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THE CONCEPT OF REPRESENTATION is at the center not only of seventeenth-century theories of knowledge but of their corresponding ontologies as well. Descartes was impressed and illuminated by mathematical innovations that enabled, on the one hand, a precise geometrical account of the optical transformations of figures and images in vision and, on the other, the formally adequate representation of such geometrical situations by nonspatial, discursive expressions in coordinate algebras. God aside, the real was for him accordingly divided into the purely geometrical realm of extension and the realm of thought (taking algebra as its model), which represents what is extended. Leibniz, with a reservation of profound consequence for subsequent German idealism, would deny metaphysical reality to what is representable but not itself a representing. Defining perception as the representation or expression of the many in the one,[1] Leibniz adumbrates a metaphysical system whose primary features follow from the doctrine that to be is to perceive. Put in his inherited terminology, monads alone are true sub-

Abbreviations

D "Discourse on Metaphysics," in *G*, 4:422–63. Translations herein are from *G. W. Leibniz: Philosophical Papers and Letters*, trans. L. E. Loemker, 2nd ed., 2 vols. (Dordrecht: D. Reidel, 1969); cited by section numbers.

G *Die philosophischen Schriften von G. W. Leibniz*, ed. C. I. Gerhardt, 7 vols. (Berlin, 1875–90).

GM *Die mathematischen Schriften von G. W. Leibniz*, ed. C. I. Gerhardt, 7 vols. (Berlin and Halle, 1849–63).

M "Monadology," in *G*, 6:607–23 (translations herein from Loemker); cited by sec. nos.

NE *New Essays concerning Human Understanding*, trans. A. G. Langley, 3rd ed. (LaSalle, Ill.: Open Court, 1949); I have emended the translation herein where necessary; cited by sec. and p. nos.

PNG "Principles of Nature and Grace," in *G*, 6:598–606 (translations herein from Loemker); cited by sec. nos.

[1] *G*, 2:121, 311; 3:69, 574; 6:598, 608; 7:317, 529.

stances, and perception is their fundamental attribute. Perceivings, the modifications of substances in that attribute,[2] are monadic properties. Relations, for example, spatial ones, cannot *be* perceivings, but are rather merely perceivable, as features of the multiplicity that is unified in a single perception. As nonperceiving creatures of perception, space, time, and matter—no less than color and odor—are relegated to the second-class metaphysical status of "true phenomena."[3]

To understand Leibniz's version of reality as a privileged class of representings[4] we must understand four features of his account of perception. First, the genus of which perception is a species is that of *expression* or representation. Leibniz says generally, "One thing expresses another . . . when there is a constant and regulated relation between what can be said of the one and of the other."[5] Favorite examples are the relations between a map and the corresponding geographical region and between a minature model of a machine and the machine itself. Second, as noted above, the specific difference defining *perceptual* representations is that in perception a multiplicity is expressed in a unity. Third, each monad (indeed, each set of contemporaneous perceptions of any monad) expresses its whole world[6]—the "flower in the crannied wall" doctrine occasionally glossed by the claim that a perfect intelligence could deduce every feature of the universe from the consideration of the perceptions of a single monad. Fourth, perception comes in *degrees,* variously referred to as degrees of perfection or distinctness.

The last of these features is of cardinal metaphysical importance, since it is explanatorily responsible both for the diversity of points of view of the monads and for the preestablished harmony between them that is Leibniz's systematic synthesis of the principles of unity and of maximal multiplicity. Leibniz explains the relation between the diversity of monadic perspectives and the expression by each of its whole world in the *Monadology:*

> [*A*] The nature of the monad being to represent, nothing can limit it to representing only a part of things, though it is true that its representation is merely confused as to the details of the whole universe, and can be distinct for a small part of things only,

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[2] I ignore here appetitions, which while also modifications of the attribute of perception, as differentials of perceivings (their tendencies to give rise to one another) are in a double sense *derivative* modifications.

[3] See J. Earman, "Perceptions and Relations in the Monadology," *Studia Leibnitiana* 9, no. 2 (1977):212–30.

[4] This characterization does not shortchange the individuality of monads, for that individuality is expressed by an individual concept or law, which is just a representing from which all the representings "belonging" to a monad can be inferred.

[5] *G,* 2:112, a letter to Arnauld. See also M. Kulstad, "Leibniz' Concept of Expression," *Studia Leibnitiana* 9, no. 2 (1977):55–76.

[6] *D,* 9; *M,* 62.

that is, for those which are the nearest or the greatest in relation to each individual monad. Otherwise each monad would be a divinity. It is not in the object but in the modification of their knowledge of the object that the monads are limited. They all move confusedly toward the infinite, toward the whole, but they are limited and distinguished from each other by the degrees of their distinct perceptions.[7]

In this passage, the metaphysical differentiation of the monads is displayed as rooted in *epistemic* differences between perceptions, ranged along a dimension from "distinct" to "confused." The same doctrine is put in slightly different terminology in the *Discourse,* twenty-eight years earlier:

[*B*] Thus a substance, which is of an infinite extension insofar as it expresses all, becomes limited in proportion to its more or less perfect manner of expression.[8]

In Leibniz's discussion of causal action and passion we meet a more specific application of the principle that monads are distinguished from one another not by what they express or perceive but by how perfectly or distinctly they do so. In strict metaphysical terms, monads cannot affect one another. Rather, each derives its current perceptions from those immediately past according to its own internal principle or individual concept. So a special account must be offered of the *appearance* of interaction between disparate substances, which is their mutual harmony in all forming a *world* together. In the *Discourse* Leibniz explains:

[*C*] The action of one finite substance upon another consists only in the increase in the degrees of expression of the first, combined with a decrease in that of the second. . . . When . . . a change occurs by which several substances are affected (in fact every change affects them all) I think we may say that those substances which by this change pass immediately to a greater degree of perfection or to a more perfect expression, exert power and act, while those which pass to a lesser degree disclose their weakness and suffer.[9]

In the *Monadology,* the point is put like this, identifying the idiom of perfection with that of distinctness of perception:

[*D*] The created being is said to act outwardly insofar as it has perfection and to *suffer* from another insofar as it is imperfect. Thus *action* is attributed to a monad insofar as it has distinct perceptions, and passion insofar as it has confused ones.[10]

The crucial explanatory role played in Leibniz's metaphysics by the various degrees of perception thus lends urgency to the question of how we are to understand the dimension along which quantitative comparisons of "per-

[7] *M,* 60.
[8] *D,* 15.
[9] Ibid.
[10] *M,* 49.

fection" or "distinctness" can be made. In Part 2, below, an account of perception will be developed which seeks to answer this question, presenting an integrated treatment of the four primary features of Leibniz's notion of perception, as indicated above. Part 1 will be devoted to formulating criteria of adequacy for such an account by delineating difficulties that any explication of the doctrine of degrees of perception must face and assembling the basic textual claims that must be reconciled and adjudicated. In particular, the concept of *awareness* (Leibniz's "apperception") will emerge as what we must get clear about in order to appreciate the order of perfection of perceptions. The conclusion of the analysis of Part 2 will be a reading in terms of which Leibniz's rationalism is seen to consist in the dependence, in the order of explanation, of the concepts of awareness and representation on the concept of inference (even for monads incapable of thought).

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The best account we have of degrees of perception is due to Montgomery Furth. The *awareness* substances have of their perceptions comes in degrees, according to Leibniz, ranging from the conscious, inferentially articulated recognition of a sample of gold by an assayer, down through the "minute perception" of each ocean wave breaking against the shore, which though individually indiscriminable, nevertheless contributes to the sound a soul with the proper organs is aware of the surf as producing. In an important paper, Furth has shown how sense can be made of the occupation of a perspective or point of view by primordially nonspatial monads, provided that the grades of distinctness of perception (or degrees of perfection of expression) that individuate those monads are identified with different distributions of the intensity of consciousness attending each monad's expressively complete set of perceptions of its world. Furth concludes:

> [*E*] It seems that the numerical diversity of harmonious monads can reside only in differences in the clearness [*sic*] or degree of consciousness with which they experience various portions of their universe(s); if Leibniz's talk of "perspective" comes to anything, it must come to this.[11]

According to this view, degrees of perception are really degrees of apperception. Furth supports this reading by showing how differences in visual perspective and phenomena such as the occlusion of our view of a distant object by a nearer one can be analyzed in terms of differences in degree of awareness of different regions of space. Although the textual basis he presents is thin (passage *A* above is the only ground he offers), evidence for the

[11] "Monadology," *Philosophical Review* 76 (1967), reprinted in H. G. Frankfort, ed., *Leibniz: A Collection of Critical Essays* (New York: Doubleday Anchor, 1972), p. 129.

thesis that distinctness or perfection of perception is consciousness of it can be found:

[*F*] But a soul can read within itself only what it represents distinctly; it cannot all at once develop all that is enfolded within it, for this reaches to infinity.[12]

[*G*] The soul itself does not know the things which it perceives until it has perceptions which are distinct and heightened. And it has perfection in proportion to the distinctness of its perceptions.[13]

[*H*] We are never without *perceptions*, but we are necessarily often without *apperceptions*, viz.: when there are no distinct perceptions.[14]

(Only the first of these passages is from the work Furth was considering.) We can certainly conclude that distinctness of perception is a *necessary* condition for apperception. Nowhere does Leibniz identify apperception with the occurrence of distinct perceptions, but the burden of proof should rest with those who would deny the sufficiency of distinctness, to say what else is required for awareness.

Yet there are some difficulties attendant on the identification. Since for Furth monads are distinguished from one another by the degrees of their perceptions rather than by the objects of those perceptions (which would be the same for all the monads in a world), it follows that there can be at most one monad so "bare" that it is without even the dullest consciousness of its perceptions. Leibniz is clearly committed to the compossibility of a multiplicity of bare monads—those lowest on the scale of perfection of perception. But these are defined as endowed with perception but not *sensation* or sentience,[15] which is reserved to animal souls. These terms in turn occur in different texts both in a wide sense—sensation defined as perception accompanied by memory, which as we shall see is equivalent to apperception for Leibniz—and in a narrow sense in which sensation is enabled by association with a particular kind of organic body possessing sense organs. In the narrow sense, which is how I will use the term "sensation," there is no reason to suppose that all apperception is comprised and hence that mere entelechies are excluded from some form of indistinct consciousness (=apperception). On the other hand, in the *Monadology* we read that "if we had nothing distinctive [*rien de distingué*] in our perceptions, and nothing heightened [*relevé*] so to speak, and of a higher flavor, we should always be in a state of stupor. This is the state of the naked monads. We see too that nature has given heightened perceptions to animals by the care she has taken to provide

[12] *M*, 61.
[13] *PNG*, 13.
[14] *NE*, 2, 19, p. 166.
[15] *G*, 7:529.

them with organs which gather numerous light rays. . . ."[16] If we may take "distingué" to be synonymous with "distincte," which Leibniz used in the passages quoted above, then it seems that we cannot distinguish between stuporous monads by their distinguished perceptions. It is in keeping with the general strategies of Leibniz's thought that consciousness be seen as occurring in even the least of substances—if perception goes all the way down, why not apperception? On the other hand, if this is his doctrine, one would expect Leibniz to say so. He tells us that all monads perceive, but never that they all apperceive.[17] In Part 2 we will see how Furth's main insight can be rescued from the consequence that all monads are conscious to some degree.

More serious difficulties arise when we consider the consequences of Furth's account of degrees of perception for monads advanced enough to be associated with animal bodies, however. The trouble is that Leibniz holds that "although each created monad represents the whole universe, it represents more distinctly the body which is particularly affected by it and of which it is the entelechy."[18] Or, in the terminology of the *Discourse:* all the soul's perceptions "correspond of themselves to that which happens in the universe at large, but more particularly and more perfectly to that which happens in the body associated with it, because it is in a particular way and only for a certain time according to the relation of other bodies to its own body that the soul expresses the state of the universe."[19] If degrees of distinctness of perception (perfection of expression) are interpreted as degrees of awareness, it follows that we must be more intensely aware of anything that is happening in our bodies than of anything external to them. On this view, if on a certain occasion I am more aware of the moon I gaze at than of the eye employed, then the moon has become part of my body, or the eye has ceased to be such a part, or both. We should treat this unwelcome implication not as simply one among many difficulties or incoherences in Leibniz's account of mind-body relations, but as evidence against the outright identification of degrees of awareness and degrees of perception. For Leibniz himself often uses examples[20] concerning bodily processes such as digestion of which we are less aware than of external happenings such as the burning of a neighbor's barn. Leibniz simply does not hold that our bodies are that portion of the world of which we are most *aware,* as the "clearest is nearest" doctrine endorsed by Furth must claim. Nor could it be argued that what I am *really* aware of when my neighbor's barn burns is

[16] *M,* 24, 25.
[17] See passage *G.*
[18] *M,* 62.
[19] *D,* 33.
[20] E.g., in *NE.*

the state of my sense organs produced (in the vulgar, not the metaphysical, sense) by the conflagration.[21] For even if such a confining restriction of possible objects of awareness could be included in a plausible reinterpretation of the rest of Leibniz's thought, a distinction would still be required between the sense in which I am aware of my retina *as* expressing or representing flames and the sense in which I am *not* aware of the lining of my stomach as representing the digestive processes it partakes in. And this distinction will still not coincide, either on the side of representing or of represented, with the distinction between my body and the rest of the world. Furth's detailed reconstruction of spatial perspective in terms of differential awareness involves only objects *external* to our bodies and cannot be extended to those bodies themselves.

These specific difficulties with Furth's suggestion will be reexamined in Part 2 below, as an interpretive strategy which avoids them is developed. First, however, we must look a little more closely at Leibniz's terminology. When introduced in the *Discourse*, perceptual degrees are referred to as arrayed along a dimension of greater and lesser *perfection*. This usage is not surrendered, persisting in later works in such passages as *D* above. In later works, though, the preferred and official portrayal of perceptual degrees is in terms of a range from *distinct* to *confused* perceptual expression (which are terms used only occasionally in this sense in the *Discourse*).[22] A common mistake among commentators on the doctrine of degrees of perception, which seems to stem historically from Russell's loose paraphrases in his classic work, is to talk instead about degrees of *clarity* of perception. Leibniz is, uncharacteristically, careful not to do so himself. (Furth falls victim to this error in passage *D* already quoted, as does Kneale in her article cited in the discussion of action below. Popular histories such as Copleston's repeat this mistaken diction.)[23] There is good reason for his care on this point since the centerpiece of Leibniz's epistemology is a set of technical definitions of what it is in virtue of which an idea may be called *clear*, rather than obscure, and *distinct*, rather than confused. These definitions (intended to improve what Leibniz saw as uncritical Cartesian usage) were formulated in Leibniz's first mature work[24] and endorsed by him until the end of his life, being either repeated or cited in every major work. That the same terms should be chosen (sometimes in Latin, sometimes in French) for the polar opposites, allowing us to speak both of distinct and confused *perceptions* and of distinct

[21] *NE*, 2, 21, p. 178.
[22] *D*, 16.
[23] *A History of Philosophy*, 8 vols. (New York: Doubleday Anchor, 1963), 4:318ff.
[24] *G*, 4:422–26.

and confused *ideas*, is clearly a datum of the first importance for understanding degrees of perception, a datum obscured by mistaking degrees of distinctness for degrees of clarity. The significance for our interpretive task of Leibniz's choice of identical technical terms in discussing perceptions and ideas is enhanced by the fact that Leibniz *defines* "distinct" and "confused" as they apply to ideas, as he does *not* in their application to perceptions.

Ideas for Leibniz are dispositions, habits, or capacities to have certain kinds of perceptions, including in some cases thoughts. When conerned with discussions of innateness, Leibniz distinguished further between ideas and concepts or notions, the latter being actually formed dispositions, the former being higher-order capacities to have concepts,[25] but elsewhere he is not careful about this distinction, as we shall not be. Ideas are sorted into clear or obscure depending upon whether or not they enable *recognition* of the object of the idea, as my idea of sweetness does but my idea of this morning's substitute bus-driver does not.

> Clear knowledge, in turn, is either confused or distinct. It is confused when I cannot enumerate one by one the marks which are sufficient to distinguish the thing from others, even though the thing may in truth have such marks and constituents into which its concept can be resolved. Thus we know colors, odors, flavors, and other particular objects of the senses clearly enough and discern them from each other but only by the simple evidence of the senses and not by marks that can be expressed.[26]

The corresponding passage in the *Discourse*—"When I am able to recognize a thing among others, without being able to say in what its differences or characteristics consist, the knowledge is confused"[27]—makes it clear that it is *discursiveness* that is the essential difference between distinct and confused (*clair-confus*) concepts. The passage continues:

> It is when I am able to explain the peculiarities which a thing has that the knowledge is called distinct. Such is the knowledge of an assayer who discerns the true gold from the false by means of certain proofs or marks which make up the definition of gold. But distinct knowledge has degrees, because ordinarily the conceptions which enter into the definitions will themselves have need of definition, and are only known confusedly.

Talk of distinctness of knowledge, ideas, and concepts is all explicitly made subject to these definitions. As we shall see, it is not uncommon for Leibniz to invoke the degrees of distinctness of ideas and the degrees of distinctness of perceptions in a single passage, and references of both sorts occur in all the major works (e.g., *Discourse* 23). It is therefore tempting to identify these uses,

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[25] *D*, 27.
[26] *G*, 4:422.
[27] *D*, 24.

taking distinct perceptions as the acts which realize the dispositions that are distinct ideas (and similarly for confused ones), particularly in the light of the following remark: "Just as being is revealed through a distinct concept, however, so existence is revealed through a distinct perception"[28] (where being is the order of possibility, and existence that of actuality). I take it that this identification has been implicitly endorsed by most commentators, insofar as they recognize the two uses of "distincte" at all.[29] But we have seen that awareness or apperception presupposes distinct perceptions, and we know that not only rational spirits like humans, but all animal souls have apperception. Yet the beasts of the field, though they have sensation and hence awareness, cannot formulate definitions, enumerate marks, or in general *explain* their recognitive capacities as required for the possession of distinct ideas. The doctrine of degrees of perception requires that *all* monads have perceptions that are distinct to some degree. Yet possession of an idea distinct to *any* degree requires reason, which only those monads that are spirits possess. Nonrational animals cannot have distinct ideas, but must have distinct perceptions. It follows that we must give different accounts of these two notions and cannot take them to be related as potency to act. For the division of substances into bare monads with perception only, souls adding apperception, and spirits adding thought, is fundamental to Leibniz's metaphysics.

The claim that we must distinguish the distinctness of ideas from the distinctness of perceptions is clearly an important one, so let us examine it a little more closely. Leibniz's most complete and systematic treatment of epistemological issues is in the *New Essays*, which discusses both distinct perceptions and distinct ideas extensively. We find there fairly direct statements to the effect that the capacity to reason is presupposed by the possession of distinct ideas of knowledge: "The true mark of a clear and distinct notion of an object is the means we have of knowing therein many truths by a priori proofs. . . ."[30] So it is sufficient for the distinctness of an idea that it be inferentially developable ("a priori" being for Leibniz a mark of what pertains to reason, inference, and thought). Distinctness of an idea is also a necessary condition for intellectual analysis, as we see in a discussion of empirical recognitive capacities: "But this *clear image* or this feeling which we may have of a regular decagon or of a weight of ninety nine pounds consists only in a *confused idea* since it is of no avail in discovering the nature and

[28] *G*, 7:319.

[29] For instance, see R. McRae, *Leibniz: Perception, Apperception, and Thought* (Toronto: University of Toronto Press, 1976), chap. 5—certainly the fullest and most thoughtful treatment of these general issues we have. McRae is particularly helpful on the relations between sensibility and understanding.

[30] *NE*, 2, 23, p. 227; see also 2, 29, p. 274.

properties of this weight or of this regular decagon, which demands a distinct idea."[31] Again we read that "ideas, when reason cannot judge of their compatibility or connection, are confused."[32] The same conclusion concerning the difference between distinctness of perceptions and of ideas can be reached by three lines of argument from less directly relevant texts.

First, one doctrine concerning distinct ideas is that "the soul is a little world, in which distinct ideas are a representation of God, and in which confused ideas are a representation of the universe."[33] This thesis is an obvious reflection of the earlier *Discourse* claim that "the spirits express God rather than the world, while other simple substances express the world rather than God," where spirits have just been defined as intelligent or reasoning souls.[34] This difference is explained as stemming from the fact that spirits can understand necessary truths, and hence are like God, as cannot those natures which are either "brutish and incapable of recognizing truths [animals], or are wholly destitute of sensation and knowledge [bare monads without the capacity to recognize and hence to have clear ideas, the lowest grade of knowledge]." Together, these passages limit distinct ideas to intelligent souls, excluding the merely sentient beasts.

Second, notice that the difference between distinct and confused *ideas* is a qualitative one, whereas that between distinct and confused *perceptions* must be a quantitative one. Distinct ideas do come in degrees (of adequacy), but the basic notion is an all-or-one, according to whether recognition actualizing some clear idea is performed *by* recognizing certain enumerable *marks* or not.

> I have sometimes defined an adequate idea as that which is so distinct that all of its ingredients are distinct, and such is nearly the idea of number. But when an idea is distinct and contains the definition or the reciprocal marks of the object it may be inadequate, viz.: when these marks or these ingredients are not also all distinctly known; for example, gold is a metal which resists the cupel and aqua fortis; it is a distinct idea, for it gives the marks or the definition of gold; but it is not perfect, for the nature of cupellation and the working of aqua fortis is not sufficiently known to us.[35]

Here, as elsewhere[36] we can ask of each component mark whether it is distinct or not. A distinct idea all of whose marks are also distinct is *more* distinct than one whose marks are merely clear ideas. Confused ideas are

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[31] *NE*, 2, 29, p. 274.
[32] *NE*, 4, p. 446.
[33] *NE*, 2, 1, p. 109.
[34] *D*, 35.
[35] *NE*, 2, 31, pp. 278–79.
[36] *NE*, 2, 29, p. 267; *D*, 24; *G*, 4:423–24.

thus *not* a limiting case of distinct ones. A sharp boundary exists between these two kinds of ideas, depending upon whether or not the idea is a *definition* of the object, expressed as a set of "reciprocal marks" (necessary and sufficient conditions). Definition is of course a function of reason. But even if the sharp distinction were not made in this way, its very existence undercuts the identification of the sense of "distinct-confused" which applies to ideas with that which applies to perceptions, since the latter requires confused perceptions to be limiting cases of distinct ones. This point is important insofar as it is widely believed that Leibniz envisages a continuum of representation, of which the conceptual is the distinct pole and the sensual the confused pole. Such a view results from running together the doctrine of degrees of perception, which do form such a continuum but do not correlate directly with intelligibility and sensibility, and the distinctness and confusion of *ideas*, which while not forming such a continuum, do capture the differences between ideas of reason and those of sense. Thought is perception inferentially articulated in that it occurs in accordance with distinct ideas and necessary truths. Sensation is subject not to inference but only to imaginative association. Between these there are no intermediate degrees.

A third consideration is that *clear* ideas that are merely confused require the capacity to recognize objects and thus require apperception. For if recognition did not require consciousness, then any unconscious perception that expressed a certain object would be a recognition of it and would demonstrate the existence of a clear idea. So every monad would have clear ideas of everything in its universe. But Liebniz certainly held that even spirits have many obscure ideas. So only souls, which have apperception, can have clear ideas. Recognition is the basic act of awareness, and so a soul which had *only* clear ideas would be aware. But we saw earlier that awareness presupposes the possession of *distinct* perceptions (see passage *F* above). It follows that clear ideas presuppose distinct perceptions. Thus distinct perceptions cannot be the actualizations of distinct ideas, for the actualizations of clear ideas (what would correspond, were the identification in question correct, to "clear perceptions") are recognitions—that is, perceptions that are noticed or apperceived, that require distinct perceptions although no distinct ideas are involved. Put another way, we can pair each element of the three metaphysical levels of being (bare monad, sentient soul, sapient spirit) with a corresponding element of the epistemological levels of knowledge (obscure ideas, clear but confused ideas, distinct ideas), but we *cannot* match this latter heirarchy of potencies to one of acts, of the form: perception, apperception, distinct perception. It is *thought* which belongs in the final place as actualizing distinct ideas. But then how are we to understand the doctrine of degrees of perception?

Perhaps we are reading the definition of distinct ideas too literally and hence are putting too much emphasis on the discursiveness of distinct ideas. The basic difference between clear-but-confused ideas and distinct ones is that between mere recognition and recognition by marks. It may be possible for an animal to have the capapcity to recognize something by its marks, while being incapable of expressing that idea in the form of a nominal definition. It will not suffice for this that an animal which reliably recognizes a particular kind of berry as edible do so as a matter of causal-perceptual fact because of some feature such as its shape. For perception of that feature may be causally necessary and sufficient for recognition of the kind of berry in question without the organism being aware of the shape, without his having a clear idea of the mark he is in some sense using. And the component marks comprising a distinct idea must at least be clear. So to follow out this line of thought will be to fill in the notion of being aware of a mark as a mark. Each distinct idea codifies an *inference*, for example, from attribution of *resistance to a cupel and to aqua fortis* to characterization as *gold*. Perceptions which play inferential roles are *thoughts*, and only spirits have them. But beasts have what Leibniz calls "consecutions," which he says are "a shadow of reasoning." For habit may induce in beasts (or, as he says in more than one place, empiricists) sequences of perceptions based merely on association of ideas or even images connected by the imagination guided solely by particular instances, and with no idea of the reasons involved, as when a dog fears a stick he has been beaten with. Perhaps we can construct a "shadow" of distinct ideas, which is to them as the consecutions of the beasts are to thought, and which will justify attributing distinct *perceptions* to the brutes in some sense as the actualization of those ideas.

These various lines of thought about distinct ideas and distinct perceptions cannot be reconciled without some strains. But in Part 2, I will put forward an account according to which the beasts' shadow of reasoning gives them also a shadow of distinct ideas, which in the weak sense will not require understanding (though modelled on it), while in the full sense being joined with the power of reflection. It is at any rate clear that we may not assume that we understand the use of "distinct" and "confused" as they apply to perceptions just because we understand them as they apply to ideas, although the use of the same paired opposites strongly argues for a connection. Although distinct perceptions are somehow related to apperception, we do not know how. And yet until we understand the notion of distinct perceptions we cannot interpret the most basic features of Leibniz's metaphysics: the levels of being, monadic perspectives, and action and passion, or indeed perception itself. The task of Part 2 is the construction of a detailed

interpretation of these matters that does justice to the difficult notion of distinctness of perception.

Leibniz sometimes seems to suggest that such interpretative effort is unnecessary, for "there is much that is innate in our mind, since we are innate, so to speak, in ourselves. There is in us: being, unity, substance, duration, change, action, perception, pleasure, and a thousand other intellectual ideas . . . immediate to our understanding. . . ."[37] Thus Descartes is chided for failing to add to the immediacy of my knowledge that I think, my knowledge that I who am one have different thoughts, can will, and so on. At most it is claimed that these are *clear* ideas, which make us capable of recognizing their objects when they occur in us. But adequate or complete chains of explications according to distinct ideas must resolve ultimately into clear primitive concepts which we are told are identical with God's attributes. Being, unity, substance, and so on, are prime candidates for this status. Two things are strange about the inclusion of perception in this list of innate clear ideas. First, the idea of perception is described as an *intellectual* idea, although perception occurs in the beasts who have clear sensible ideas, but no intellectual ones at all. Second, our introspective, clear idea of perception is an idea of perceptions which we are aware of, which are apperceived. Strictly, what we have is a clear idea of apperception. We cannot say, "minute perceptions are just like the ones we are conscious of, only unconscious," and claim thereby to have expressed an idea (clear or distinct) as one might say, "unobserved elephants are just like observed ones"; for, as Wittgenstein has pointed out, when mental states are at issue awareness is the only feature that matters (cf. "It's five o'clock on the sun"). Leibniz is aware of this problem with his extension of the Cartesian notions of thought and perception to the unapperceived. He expended great efforts in the development of a theory of unconscious or "symbolic" thought (in which ideas are manipulated by marks of marks, corresponding to distinct ideas, but never clearly conceived),[38] in the guise of a theory of notation. We want a similar explication of the *intellectual* idea of perception,[39] which the brutes who cannot reason according to necessary truths do *not* have, although they are aware of some of their perceptions. The innateness doctrine does not discharge this explanatory responsibility, and it is clear that we cannot make the polar notion of unconscious perception distinct merely by invoking a plenum of degrees of perception intermediate between those of which we are aware and those of which we are not.[40]

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[37] *NE*, intro., p. 45. See also *NE*, 1, 1, p. 46; 1, 2, p. 111; 4, 2, p. 410; 4, 10, p. 499.
[38] *D*, 27.
[39] *NE*, 2, 1, p. 111.
[40] *NE*, 2, 13, p. 152.

II

I wish to make a suggestion: the expressive or representative nature of perception consists in the fact that from the existence of the modification of some monad which is a perceiving can be *inferred* the existence of various *accidents* or facts pertaining to its own monad or to others. An accident is any property of a subject which is not a maximal property, in the sense that it does not contain or entail all of the properties of that subject that are comprised by its individual concept. It is one of Leibniz's principles that "every true predication has some basis in the nature of things."[41] The basis in reality for our ordinary predications is called an accident, officially defined as "a being the notion of which does not include all that can be attributed to the subject to which this notion is attributed."[42] The subjects of ordinary predications are typically multimonadic aggregates. When we attribute sphericality to such an aggregate, for example, a billiard ball, the metaphysical basis in virtue of which this predication is true is a set of modifications of the monads which constitute the billiard ball. The impenetrability of the billiard ball will consist of a different selection of the modifications of those aggregated monads. One of the key features of the interpretation that follows is the claim that what is expressed by perceptions is a set of such accidents. This will allow an intensional reading of expression.

That the relation between expression and expressed is an inferential one is suggested by several of Leibniz's formulations, for instance, his earliest definition of mathematical expression: "What is common to all these expressions is that we can pass from a consideration of the relations in the expression to a knowledge of the corresponding properties of the thing expressed."[43] It is natural to take such "passage" from one consideration to knowledge of something else as inference. What is important about a map or a model is that we can make appropriate inferences concerning features of the mapped or modelled thing from observations concerning the features of the map and model. This reading is confirmed later in the same passage as we are told, "Similarly every entire effect represents the whole cause, for I can always pass from the knowledge of such an effect to a knowledge of its cause. . . . It may also happen that the effects which arise from the same cause express each other mutually in gesture and speech," since for Leibniz the cause of a phenomenon is its sufficient reason. Expression is here clearly a generally nonsymmetric relation (as cause to effect or premise to conclusion), though cap-

[41] *D*, 8.
[42] Ibid. On the logic of such accidents, see *G*, 7:236–47.
[43] *G*, 7:263.

able of symmetry in particular cases. Further evidence is supplied by the use of the notion of *perfection* throughout Leibniz's mature period (a notion that supplies a crucial link to a distinctness of perception). Immediately after passage *D* quoted above, the *Monadology* continues: "One created being is more perfect than another if one finds in it that which will supply a reason a priori for what happens in the other. And it is because of this that it is said to act upon the other." A similar definition is to be found in the *Discourse*,[44] where we recall that as elsewhere, "degrees of expression" is used interchangeably with "degrees of perfection" (e.g., in passages *C*, *D*, and *G* above, and in *Discourse* 15).

Mathematical expression corresponds to a particularly simple case of inferrability, namely where expressing features and expressed features stand in a one-to-one correspondance: "It suffices to the expression of one in another that there is a certain constant law of relations, by which the singulars in one can be referred to corresponding singulars in another,"[45] as each point of an ellipse can be projected onto a corresponding point of a circle. Notice that at this mathematical level expression is symmetric since one-to-one correspondances are. There seems no room for talk of "degrees of perfection" of correspondance. These facts become explicable if we read Leibniz's differentia for perceptual expression, as expression of the many in the one, as appealing to his conceptual containment account of inference. One clear sense borne by the many-in-one formula[46] is that many perceptual modifications are nonspatially included in each simple substance. That this inclusion is inferential is argued by Leibniz's claim that the individual concept of the substance includes every one of its modifications, or put another way, that everything that will happen to the substance can be deduced from that concept. The present suggestion is that the many-in-one formula bears a second, less obvious but equally important sense, according to which *each* perception itself enfolds a multitude (of accidents), its expressive *range*. On this view, the mathematical expression of a circle is an ellipse differs from perceptual expression *both* in that ellipses and circles are mere aggregates and not true unities (corresponding to the first sense of the furmula) *and* in that each point of the circle expresses only a single point of the ellipse. Evidence for this double reading can be found in such pronouncements as that "we can define our essence or idea as that which includes everything which we express."[47] Given an individual concept, not only can we deduce all

[44] *D*, 6.
[45] *Opuscules et fragments inédits de Leibniz*, ed. L. Couturat (Paris, 1903), p. 15.
[46] *M*, 12, 13.
[47] *D*, 16.

of its modifications, but also everything expressed by them. Of course this will follow at once from the transitivity of deducibility if the expressive range of each perception is a set of accidents deducible from it, as I have suggested.

The claim then is that percepts have content in the same way in which concepts do, with each perception expressing a variety of facts about its universe. On this account, expressive content is an intrinsic feature of perceptions, each of which has its own content or set of attributes deducible from its occurrence. By contrast, the projected points of an ellipse that expresses a circle have their contents as extrinsic properties, acquired in virtue of their relations to other points on the ellipse. Deductive relationships in Leibniz's universe are always an expression of its fundamental lawfulness. Whenever an inference can be made, it is according to an underlying rule or regularity. For conic sections, laws of geometrical projection underwrite the inferences in virtue of which one expresses another. For perceptions, the preestablished harmony of the modifications of one monad with the modifications of others makes possible the inferences that give perceptions their expressive contents.

A perception provides it monad with information about the rest of the world only insofar as the preestablished harmony provides principles (laws of Nature) which permit inferences from the occurrence of this particular perception, rather than any other possible one, to conclusions about facts outside that monad. We are assured of the existence of such principles only by metaphysical reasoning. The form in which that harmony manifests itself in the experience of particular monads is the physical or phenomenal world. It is accordingly facts couched in the phenomenal terms of *this* world that are the informational contents of perceptions as experienced by the monads those perceptions modify. For the monad, its world is the world of physical, perceptible attributes. Leibniz's phenomenalism entails that the deductive relations between perceptions implied by the preestablished harmony are reflected by deductive relations between those perceptions and features of the phenomenal things which appear to the perceiving monad as their objects.

In what follows, the prime argument to be offered for this sense of "many-in-one" as inferential containment of many attributes in one perception is the explanatory power the hypothesis possesses regarding Leibniz's many doctrines about degrees of perception. Besides accounting for the assymmetry of expression involving modifications of true substances evident in the application to cause-effect relations above, this interpretation gives a natural sense to talk of degrees of expression. For if many accidents are expressed in one perception, it is possible for more or fewer of them to be

expressed by another perception. We may say that two perceptions differ in perceptual or expressive degree just in case the expressive range or content of one of them properly includes the range or content of the other.[48] Leibniz's standard definition of perfection is that that is most perfect which is "simplest in hypotheses and richest in phenomena."[49]

That is, one substance is more perfect than another if from fewer premises about it, more about its world can be deduced than is the case for the other. The "hypotheses" will be statements reporting the occurrence of a perception in some monad, and the "phenomena" deducible from them will be statements reporting on the inherence of an accident in some subject. Thus higher degrees of perfection of expression correspond to more inclusive sets of expressed (inferable) accidents. Consider three perceptions of a physical object. The first, p_1, represents it as red (its expressive range consists of a single accident), p_2 represents it as cubical, and p_3 represents it as red and cubical. Then p_3 will be a more perfect expression of the object than p_1 or p_2. Indeed, we can see why one might say that p_3 is more *distinct* than p_1 or p_2, and they more confused than it. For p_1 cannot distinguish the object from a red sphere, while p_2 cannot distinguish it from a green cube. Perception p_3 is both more distinguishing and more specific than the others.

On this account, the degrees of perception are a consequence of the character of perceptions as representing many in one. A cardinal virtue of this approach is that it explains how two numerically distinct monads, individuated *only* by their perceptions, can nonetheless both express the whole world. For a monad to express the whole world is for the union of the expressive ranges of all of its component perceptions to include the complete set of accidents of that world, that is, those accidents whose joint occurrence determines every particular substantial modification in that world. Different monads simply divide up that complete set of accidents among the expressive ranges of contemporaneous perceptions in different ways. In a mini-world in which no modifications exist save those in virtue of which a particular cube is red, one substance (by hypothesis "part" of the cube, since the world contains nothing else) might express its whole world by having the single perception p_3, while another has p_1 and p_2 instead. These perceptions are distinguishable, since no two of them have the same expressive range. The monads these perceptions modify are accordingly distinguishable as well, since they are qualified by distinguishable modifications. Yet each monad expresses *every* feature of its world, since for each monad

[48] We cannot just compare numbers of accidents, since each perception may express an infinite number of them.

[49] *D*, 7. See *D*, 15 for talk of "more perfect expression of phenomena."

there is no accident not expressed by some one of its perceptions. Each complete set of monad's contemporary perceptions has the whole set of its world's real accidents as the union of the expressive ranges of its perceptions. But the distribution of more and less inclusive expressive ranges over that set of perceptions differs from monad to monad, and from time to time within a single monad (see passages *A* and *B* above). It is these differences in the distinctness (inferential potential) of the individual perceptions that jointly express the whole world which distinguish the various monads.

In order to follow out this suggestion for interpreting perceptual expression and its degrees as regards the notions of action and awareness explicated in terms of them, we must take note of one important respect in which Leibniz sharpened his views between 1687 and 1706. If we compare passages *C* and *D* above, we may notice that the first defines action in terms of an *increase* in the degrees of expression of a substance, while the second defines it in terms of having perceptions of a high degree, with changes in degree not mentioned. A prominent commentator[50] has argued that the earlier view is an "aberration" and that Leibniz himself did not believe its paradoxical consequences—the conclusion drawn in the *Discourse* after passage *C* that "every activity of substance which has perception implies some pleasure, and every passion some pain." The *Discourse* definition cannot be seen as merely aberrant, however, for throughout his career Leibniz held a doctrine of *development* of perception, enunciated in the same terms in the late (1714) "Principles of Nature and Grace" as in the epistemologically authoritative *New Essays*, as well as in the early *Discourse* and correspondence with Arnauld.[51]

A perception is said to "develop" or be "heightened" when it becomes more perfect or distinct, increasing its expressive degree. What happens is that where in the *Discourse* development is associated primarily with activity, and secondarily with awareness (since pleasure and pain are both apperceptive states for Leibniz), afterwards development is offered as part of the account of awareness alone (see passages *F* and *G* for instance). In the later view, awareness is a kind of activity, but not all activity is awareness. I will present detailed reconstructions of each of these notions. First I show how *differences* in degrees of expression can be seen as underwriting the attribution of cause-effect interaction between monads, without requiring the sort of active *change* of degree I will associate with awareness.

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[50] M. Kneale, "Leibniz and Spinoza on Activity," in Frankfort, *Leibniz*, pp. 215–37.

[51] *PNG*, 4, 13. *NE*, intro., p. 51; 2, 9, p. 142; 2, 19, p. 166; 2, 21, pp. 178, 201, 219–20. See also *G*, 3:574; 4:522, 562–65; 6:500–501.

Kneale[52] is right to doubt the cogency of the claim that a pair of billiard balls engaged in a collision affect one another by causing apperceptive states of pain and pleasure, as the earlier view seemed to require. But it is not at all obvious that sense can be made of the later view either. For we know that monads are ranked by the degrees of their perceptions, with spirits ranked higher than brutes or bare monads. But then it seems we must deny that it is possible for a lower being, a stone, say, to cause pain to a brute, or for a chemical substance to put a rational being to sleep. Each of these would be action by a less perfectly expressive being upon one more so. Any view about Leibniz's account of activity must face this difficulty. The paradoxical conclusion can be avoided, however, by focussing on the differences in the degrees of perfection with which two apparently interacting substances express, not their whole world, but some particular occurence. We can be a little more precise about how the partial ordering of perceptions into degrees by the inclusion relations among their expressive ranges can be extended to partially order the time-slices of monads in which those perceptions occur, as required by the theory of causation. Let a be any set of accidents (perhaps a temporal sequence of them forming the "change" of passage *C* above), and let m and m' be two different sets of co-monadic, contemporaneous sets of perceptions. We can say that m expresses a more perfectly than m' does if it is possible to select a nonempty subset $k(m)$ of the perceptions in m such that (i) $k(m)$ is a complete expression of a, that is, every accident in a is in the union of the expressive ranges of the elements of $k(m)$; and (ii) for any subset $k(m')$ which completely expresses a, $k(m)$ is inferentially stronger than $k(m')$ in the sense that given any perception $p' \in m'$, there is some perception $p \in m$ such that the expressive range of p' is a proper subset of the expressive range of p. This condition merely generalizes the example discussed making more perfect expression (higher degrees of perception) depend upon having perceptions which are richer and more specific in content.

I will justify this definition further below when I discuss the development of perception and awareness. Even at this point I can remark on a cardinal explanatory virtue of the definition, however. We saw above that Leibniz believes that a cause or activity provides a reason a priori for its effects.[53] Yet his *definition* of causation in its general form as action and passion (as presented in passages *C* and *D*, for instance) is in terms of differences of degree of expression. What is the relation between the definition and the claim that effects are deducible from their causes? Given our inferential reading of

[52] "Leibniz and Spinoza on Activity."

[53] *M*, 52.

expression and the account above, the deducibility claim *follows* from the definition of action and passion. For it follows directly from the account of more perfect expression above that everything deducible from the occurrence of m' is also deducible from the occurrence of m; the content of the relevant passive monadic substate $k(m')$ is part of the content of the relevant active monadic substate $k(m)$. If m' is involved in the change in question, that is, if the modifications in virtue of which the accidents in a characterize the world in question, then those modifications themselves will be part of the content of $k(m)$, that is, will be deducible from it. So insofar as we can justify reading high relative degrees of expressive perfection of monadic states as corresponding to having perceptions with richer and more specific expressive ranges as above, we can explain how the active state gives a reason for or allows us to deduce the corresponding passive one.

This much results from the three interpretive suggestions offered so far: taking the expression of many-in-one which is perception to apply each perception (as well as to the monad as a whole); taking the relevant sense of "in" to be explicated inferentially following the idiom of Leibniz's account of deducibility in terms of the containment relations of concepts; and taking degrees of perception to correspond to more-or-less-in-one, where again following Leibniz's intensional logic, increasing the number of accidents attributed to a subject amounts to specifying one's claim. My account also explains why mathematical expression, which is not a matter of many-in-one, does not come in degrees and seems to have nothing to do with activity and passivity. As Part 1 argues, however, the real test of any account of degrees of perception is its treatment of the problem of *distinctness* of perception. An acceptable account must explain both directions in which the use of this term pulls: one way toward awareness, the other toward distinct ideas. The existence of these two uses of "distinct" must be explained in the light of the sharp distinction in levels of being between those who have sensation but no more, and those who can think also and hence can have distinct ideas.[54] Even without this complication introduced by considering distinct ideas, the association between distinct perceptions and awareness causes trouble, as we have seen, since our bodies are defined as whatever we have the most distinct perceptions of (passage *H* above), and our bodies are not the exclusive or even the preeminent objects of our awareness. So let us consider awareness.

One of Leibniz's important doctrines about awareness is that apperception occurs when we not only have perceptions, but also perceive those perceptions. Three basic elements must accordingly be distinguished. First there is an apperceiving, which is a perception of an earlier perception. The

[54] *NE*, 4, 5, p. 448.

perception thus perceived is the immediate object of apperception—that in us to which we attend, as distinguished from the myriad of perceptions we ignore. Finally, there is that in the world, a table, perhaps, of which we are mediately aware in virtue of attending to or perceiving the immediate object of attention. There are two questions we should ask about awareness according to this structure: First, what is the relation between a perception that is an apperceiving and the perception that is its immediate object, in virtue of which we may say that awareness is occurring at all? (How is it "of" its internal object?) Second, what is the relation between this constellation of perceptions and that external object which they constitute an awareness of? In addressing this second question we will need to explain (*pace* the discussion of Part 1) how it is possible to be aware of anything except one's own body. Each of these queries must be distinguished from the related question of what it is about a perception or a feature of the world which makes it liable or likely to become an object of apperception in either of these two senses. "Novelty" is a good response to the second kind of worry, but not to the first. Unfortunately Leibniz does not carefully separate these issues in the *New Essays* (our basic source on such matters), which has obscured what he has to say about the more basic questions (what the trick of awareness consists in or how it is brought off, rather than when it is likely to be performed).

Consider the first question. I referred above to the various pronouncements establishing that the expressive development of perception is a necessary condition for awareness. Insofar as the development of perceptions involves only the expressive or representative contents of the developed and developing perceptions, development as increasing distinctness or perfection of expression has been glossed as specification of that content, understood in turn by inclusion relations holding between the sets of accidents which are their expressive ranges. In order to arrive at necessary and sufficient conditions for the occurrence of apperception, we must consider also purely material features of perceivings as vehicles for expression, features arising out of the particular representings of expressive content as they occur in the career of individual monads. For illumination of this aspect we may look to the third class of definitional remarks about apperception (the first two being those talking about perception "of" perceptions, and development), namely, those concerning *memory*. In the same texts which make so much of development, "sentiment," or feeling (the generic prereflexive apperceptive state), is defined as "perception accompanied by memory."[55] We are also told that "all attention requires memory,"[56] with

[55] *PNG*, 4.
[56] *NE*, preface.

the acknowledged implication that strictly all we can be directly aware of is our immediately past perceptions.[57] My claim is that appeals to memory, development, and perception of earlier perceptions determine a single account of awareness, involving both material and expressive features, though each emphasizes one or the other sort.

Mere repetition of representative content is notoriously insufficient for memory. My awareness of the table today may have the same content as yours of yesterday, but it is not a memory of your experience. To be such requires beyond the repetition of content also that the memory be *produced* in the right way. For Leibniz this "production in the right way" is a matter not of causation of phenomenal interaction between monads, but of that genuine metaphysical activity whereby the perceptions modifying a monad at any given time produce their successors according to the law which is the concept of that individual, as expressed by a contemporaneous set of appetitions codifying particular tendencies of one set of perceptions to give rise to another. For p_2 to be a memory of p_1 requires not only a relation of their contents, but that p_2 have been produced by p_1.

In general, perceptions will give rise to other perceptions whose expressive ranges bear little relation to those of their progenitors. But if p_1 both gives rise to p_2 and has its expressive content repeated or specified by p_2, then p_2 is a perception, memory, development, that is to say an awareness *of* p_1. Awareness of or attention to a perception thus should be understood as the product of the two characteristics of metaphysical *production*[58] of the later perception by the earlier one and the expressive *specification* of the content of the first by the second, in that the expressive range of the first is a subset (proper or improper) of the expressive range of the later. In this way memory as requiring only repetition of content is assimilated as a limiting case to development of that content. Put another way, awareness occurs when one perception is "of" another in the dual sense of being produced *by* the first and expressing (at least) the content of the first. thus in the representative sense of what a perception is "of," discussed above, the second perception must be of the same content as the first, in that every fact (the occurrence of an accident) deducible from the first must likewise be deducible from the second. I have assumed that the representative content of a perception is an intrinsic feature of that perception—that a perception could not be just the modification it is without having just the content that it does—since appetitions are the differentials or tendencies on the part of perceptions to give

[57] *NE*, intro., pp. 45, 47; 2, 19, p. 165; 2, 22, p. 222; 2, 27, pp. 248, 250. *PNG*, 4; M, 19.

[58] On perceptions producing others, see *G*, 2:372; 4:523–24, 563–65; *NE*, intro., p. 49; 2, 1, p. 116; 2, 21, p. 211; 2, 33, pp. 283–84.

rise to other perceptions, that is to say, that awareness resides as a potential in special appetitions or developmental tendencies, which may or may not be realized by the succeeding crop of perceptions. (In fact, Lebiniz's account of intentional action is couched in terms of *distinct appetitions* which reason develops so that we are aware of the inclinations which impel us.[59] The present analysis may be applied to the degrees and development of such appetitions at a higher level—with degrees of appetitions corresponding to the development which would result in the perceptions involved, and the development of appetitions corresponding to tendencies to increase development codified in higher-order appetitions governing the tendency of one appetition to give rise to another. The details of such an extension, involving as they do the perception of good and evil, lie beyond the scope of this work, however.)

So a straightforward answer to the first of our questions about apperception (about the relation between an apperceiving and the perception that is its immediate content) is available, which draws together the three sorts of locutions Leibniz uses to explain awareness. This account reflects, furthermore, the primary empirical datum that, to judge from the frequency with which examples are cited and the variety of theoretical insights he thinks can be gleaned therefrom, Leibniz took as the basic object of explanation and major confirmation of his account of awareness and unconscious perception—namely, that one may remember after the event an occurrence one did not notice at the time, but must in some sense have seen in order now to recall. On my account, all perceptions are intrinsically unconscious. But though a perception might have remained undeveloped and hence unnoticed for several generations of its perceptual progeny, this is consistent with eventual development (since "to produce" is transitive). Indeed, Leibniz holds that "nothing is for nothing," that all perceptions will eventually be developed, that all monads will eventually be conscious of all that they have ever perceived. (Holding this doctrine does not, of course, defuse the objection made earlier concerning what is required to make intelligible what is meant by the notion of "unconscious" perception, as we still need to know what these are like *before* they are developed.)

I have already considered the sense of "distinct perception" as perception of high expressive degree that is relevant for the explanation of physical interaction. The current claim is that another sense of "distinct perception" occurs in passages such as *I* below, where awareness is at issue. In such passages, the question is how a particular set of perceptions becomes distinct in the sense of distinguished from the rest as the immediate objects of

[59] See *NE*, 2, 21, p. 201.

attention and are themselves perceived. My answer is that they are distinctive or remarkable in the measure of their development, that is, the *increase* in their expressive degrees. This second sense is thus defined in terms of the first. Given these two senses of "distinct" as applied to perceptions, we can easily resolve the issue raised earlier concerning bodily awareness. The body of a dominant monad is that which it perceives most distinctly in the first sense, that is, has the richest, most detailed and inferentially powerful perceptions of. This does not mean that those perceptions are the most developing, however. There need be no special correlation between those perceptions of highest expressive degree and those which give rise to *more* expressive specifications of themselves. It is these latter that matter for awareness. So we need not be more aware of our bodies than of anything in the rest of the world. Even if each bodily perception, with its inclusive expressive range, gives rise to a perception with an expressive range of similar size, if the content of the first is not included in that of the second, there is no awareness, regardless of the expressive degrees involved (see the discussion of the sensation below). It is for this reason that we can say that perceptions of our own bodies are confused.

My second question about apperception concerned the determination of the ultimate external objects of awareness. Clearly these are determined in some way by the expressive ranges of the "heightened" perceptions of which one is immediately aware. That some care is required in dealing with this issue, however, is indicated by Leibniz's account of sensation. Two major features of that account yield interpretive puzzles. First, from 1684 on it is claimed that sensations are made of a myriad of "smaller" perceptions that are its "parts": "When we perceive colors or odors we are having nothing but a perception of figures and motions, but of figures and motions so complex and minute that our mind in its present state is incapable of observing each distinctly and therefore fails to notice that its perception is compounded of single perceptions of exceedingly small figures and motions."[60] How is one perception "compounded" out of others? How can those parts result in the apperception that is sensation without themselves being apperceived? Second, Leibniz holds that the phenomenal qualities that are the contents of states of sensory awareness are *phantasms* or phenomenal qualities that, while grounded in some sense in the figures and motions of the bodies they express, are not qualities to be found in the world represented but rather are artifacts of our representing those motions in apperception. Thus if we were able to distinguish further the perceptual parts comprised by our sensation of green, we would discover it to be a compound of blue and yellow.

[60] *G*, 4:426. See also *NE*, preface, p. 50; 2, 1, p. 118; 2, 9, p. 136.

These sensory phantoms would in turn disappear on further analysis; but as a result of the infinite divisibility (indeed infinite division) of matter, new phantoms will arise no matter how finely we divide our sensation.[61] Both doctrines are combined in Leibniz's likening of sensory phantasms to the artificial transparency of a toothed wheel or spoked cart-wheel as it rotates, in which the individual parts move too fast for us to distinguish. The doctrine of phantasms is puzzling because of its ambiguous status with respect to the metaphysical foundations of the possibility of *error*. For Leibniz's official view is that perception never errs, that it is only with judgment, at the level of reason, that error is possible.[62] Sensation as apperceptive is intermediate on the scale of being between mere perception and rational judgment. The phenomenal qualities of sense are somehow intermediate between the infallible representation of mere perception and the possibility of genuine error of discursive judgment. The difficulty of explicating this doctrine parallels and reproduces on the epistemological side the metaphysical embarrassment similarly arising concerning the status of space and time as "true phenomena" grounded in but in some ways misrepresenting the nature of individual substance. Sensations represent neither quite correctly nor quite incorrectly, but what sort of middle ground is envisaged here?

We need not address the question of how perceptions can be composed of or have as parts other perceptions in terms of a *spatial* notion of part-whole. Leibniz tells us that this is not the primary signification of talk of parts and wholes,[63] and it seems that he has in mind the logical relations of containment of *concepts* in one another as primitive. Following this line of thought suggests that it is the *expressive ranges* of petite perceptions which are included as parts in the expressive range of some perception which is a sensation. Suppose P to be an infinite set of perceptions which jointly give rise to p_1, whose expressive range is just the union of the ranges of the elements of P. Then p_1 will count for us as developing those perceptions, and hence will be an apperceiving, as sensations are. If none of the elements of P is individually developed, that is, gives rise to a perception more distinct of it though not of its fellows, then on our account we would have no separate awareness of that perception and hence would be ignorant of its exact contribution to the corporate awareness of the infinite set P.

Why on Leibniz's account should we have such wholesale development in preference to development of individual perceptions? This can be seen as a

[61] *NE*, 2, 23, p. 228.

[62] *D*, 14. See also H. Ishiguro's response to Furth on this point, in "Leibniz' Theory of the Ideality of Relations," in Frankfort, *Leibniz*, pp. 191–213, esp. 210–13.

[63] *NE*, 1, 3, p. 102.

consequence of two general precepts. First, Leibniz holds a principle of *finiteness of apperception*, that our awareness at any given time comprises only a finite number of elements.[64] (Indeed, it is to this finiteness of apperception that the appearance of "leaps" in a continuous universe is due, according to Leibniz.)[65] Thus in the *New Essays* our ignorance of the minute perceptions making up sensations is attributed to their "infinite multitude, which keeps us from distinguishing them."[66] Next, as a result of the principle of sufficient reason, if there were a multitude of petite perceptions which differed little from one another, there would need to be some *sufficient reason*, grounded in those perceptions themselves, why one and not another of them was developed. That the little perceptions differ only insensibly from one another is frequently invoked as a reason for our failure to distinguish them. If we take the finiteness of apperception to restrict a single field of awareness to a finite number of apperceivings (i.e., perceptions which are developings of others), and if we assume as a result of the constitution of bodies the presence of infinite sets of expressively similar perceptions ripe for development, the principle of sufficient reason *requires* that perceptions developing infinite sets of their ancestors arise. Since sensation, as perception of something external,[67] must involve perceptions expressing the infinitely intricate relations of material bodies actually divided to infinity, in virtue of the association of sensation with the material impressions of bodies on the organs of sense, we can be sure that infinite sets of insensibly different perceptions will occur.

But what of the content of these joint-stock developments of infinite sets of look-alike perceptions? Whence the phantasms? The key here may be taken to be the paired notions of artificiality and abstraction as they arise in the model of the disappearance of the spokes of a spinning wheel. Such transparency is an artifact of its means of production, arising only under specifiable circumstances. In such a way we could describe the expressive range of a perception which developed an infinite number of similar minute perceptions as "artificial" just in case no perception which does not arise in that way ever has that expressive range. That is, the expressive ranges of percepts which are sensations may be artifacts of the expressive combination of an infinite number of similar precursors. It would make a neater story if the status of the contents of sensations as phantasms could be accounted for just as expressive ranges artificially inclusive in this sense, but phantasms in

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[64] *NE*, 2, 1, p. 113; 2, 13, p. 150; 2, 21, p. 187; 2, 23, p. 228; *G*, 4:557–59.
[65] *NE*, 2, 17, p. 160; 4, 16, p. 552; *G*, 4:555–56; Couturat, *Opuscules*, p. 523.
[66] *NE*, 4, 6, p. 459.
[67] So called at *NE*, 2, 19, p. 165.

this sense would not be "false" enough as expressions for what Leibniz says of them. Often it is suggested that what is appercievable is what is *common* to the infinite number of petite perceptions which conspire to produce an effect (this seems to be a lesson of the discussions of how individually insensible increments in the intensity of a sound can awaken one from a sound sleep, for instance). Our failure to perceive the individuals is the failure to distinguish the unique contribution of each to the resulting awareness. Taking this strand of thought seriously, a set P of petite perceptions is taken as consisting of perceptions whose expressive ranges largely overlap, though each may contain a few distinguishing accidents. A perception metaphysically produced by all of them might be said to develop (in an attenuated sense) the *set* P if it expressed a superset of what is *common* to the expressive ranges of elements P, even though no element of P is developed in the strict sense. The common content thus apperceived is artificial in the above sense, and is false as representation in just the sense in which abstractions may be called "false" as overlooking distinguishing detail. The infinite descending heirarchy of phantasms is easily explained in these terms. If I become capable of greater discrimination concerning my sensation of green, more attentive to its origins and details—in short, more aware of the distinctions in expressive range in the collaborating petit perceptions—I may divide P into two subsets P' and P^* each of which boasts a larger common expressive core than P did, and which separately give rise to the sensations of blue and yellow. The resegregation of P into P' and P^* occurs only because more distinguishing accidents of its elements are taken account of, and the same process can in principle occur in P' or P^* since an infinite number of differentiating features of expression are abstracted from at each stage.

On this account, then, sensation occurs when what is developed is the common core of an infinite set of perceptions so similar to one another that there is not sufficient reason for individual elements or proper subsets to be picked out as distinguished and to be individually developed. All the minute perceptions which are in this sense included in a sensation contribute to a single undifferentiated episode of sensory awareness. "These sense-ideas are simple appearance, because, being confused, they do not give the mind the means of distinguishing their contents; . . . we treat these ideas as simple ideas because at least our apperception does not divide them,"[68] Leibniz says of the recognitive dispositions (clear but confused ideas) corresponding to sensations.

The final question we must consider is what sort of perceptual act, or form of apperception, if any, corresponds to distinct *ideas* as their realiza-

[68] *NE*, 2, 3, p. 120.

tion. The trouble with the ideas of sense is that "they are not distinct, because they are not distinguished by what they include. Thus we cannot give a definition of them."[69]

> Thus although in our view distinct ideas distinguish one object from another, nevertheless, as the ideas clear but confused in themselves do so also, we call *distinct* not all those which are very discriminating or which distinguish objects, but those which are well distinguished, i.e., which are distinct in themselves and distinguish in the object the marks which make it known, which an analysis or definition gives.[70]

"Distinct in itself" here may refer either to inclusiveness of expressive range or to development. The element in this account that goes beyond sensation is distinguishing within the object the marks by which it can be known. The simple recognition which actualizes clear ideas has been modelled by development of the content of a perception expressing some feature of the world. To recognize a feature is to be aware of it, to respond to one's initial perception expressing that feature *as of* that feature, namely, by developing the original content. What is wanted now is a similar account of recognition by marks, which can apply to ideas more complicated than *red*. What is it to be aware of some feature *as* a mark of a particular object?

Leibniz recognizes that nonreasoning animals are capable of apperceptive association, as when noticing a stick he was once beaten with makes a dog fear another beating. This is not reasoning, since it depends not on conformity to necessary principles but on adventitious facts about one's actual sensory career. But it is a "shadow of reasoning" that the brutes exhibit and that marks the limit of aspiration of empiricists.[71] Let us look more closely at what is required for such associative links to allow recognition by marks analogous to that enabled by distinct ideas. In the *New Essays* Leibniz offers an extended and surprisingly modern discussion of the recognition of natural kinds by their marks. In his early work, Leibniz took as the expression of a distinct idea in a nominal definition statements such as "gold is the most fixed metal." This view was refined, however, as Leibniz sought to deal with a puzzle Locke raises. Locke had objected (Section 50 of "On the Names of Substances," in the *Essay*) that with such a definition one could not without triviality assert that gold is fixed, whereas if we take the definition as shorthand merely for the assertion that gold is some internal essence and that being fixed is a consequence of that essence, then we are speaking of a wholly unknown essence. Leibniz's reply is that "the body given by this internal constitution is designated by other external marks in which fixed-

[69] *NE*, 2, 29, p. 267.
[70] Ibid.
[71] See *NE*, preface, pp. 44–45.

ness is not comprised, as if one said: the heaviest of all bodies is also one of the most fixed."[72] Here and elsewhere in this work (see especially p. 394 and below) Leibniz requires *two* sets of marks for recognition of an object according to a distinct idea. The problem is explicitly presented as arising from the necessity of explaining the informativeness of identity statements codifying such recognition. Thus malleability is indeed included in our complex idea of gold:

> But in order to express its malleability without identity and without the defect of *coccysm* or repetition, we must recognize this thing by other qualities, as color and weight. And it is as if we said that a certain fusible body, yellow and very heavy, called gold, has a nature which gives it besides the quality of being very soft to the hammer and capable of being made very thin.[73]

Taking Leibniz's "it is as if one said" in these passages as indicating an analysis of the sense of what is said, this dual-marks requirement exactly coincides with Frege's demand that the expressions flanking an identity sign (what in the *Grundlagen* he called "recognition statements"—for him as for Leibniz all cognitive activity consists either of recognition or of inference) express different senses, if the identity is to count as expressing a recognition at all. Our problem is thus to say what it is according to Leibniz to *take* two sets of marks *as* marks of the *same* object (the apperceptive or recognitive status expressed discursively by reasoning beings in the form of identity statements).

The marks involved in distinct ideas may themselves be merely clear, so we may take the marks to be sensory complexes in the simplest cases. But we may not then identify recognition by marks simply with passage from one such complex to another, even if some repeatable kind of passage becomes habitual. For such passage may be no more than a shift of attention, as one might have the habit of conjuring up the smell of fresh cinnamon upon seeing a white picket fence (as the result of an early experience) without in any way confounding the objects. Not every reminder is a recognition. What is required is that two separate sets of marks be distinguished both *from* one another (as the minute perceptions which are in some sense "marks" for the awareness that is recognition of sensory qualia are not) and *as* characterizing a common object which exhibits all of the accidents expressed by either set of marks. For the significance of the recognition that $a = b$ is that every accident of a is an accident of b and vice versa. Thus we are led to the following scenario for the advent of a perception which will be "distinct" in the third and strongest of our senses, namely, as the recognition by marks

[72] *NE*, 3, 4, p. 340.
[73] *NE*, 3, 10, p. 384.

enabled by distinct ideas—the sense in which distinct perceptions alone furnish "matter for reason."[74] Let the first of our marks be the combination of accidents a_1 and a_2 that we suppose to be expressed by perception p_a occuring at time t_a, and let the second of our distinguishing marks be the combination of accidents a_3 and a_4 expressed by p_b occurring at a later time t_b. We may think of these as corresponding to the perception of an instance of the heaviest metal and of the most malleable yellow one respectively. The individual in question must be aware of each of these, and as distinct (i.e., discrete). So we presume that p_a is developed by a succeeding perception p_a' and p_b is developed by p_b'. To be aware of these properties as marks of one thing, then, will be for p_a' and p_b' to be jointly developed by a further perception p_c, produced by both and whose expressive range is a superset of the union of the expressive ranges of p_a' and p_b'. P_c is then a distinct recognition of gold. It is the occurrence of a common development of the contents of p_a' and p_b' that sets off awareness of them as marks of one thing from the mere associational passage from p_a' to p_b' (considered for the moment as repeatable types) that includes habitual shifts of attention. That the content of p_c may include more than is included in p_a' or p_b' allows a dog to take both the appearance of a certain stick and an expression of his master's as marks of an impending beating (and hence of each other) without being aware of the beating as consisting entirely in that association.

The difference between the way p_c develops the content of p_a and p_b and the way a sensation develops the contents of the multitude of minute perceptions it springs from is the difference between distinguishing component marks and confusing them. In distinct recognition the perceptions developed need have no overlap of expressive range. Even if they do have some accident as common content (e.g., *metallic*), it is the *differences* between those contents which makes distinct recognition possible. In sensation, only the *common* content is developed. Individual perceptions are not distinguished from one another, nor developed. P_a and p_b may themselves be sensations, of course, or more generally, their places may be taken by *sets* of sensations—the set associated with a heavy yellow metal sphere and that associated with a sphere of a malleable, fixed metal, for instance. In either case it seems clear that the beasts of the field could possess distinct recognitions ultimately based on their senses that differ from the inferential realization of distinct ideas *only* in that the development of expressive content essential to them is not underwritten by the necessary and general truths of reason, stemming rather from happy historical accident as regards the acquisition of developmental appetitions. Furthermore, some account along these lines will be

[74] *NE*, 3, 17, p. 570.

required if we are willing (as Leibniz seems to be) to attribute to brutes some differentiation of the field of awareness, not as regards intensity of attention (which we model by degree of development), but as awareness of a variety of objects. Only a mechanism like that suggested will allow the segregation of features in the world of which we are separately aware into coobjectual classes. Thus a brute aware of the smells of an apple and an orange, and of a red sphere and an orange one, can in virtue of the codevelopment of the perception of the red sphere and the apple smell on the one hand, and the orange sphere and the orange's smell on the other, be aware of two fruits as well as four features. Such partitioning of features into objects is also needed for association to work well, so that the apple smell will in future be associated only with apples, and not with oranges.

I have discerned three different but closely related senses in which Leibniz uses the concept of distinctness. The first and earliest use, in terms of which the hierarchy of perfection of monads and physical interaction are to be understood, corresponds to being of high *expressive* degree, that is, having a relatively inclusive expressive range. The next use, in terms of which awareness of apperception is to be explained, is one in which a perception is distinct (and hence noticed) to the extent to which it is *developed*, that is, gives rise to a perception whose expressive range is a superset of that of the original perception. The concept of development accordingly presupposes and builds upon the notion of expressive degree. The doctrine of finiteness of apperception, that only a finite number of the most developed perceptions are apperceived, together with considerations concerning the bodily origin of sensations and the principle of sufficient reason, enabled me to explain the occurrence of sensory phantasms in terms of development as well. Finally, I described a use which occurs only very late, which indeed appears to be developed in the *New Essays* in response to Locke's doctrines concerning the articulation of ideas, in which a perception is distinct just in case it constitutes recognition of some object by marks. This usage is explained by a two-stage sequence of development and is that intended when Leibniz talks of distinct perceptions as realizing distinct ideas, although strictly reason is not required for such recognition by marks.

[*I*] We apperceive many things within and without us which we do not understand, and we *understand* the, when we have distinct [*distinctes*] ideas of them, together with the power of reflection and of drawing from them necessary truths. Animals therefore have no understanding, at least in this sense, although they have the faculty of apperceiving impressions more remarkable and more distinguished [*plus distinguées*], as the boar is aware of a person who shouts at him, and goes straight for this person, of whom he had had before only a cloudy perception, but confused, as of all other

objects which fell under his eyes, and whose rays struck his crystalline humor. Thus in my view the *understanding* [when exercised] is called *intellection*, which is a [*distincte*] perception united with the faculty of reflection, which is not in animals. Every perception united with this faculty is thought, which I do not accord to animals any more than understanding, so that we may say there is intellection when thought is distinct [*distincte*].[75]

These three senses arrayed in roughly increasing order of strength and maturity of period of development enable one to explicate all of Leibniz's pronouncements concerning distinctness of perceptions or indeed appetitions.[76] One could hardly avoid discriminating the first two senses, since the tension between them appears even in the earliest work. The third might be discarded as unduly speculative, if one is willing to ignore various of Leibniz's late pronouncements.

The theoretical postulate which permits the detailed explication of these various phenomena of perception and apperception is the association with each perception of an *expressive range* consisting of those accidents or features of the world which are represented by that perception, that is, are deducible from its occurrence. This association of intensional content with each perception is motivated by consideration of the nature of perception and of expression according to Leibniz, in particular the need to differentiate perceptual from merely mathematical or symbolic expression in such a way as to permit the gradation into *degrees* of perceptual expression so crucial to the metaphysical role Leibniz assigns that notion. Using that hypothesis about the content of perceivings, it was possible to offer necessary and sufficient conditions for both the *occurrence* and the delimitation of *content* of *apperceivings*, including sensations.

It is important to notice that although the recognition by marks corresponding to distinct ideas is explicitly the model for the third sense of *distinct* as applied to perceptions, it is implicitly the model for the second sense as well. Development of a perception corresponds to passage from a mark or feature to a more inclusive delineation of an object. On the level of concepts, moving from the mark *heaviest metal* to the concept *gold* is moving to a concept that along with much else includes the designation *heaviest metal*. So my notion of awareness can be restated as what occurs when a perception is taken as a mark of another more expressively complete perception. When the mark is in addition apperceived *as* a mark, the third sense of distinctiness arises. This observation is important for evaluating the theoretical role assigned to the notion of *inference* in the portions of Leibniz's epistemology

[75] *NE*, 2, 21, p. 178.

[76] See *NE*, 2, 21, p. 201.

and philosophy of mind which I have taken to be metaphysically fundamental. Inference is the primitive which anchors both ends of the foregoing explanatory structure. First, the basic theoretical auxiliary I introduced, the notion of an individual expressive range, is explicitly explained in terms of inference. The expressive range of a perception is that set of accidents (nonrepeatable occurrences of complex property-types) which may be inferred from the occurrence of that perception alone (i.e., if nothing else were known about its universe). It is only insofar as there are primitive inferrential facts of this form that this explanatory scheme gets off the ground. At the other end, the model in terms of which awareness and recognition consciously by marks (the Fregean model of recognition) are explained is that of distinct *ideas*, which as we have seen are *inferentially* articulated ideas, which can be had only by beings capable of reason. These again I take for granted. One of Leibniz's primary methodological principles is that we should conceive those things of which we do *not* have distinct ideas on the model of those things of which we *do* have distinct ideas. This paper has suggested, in effect, that at least as regards perception and representation, he also conceives those things which are not distinct ideas (inferentially articulated) on the model of those things which are. Inference is the root notion in terms of which representation and its varieties are explained. It is this in which Leibniz's *rationalism* consists: that where empiricists begin with a primitive notion of *representation* and seek to ground in it whatever inferences are to be recognized (as Hume attempts to ground causal and inductive inference), he as rationalist begins with inference and then explains the notion of representation in terms of it. It is in this sense that percepts are assimilated to concepts (efficacious ideas), as modelled on them, though we have seen that in no way can the difference between them be described as merely one of "degree."[77]

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