mill itself (besides perhaps a meta-requirement for unity to ground reality in the wider natural world). Mills have parts which are only finite, and they are generic, as one can replace a gear for any generic piece from the hardware store. The parts of the mill are not themselves substances, and it is possible that to be the parts that they are will depend on how we conceive of them. Blocks of cheese also contain an infinite number of perceivers in them, and if we take the cheese as an aggregate of worms, (at least some of) the parts of the cheese are perceivers themselves. There are infinitely many of these parts in the cheese, and they don't seem to depend on our conception of them. In perceivers like you or me, there are again an infinity of parts belonging to us. These parts are plausibly organs. Organs themselves are perceivers, and have organs of their own. So organism is (at least one) intended criterion to distinguish aggregates of perceivers from perceiving wholes of perceivers. I will cash that out in terms of action.

[22] This point relates to the way that substances have a unique, infinitely determined point of view in the world, outlined in chapter 2.

III. Considering Cases of Organic Unity in Action and Perception

The preceding dialectical structure is complicated, but when it is rooted in particular cases it can illuminate Leibniz' position, and in some cases perhaps even make it plausible. I will consider how different relations between monads affect the purported action of the purported whole. This will require stipulating which parts in the cases are perceivers, in order to then approach and shed light on the question about the relation in the whole such that it has the requisite unity to perceive.

Rocks – Primary Matter

Consider the body of a rock. Its parts hold together firmly, it has an elasticity, it resists penetration. It doesn't seem to move itself, but it takes force to get it moving. The way that it holds together owes to the natures of the parts of matter belonging to it. But we can more or less exhaust what happens to the rock by considering primary matter alone. The rock seems to fall where it does independently from any perception governing its motion. Certainly, there are organisms within the rock, as there are in all parts of matter. But the rock body, and the things that happen to the rock, are very well described without any recourse to those organisms. The organisms seem to play no role in the structure of the rock, they just go along for the ride. So, it would seem that whatever action we might attribute to the rock (if any), it doesn't depend on any of the organisms found deep within the crevices of the rock, but only on their primary matter. An

exchange in a chunk of rock for another, so long as it maintains its same shape and weight distribution and other physical properties, won't affect any happenings.[23]

Thus, when we consider a group of such rocks, there are no notable changes in the type of happening. The scales change for the group, both in size and in weight. The aggregate will break apart more easily than any individual rock. But again, primary matter will more or less exhaust the things that happen with the rocks. If there is rock slide, one rock falling will give us the model to get all the rocks falling together. It's true that when there are many rocks, they may collide with each other as they fall, and so they may exhibit something different. But these additional collisions don't call for anything more than we already have.[24] In fact, the lesson here seems to be that we can treat the single rock as an aggregate in its own right, and that we can treat the aggregate of rocks as a single rock, if we so please.[25]

Fish – Secondary Matter

In contrast, consider the body of a single fish. It has a group of smaller elements that make it up: bones with muscles and tendons, a brain and nervous system, a heart and a vascular system,

[23] But note, it is not clear that Leibniz might not be more demanding about individuation of different rocks and the things that happen to them. While he is keen about the equivalence of hypotheses for these kinds of motion in the physical system, he is also very particular about the indiscernibility of identicals. So while a mere modality might abide a change in its parts, it's not clear that a rock can. But these are deliverances of his particular system. The task at hand is to introduce a plausible notion of unity in action for composite cases, so intuitions about the actions are more important here.

[24] For Leibniz, the limitations of thought might provide a nice limit here. Some unities might be unified in virtue of a faulty common conception. Considering a chimera as a whole, when it conceals a contradiction, might be no problem. Chimerical unity might survive contradictions, so long as the force of a kind of belief is behind it. But in physical notions, it seems plausible that Leibniz would consider physically consistent possibilities as a limit. There are many equivalent hypotheses, but these natural kinds terms might have more unity than the terms used in a faulty science.

[25] Note that emergent behavior poses an interesting potential difference here. If there is a claim here on a kind of unity in action, it may be at the level of the rock rather than at the level of the rock body. It is unclear to me how Leibniz might deny this awkward parody.

a series of kinds of cells with their organelles, etc… The way that these parts relate in a structure seems importantly different than the rock. The parts are less interchangeable than before, and more important to the actions of the fish substance. For example, if we take the heart as a unity of its own, with actions belonging to it, the beating can be taken as more than just plain physical motion. In some sense, the heart beats for the whole. If the heart stops beating, the fish's motion is clearly affected in a profound way.

However, it seems that if we were to give the fish an artificial heart, that would not change much about the motion of the fish. Likewise, if we were to break a pin in a watch, the motion of the watch would also stop in similarly dramatic way. Is there an underlying difference in the activity of the creature when it dominates an organ?

It is tempting to think that artificial hearts are inferior in performance somehow, and that this might explain the difference. After all, systemic activity after the replacement will probably be negatively affected. But surely this is only a temporary technological limit. Artificial hearts could conceivably exceed the performance of the organic heart, and thereby improve systemic performance. But this seems more akin to an agent being in good conditions than it is an agent performing the same action. A body missing a part might outperform the same body with the part in certain conditions. But these conditions don't seem to constitute the action itself. It seems more natural to say that the body performs different actions in each scenario, and fares well due to external conditions.

Perhaps instead one thinks that the reactiveness of the organic heart to the actions of the whole is importantly different than the reactiveness in the artificial one. Organic hearts pump in reaction to an infinitely complex system on Leibniz' account, acting in response and as a part of the actions of the whole. Artificial hearts might be programmable to mimic that same behavior.

However, if the activity of the whole requires an infinitely complex system, how will an artificial heart, with its finite set of generic parts be up to the task? The primary matter of the artificial heart is infinitely divided, so it has resources that aren't parts. But since they aren't parts, they don't seem to factor into the whole. Likewise, the activity itself of the whole organism was integrated with the activity of the parts. Replacing a perceiving part for a non-perceiving part seems like a diminution of the action of the whole. The organism was in relation to a set of infinitely complex perceivers, relating to each in its own dominating actions. By removing one chain of complex sub-perception in the organic relationship, and replacing it with a piece of non-perception, the total result is not capable of the same things. Just as fleeing may not be possible without the proper perceptions behind it, so may the relations between an organic whole be impossible without perceptions backing each part and each part of the action.

We can see a similar lesson by considering it from the perspective of the parts. For example, consider a school of fish. According to Leibniz, the school taken as a whole is not completely different than the block of cheese. They each contain lots of perceivers—there are lots of fish in the school just as we find lots of worms in the cheese. And they each ostensibly lack perception as a whole. Schools of fish make for an easier case to manage than cheese with worms, since the individual parts of the school are easier to guess about. It's hard to tell where the worms are in the block in comparison to the fish in the school. And it's also not clear that there is a single species of worm that permeates the whole cheese like we find in a school of fish.[26] We can add

[26] Leibniz has a peculiar view about species: "Entelechies must necessarily differ, that is, they must not be entirely similar to each other. Indeed, they must be sources [principia] of diversity, for different ones express the universe differently, each from its own way of viewing things; it is their duty to be so many living mirrors of things, that is, so many concentrated worlds. However, it is correct to say that the souls of animals with the same name (like humans) are of the same species, not in the mathematical, but in the physical sense, the sense in which father and son are held to be of the same species." (To de Volder, AG 177).

some variety to the school by taking a pod of whales together with their attendant swarm of cleaning fish, which in turn have their own hosts of parasites, and algae in the spaces of water in between them. Of course, this goes on forever for Leibniz. So it is important to notice that even though a school of a single species of fish all of a kind has only two levels, this is not required.[27] The interest here is how to carve the containment relations such that we capture the substances (which I have helped myself to in the form of obvious organisms). If there is a unity of action to the school, especially as it requires perceptions, it will cast light onto the question.

So consider a potential action of the school, the way it moves. When the school moves as a whole, each individual member acts in response to what it perceives. If I toss a bit of bread into the school, each fish that has powers to recognize it as food (and that has the appetite for it) can move in to intercept it. It is true that the fish seem to move together as a whole, but this is only in appearance. Each individual fish navigates according to its own laws and perceptions. One of the fish in the school will manage the space between its body and the bodies of its comrades, using its own perceptions in order to approach the food. So out of the motions of each individual fish, which are perception governed, there is a composite motion for the school, which doesn't seem to need a total perception. If we were to see the school from far enough off, we might not be able to distinguish any individual perceiver in it, and it may appear to move like a fish all its own. There may be interesting mathematical relations that the agents bear to each other, an economy of action. But the motion belonging to the school itself requires no single perception to account for it. It is plausibly describable purely in terms of a series of independent actions issuing from each fish. As Leibniz explains, "it is as by accident that they are required to perform the same motion." (To Arnauld, AG 79).

[27] This sense of species will not be the same for Leibniz. He thinks all substances are *sui generus*, but he still can manage classifications of kinds of fish together in other ways.

Moreover, if we were to swap out one of the fish for a different one, so long as the fish moves in the same places, the presence of a new perceiver in the bunch wouldn't change much about the whole motion. The individual fish that gets substituted might act differently, depending on how good it is at discriminating the food. But all that is relevant to the other members of the school is the space their old comrade takes up. And if we were to trade a live fish for a convincing automaton, stipulating that this part is not a perceiver and successfully introduce it to the school, the automatic motions, if they can be detailed enough through the mechanisms of primary matter, wouldn't seem to change the motions of the others.[28] Each individual living fish will continue, according to its same internally determined course, and the whole, it would seem, will follow.[29] A school composed of different members, some of which aren't perceivers, could do the same. Thus, by considering the potential for unity in action in the case of a school, we find no strong reasons to think that it has perception, since it has no strong case for a unified principle of action at the aggregate level.[30]

By considering these cases, we can begin to see outlines of how Leibniz might appeal to unity through organism, and to rest organism on a kind of action where perceptions pay an essential role. If this sketch is persuasive, it could offer a way to determine where there is a perceiver among many. Of course, the intuitions about these cases are not irresistible. But by focusing on some features of actions of substances and how they relate to each other in organisms, and to the

[28] This may appear problematic to stipulate that the automata isn't a perceiver, but it need not be an illicit move. The question here involves placing known perceivers or known non-perceivers together and asking whether we can build up a larger perceiver by tending to the resulting motion and action.
[29] Hence, taking a dialectical cue from chapter 2, any perceptions that potentially belong to the school in aggregate aren't proprietary, and perhaps not even unique
[30] Part of the story certainly involves sense organs. Leibniz prefaces his organism and domination talk with a need for the monad represent the whole universe. This motivation puts the role of organs and the action of representing very close together.

perceptions that they depend on, we can better understand the approach that Leibniz seems to signal to limit the perceivers in his system.

IV. Further Questions

Cooperation

Perhaps the lack of reason for a unified action here owes to the kinds of cases I have chosen. Blind mobs like schools of fish, or fans at a sporting event, may seem to take on a character of their own that yet requires no head of action and no head of perception. But what of more sophisticated group motion? Consider a pod of dolphins on the hunt. Here there are specialized duties. One dolphin may serve to corral fish together, while another may serve to scatter them. By organizing these parts together according to internal principles different in kind (e.g., corralling or scattering) rather than of a single kind (e.g., pursue the piece of bread), perhaps we will find a difference in the possible action of the whole.

On one reading, it seems unimportant to the hunt whether a certain dolphin or other does a certain job, as long as the job gets done. However, on another reading, the job just isn't the same unless it's done by the right agent, in the way that a team may rely on a star player. It seems possible that its more than just that the star scores the points, but it matters to the action of the team itself that it is done by the star. Leibniz could resist this kind of favoritism for performing certain roles. Although a good team may mimic as closely as possible an organic relationship between the parts and the whole, in the end he thinks it lacks the same kind of connection.

If the pod of dolphin is short a member, they might use a rockface or a coral reef to do the same job on the hunt. In the case of the non-perceiving rockface, if the same outcome occurs, we could claim that there is no need for perception at the level of the whole for the same reasons as

above. But in the case of the coral reef, things might be different. The reef provides a set of many tiny perceivers. You might even consider using a very large whale for the same purpose as it floats by unaware of its role. Reefs can't do the same exact thing as the dolphin, since they lack the kind of perception required to hunt. As one might skillfully bounce a ball off of a less skilled teammate, instead of passing to the teammate, one can use the teammate like they use a feature of the field. The humiliation that accompanies being reduced to the role of an barrier, rather than an agent, on the field seems to signal a relevant difference. The teammate who perceives the soccer ball and goes for the header goal, does something much different than the player who is unlucky enough to be the object from which the ball ricochets, aimed by his skilled teammate to collide with his head. Of course, great teams mimic organic wholes where each member's perception relates to one another and feeds into a communal goal. But in this case, it seems more difficult to claim that the team who succeeds in a spectacular header, and the team that succeeds in a teammate ricochet is performing completely different kind of action. It sees more plausible to say that it is a matter of team action in either case, just better or worse, but team action nonetheless. Perhaps this is different in the organic whole, whose parts and perceptions are all relevant to the kind of action, not merely the success or goodness of the action.

Ends and Aims

Besides the above considerations for the unity of action, proper actions for Leibniz have ends. A great deal of this ends approach depends on his notion of appetition. If we consider the ends of the various members of aggregates, we can ask how they relate to the ends that belong to the whole (if there are any). In an organism, the relationship between organs can be taken in terms

of the aims, functions, purposes, or some related notion, such that the pumping of the heart serves the function of the whole. In the case of a school of fish, there isn't an obvious way that the members' ends unite in an ends of a whole school. In some cases it seems you can exchange perceivers for non-perceiving parts and not affect the purported whole action, or the actions of the other members. Each fish is properly selfish. Even in hunting cases, it seems unlikely that the end is for the pack as a whole to eat (packs themselves don't eat in any normal sense of ingesting calories to nourish), but for each individual member to eat.

However, when one puts an artificial heart into an organism, it seems to serve the function that the natural heart did. If Leibniz insists on a perceiver in order to have an end, then the way that the artificial heart serves its purpose will be very different than the natural heart. The natural heart pumps, but the artificial heart does something less. Such a case may put intuitive pressure on Leibniz' analysis.

Joint Actions

From the preceding, it seems clear that Leibniz is uncompromisingly committed to the view that actions belong to substances. Using this principle, we got a start on answering questions about mills and worms. But there is, from the start, a plausible objection to Leibniz' starting point. Joint action is plausibly a fundamental kind of action, which seems summarily rejected in Leibniz' terms. This will pose special issues and challenges for analyzing cooperation between substances for Leibniz that are taken as basic on other systems.

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