

## IV\*—LOCKE'S RELATIONS AND GOD'S GOOD PLEASURE

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**ABSTRACT** Did God give things 'accidental powers not rooted in their natures', powers not rooted in intrinsic properties? For Leibniz, no. For Locke, the answer is disputed. On a voluntarist reading, yes, secondary and tertiary qualities are superadded (Margaret Wilson). On a mechanist reading, no, as for Leibniz (Michael Ayers). Since Locke viewed these qualities as relational, his view of relations ought to bear on the dispute. Locke said relation is 'not contained in the real existence of things'. Bennett says Locke means relations are reducible (as Leibniz thought), which supports the mechanist reading. Bennett is mistaken: Locke means relations are irreducible, in harmony with his voluntarism.

### I

#### *Mechanism and voluntarism.*

[I]f we could discover the Figure, Size, Texture, and Motion of the minute Constituent parts of... Bodies, we should know without Trial several of their Operations one upon another, as we do now the Properties of a Square, or a Triangle.<sup>1</sup>

The shining yellowness of gold, the attractive power of the loadstone, the sweetness of manna, are qualities that flow inexorably from the primary qualities of their parts. There is in principle a deductive science of nature—or so Locke seems at times to hope. If we had an adequate idea of the real essence of some substance,

then the Properties we discover in that Body, would depend on that complex *Idea*, and be deducible from it, and their necessary connexion with it be known. (II.xxxi.6, 379)

1. John Locke, *An Essay Concerning Human Understanding*, ed. Peter Nidditch (Oxford: Clarendon Press, 1975), IV.iii.25, 556. This essay has benefited (albeit not so well as it ought) from the generous comments of Margaret Wilson, Michael Ayers, and Richard Holton. Thanks also to those who discussed an ancestor of the paper, presented at a 1993 conference of the Australasian Society for the History of Philosophy (and published in their 1993 Yearbook, ed. Knud Haakonssen and Udo Thiel).

\*Meeting of the Aristotelian Society, held in Senate House, University of London, on Monday, 22nd November, 1999 at 8.15 p.m.

Those mechanical affections, primary qualities, real essences, are in some sense *intrinsic* properties, properties a thing has 'considered barely in itself', that make up 'that particular constitution, which every Thing has within it self, without any relation to any thing without it' (III.vi.6, 442). Whatever conception of intrinsicness we bring to bear in understanding Locke, it will allow that primary qualities, and not secondary and tertiary qualities, are intrinsic. They are also essential to matter, but that is not my topic here. These properties are known by God and the angels, who are able to deduce the derivative powers.

Spirits of a higher rank than those immersed in Flesh, may have as clear Ideas of the radical Constitution of Substances, as we have of a Triangle, and so perceive how all their Properties and Operations flow from thence. (III.xi.23, 520)

If we were angels, knowledge of the physical world would be at least partly like knowledge of geometry. But alas, we are not angels. We are baffled when we seek a connection between the primary qualities of matter and its powers. Locke's faith in Boylean mechanism is tempered by humility. The powers of things do flow from their intrinsic properties, but we cannot see how, we see no conceivable connection (IV.iii.13, 545). A deductive science may belong to angels, but it does not belong to us. So runs a certain story of Locke the mechanist, ably defended by (among others) Michael Ayers.<sup>2</sup>

There is an alternative explanation for our bafflement, an alternative reading of Locke's lament that there is no conceivable connection between primary qualities and powers. Despite moments of optimism, Locke ultimately doubts there *is* a connection between primary qualities and powers, conceivable by us or anyone. Powers—secondary and tertiary qualities—do not flow from primary qualities, but from 'the arbitrary Will and good Pleasure of the Wise Architect' (IV.iii.29, 560). Some, many, perhaps all, of the powers of bodies to interact with each other and with ourselves have been superadded to them by a free act of God. The problem lies not with our ignorance, but with the

2. Michael Ayers, 'Mechanism, Superaddition, and the Proof of God's Existence in Locke's *Essay*', *The Philosophical Review*, 90 (1981), 210–51, *Locke II: Ontology* (London: Routledge, 1991), ch. 12.

natures of things. So runs a certain story of Locke the voluntarist, ably defended by (among others) Margaret Wilson;<sup>3</sup> and this essay is intended as a tribute to that fine scholar and inspiring teacher, who is remembered with great respect and affection by those fortunate enough to have known her. (I have no other excuse for the presumption of venturing into Locke's terrain.)

The voluntarist reading of Locke was anticipated by Leibniz, who complained of Locke's alleged superadded powers:

if... God gave things accidental powers which were not rooted in their natures and were therefore out of reach of reason in general; that would be a back-door through which to re-admit 'over-occult qualities' which no mind can understand.<sup>4</sup>

It is worth observing that in Leibniz's case, the conviction that physical powers are rooted in things' natures rests on a metaphysical thesis about the reducibility of relations, or, as some have preferred to put it, the supervenience of relations on intrinsic properties. Powers, physical forces, belong 'among the phenomena', they are 'relations', and are 'derivative', reducible to the intrinsic properties of monadic substances.<sup>5</sup> Physical powers have foundations in monadic substances, so that there can be no difference in the physical powers without a difference in the monads. Of necessity, facts about the intrinsic properties entail the relational facts. In creating substances with their intrinsic properties, God creates derivative relations, and with them, relational properties. An angel acquainted with the intrinsic properties of monadic substances would be able to deduce the derivative relations and properties, as surely as we can deduce

3. Margaret Wilson, 'Superadded Properties: The Limits of Mechanism in Locke', *American Philosophical Quarterly* 16 (1979) 143–50, 'Superadded Properties: A Reply to Michael Ayers', *Philosophical Review* 90 (1982), 247–52. For a recent and sophisticated defense of the voluntarist interpretation see Matthew Stuart, 'Locke on Superaddition and Mechanism', *British Journal for the History of Philosophy* 6 (1998), 351–79. Of Locke's various (alleged) superadded powers I focus on secondary and tertiary qualities, not powers of thought added to unthinking matter, and do not explore in depth the question of which, or how many, physical powers are superadded.

4. G. W. Leibniz, *New Essays on Human Understanding* (1765), tr. P. Remnant and J. Bennett (Cambridge: Cambridge University Press, 1981), 382, discussed by Ayers, *Locke II: Ontology*, 142–53. While Leibniz may have powers of thought in mind here, his complaint would be the same for any superadded powers.

5. See especially the correspondence with de Volder, in *Leibniz: Philosophical Essays*, ed. Roger Ariew and Daniel Garber (Indianapolis: Hackett, 1989).

that Simmias is taller than Socrates, when told that Simmias is six feet tall, and Socrates five. The powers of things are rooted in natures because powers are relational properties, and relations are reducible.<sup>6</sup>

If the voluntarist story of Locke is mistaken, Leibniz's complaint would be misplaced, at least for physical powers (henceforth simply 'powers'). If the mechanist story is true, Locke agrees with Leibniz: there is no need for superaddition. Could it be that that Locke agrees with Leibniz *for his reason*? Could he agree because he thinks powers are relational properties, and relations are reducible? Certainly powers are relational properties, for Locke: the secondary and tertiary qualities of gold, its yellowness, weight, ductility, fusibility, solubility in aqua regia, are, as he puts it, 'nothing else, but so many relations to other Substances' (II.xxiii.37, 317). Locke calls them relations where we might call them relational properties, and his unreliability on this distinction sometimes matters; but for now we can simply note that when relations are reducible, their corresponding relational properties will be reducible too. What would reducibility be, translated into Locke's metaphysics? It would say that relations are reducible to the intrinsic properties of *physical* (not monadic) substances. It would say that in creating a world of physical substances with intrinsic properties, God thereby creates a world with relations and relational properties. It would say, perhaps, what the mechanist says: an angel acquainted with the primary qualities of things would be able to deduce the derivative secondary and tertiary qualities, because the latter supervene on the former. The dispute between mechanism and voluntarism is often described as a dispute about explanation, but seen this way it is a metaphysical one. Seen this way, mechanism's epistemology emerges from metaphysics: angelic deducibility stems from reducibility. Perhaps the question of Locke's mechanism can thus be illumined, even settled, by attending to his views about relations.

In the chapter of Locke's *Essay* devoted to the topic we find this: 'Relation' is 'not contained in the real existence of Things,

6. See Jaegwon Kim, 'Concepts of Supervenience', *Philosophy and Phenomenological Research* 45 (1984), 153–76 (strong supervenience 165). For application to Leibnizian reducibility, see my *Kantian Humility: Our Ignorance of Things in Themselves* (Oxford: Clarendon Press, 1998), ch. 4.

but something extraneous, and superinduced' (II.xxv.8, 322). Jonathan Bennett has suggested a Leibnizian interpretation of the passage: Locke means relations are reducible.<sup>7</sup> Relation is not among the things that have 'real existence', being nothing over and above the intrinsic properties of things. Bennett's suggestion is parenthetical, and he draws no implications for Locke's views about mechanism or the qualities, but they seem plain. If Locke agrees with Leibniz about the reducibility of relations, and powers are relational, then powers do 'flow from' the intrinsic properties of things. In creating a world of physical substances with primary qualities, God creates a world with powers. If Bennett is right, Ayers' interpretation receives additional support: Locke's mechanism is a corollary of a more general thesis about relations. If Bennett is right, Wilson is wrong: there is no need for God's arbitrary pleasure.

In what follows I take up Bennett's suggestion, examining its implications for Locke's mechanism, and I argue that Bennett is wrong. When Locke says that relation is 'not contained in the real existence of Things, but something extraneous, and superinduced' he means, I think, that relations and relational properties are *irreducible*.<sup>8</sup> I consider two alternative interpretations of Locke's remark, as an assertion of irreducibility. Each has some claim to being a good interpretation, and in addition the not inconsiderable merit of being (probably) true. If it works, my argument gives broad support to the voluntarist interpretation of Locke; if not, it leaves that debate where it stands.

## II

*Preliminaries.* Locke says relation is 'not contained in the real existence of Things'. What do we make of 'real existence'? One important usage for 'real' is to signal the independence of a thing from other things, as when describing the 'real and primary

7. Bennett, *Locke, Berkeley, Hume: Central Themes* (Oxford: Clarendon Press, 1971), 254.

8. Cf. John Yolton: Locke 'means only to say that relations are not positive or absolute properties of things, not properties which objects have by themselves. Relations are real, however, in the sense that objects do in fact stand in relation with other objects', *Locke and the Compass of Human Understanding* (Cambridge: Cambridge University Press, 1975) 105. Yolton might not though be attributing irreducibility to Locke, since Leibniz could agree that relations are 'real' in Yolton's weak sense.



Qualities' which, unlike the secondary and tertiary qualities, are independent, not simply of perceivers, but of other things in general. He advises something like an isolation test for the real: to discover a thing's 'real' essence we should imagine it in the absence of other things, 'Put a piece of *Gold...* by it self' (IV.vi.11, 585, cf. II.xxiii.37, 317).<sup>9</sup> When Locke speaks of the 'real existence' of things he speaks of the intrinsic properties of things, in keeping with his usage a little later:

all Words, that necessarily lead the Mind to any other Ideas, than are supposed really to exist in that thing, to which the Word is applied, are *relative Words*. v.g. *A Man Black, Merry, Thoughtful, Thirsty, Angry, Extended*; these, and the like, are all absolute, because they neither signify nor intimate any thing, but what does, or is supposed really to exist in the Man thus denominated: But *Father, Brother, King, Husband, Blacker, Merrier, etc.* are Words, which together with the thing they denominate, imply also something else separate, and exterior to the existence of that thing. (II.xxv.10, 323)

The 'absolute' words signify the intrinsic properties (black being counted as intrinsic here),<sup>10</sup> that are supposed 'really' to exist in the thing, 'really' to exist in the man. What do we make of the spatial metaphor, 'contained in'? I shall take it to convey the idea of supervenience. Relation does not supervene on the intrinsic properties of things, but is something extraneous and superinduced.

This already looks like irreducibility, but there is a further interpretive question of how to construe the plural 'Things', which could be understood distributively or collectively. Locke

9. Locke speaks here of causal isolation, but could be gesturing towards the stronger isolation of being unaccompanied by any distinct (contingent) thing; though this test is inadequate, as David Lewis showed of Jaegwon Kim's similar test for intrinsicness, unaccompaniment being compatible with itself but extrinsic (Lewis, 'Extrinsic Properties', *Philosophical Studies* 44 (1983), 197–200; Kim, 'Psychophysical Supervenience', *Philosophical Studies* 41 (1982), 51–70). For a more optimistic development, see Langton and Lewis, where it is proposed that a basic intrinsic property is independent of accompaniment, i.e. four cases are possible: something can have the property and be unaccompanied, lack the property and be unaccompanied, have the property and be accompanied, lack the property and be accompanied; and intrinsic properties supervene on basic intrinsic properties (Rae Langton and David Lewis, 'Defining "intrinsic"', *Philosophy and Phenomenological Research* 58 (1998), 333–45).

10. Showing that Locke is as susceptible as any to the habit described at IV.vi.11, 585.

could be denying this: 'For any given thing, its relations supervene on its intrinsic properties' (a distributive reading). Or this: 'For any given pair of things, the relations between those things supervene on the intrinsic properties of those things' (a collective reading). Locke could be denying that relations are what I shall call *unilaterally* reducible (the distributive reading), or that they are *bilaterally* reducible (the collective).<sup>11</sup>

So we can distinguish two readings of Locke's remark. On one, Locke denies unilateral reducibility: he denies that a relation supervenes on the intrinsic properties of the relata, taken distributively. A thing's relations do not always supervene on the intrinsic properties of that thing. And, since what applies to relations applies (*mutatis mutandis*) to relational properties, we shall say that on this reading Locke affirms—*Irreducibility I*: Not all relations or relational properties are unilaterally reducible.

On another, Locke denies bilateral reducibility: he denies that a relation supervenes on the intrinsic properties of the relata, taken collectively. It is not the case that for any given pair of things, their relations supervene on the intrinsic properties of those things. And again, since what applies to relations applies (*mutatis mutandis*) to relational properties, we shall say that on this reading Locke affirms—*Irreducibility II*: Not all relations or relational properties are bilaterally reducible.

For ease (and in keeping with Locke's own loose talk of 'Relation') the distinction between relation and relational property is not always closely observed in what follows (reducibility for the former being taken to include reducibility for the latter), but it will be observed where it is particularly significant.<sup>12</sup>

11. For simplicity I say 'pair', introducing a notion of *bilateral* reducibility. I should perhaps say 'set', introducing a more complex notion of *multilateral* reducibility. See Langton, *Kantian Humility*, 78–89, where unilateral and bilateral reducibility for relations and relational properties are more formally defined. (The notions are adapted from Keith Campbell, *Abstract Particulars* (Oxford: Blackwell, 1990), and resemble a distinction made by G. H. R. Parkinson, *Logic and Reality in Leibniz's Metaphysics* (Oxford: Clarendon Press, 1965) 45, 147). Note too an ambiguity in the negation's scope (ignored for simplicity here): Locke could mean no relations are reducible, or not all are.

12. A rough cashing out for the hand-waving about relational properties: *Irreducibility I*: no relational property is unilaterally reducible, i.e. none supervenes on the intrinsic properties of its bearer alone; *Irreducibility II*: not every relational property is bilaterally reducible, i.e. not every one supervenes on the intrinsic properties of its bearer and some other salient thing.

Leibniz probably believed that all relations were bilaterally reducible, and this seems the sort of reducibility Bennett has in mind, contradicted by *Irreducibility II*. Leibniz may also have believed that all relations are unilaterally reducible, a thesis contradicted by *Irreducibility I*.<sup>13</sup> So each of my readings of Locke's remark opposes an arguably Leibnizian reducibility thesis, but we shall see it is the second that matters most for mechanism.

### III

*Irreducibility I: Not all relations or relational properties are unilaterally reducible.* This thesis seems true, whatever Leibniz may have thought to the contrary. Relations and relational properties widely thought to be reducible are not thought to be unilaterally reducible. Simmias's property of being taller than Socrates doesn't supervene on the intrinsic properties of Simmias, but on those of Simmias and Socrates. To ask a relational property to be unilaterally reducible comes close to asking it to be intrinsic, suggesting the plausibility of an even stronger thesis, that *no* relations are unilaterally reducible.

Notwithstanding its apparent plausibility, there is a certain *prima facie* case for thinking that Locke might not believe *Irreducibility I*. He occasionally seems to regard the powers as relational *and* unilaterally reducible. Certain passages expressing the geometrical vision of the physical world appear to say that the powers of a thing 'flow from' the primary qualities of that thing alone. Locke says that if only we knew of 'that real Constitution [of Gold] in which [Colour, Weight, Fusibility, Fixedness, etc.] are all founded; and also how they flow from it,' then 'the real Truth of this proposition, *that all Gold is malleable*, would be as certain as of this, *The three Angles of all right-lined Triangles, are equal to two right ones.*' (IV.vi.10, 585). If propositions about gold's intrinsic properties imply the propositions

13. Unilateral reducibility may be implied by Leibniz's idea that the complete concept of an individual substance contains all of its relational predicates. His beliefs would be consistent: unilateral reducibility entails bilateral, though not vice versa. See Langton, *Kantian Humility*, ch. 4, drawing on interpretations of Leibniz from Parkinson, *Logic and Reality*, Benson Mates, *The Philosophy of Leibniz: Metaphysics and Language* (Oxford: Oxford University Press, 1986), Nicholas Rescher, *The Philosophy of Leibniz* (Englewood Cliffs: Prentice Hall, 1967), and James van Cleve 'Inner States and Outer Relations: Kant and the Case for Monadism', *Doing Philosophy Historically*, ed. Peter H. Hare (Buffalo, N.Y: Prometheus Books, 1988).



about gold's relational properties, perhaps malleability supervenes on those intrinsic properties, and is unilaterally reducible. Again: 'What is Sweet, Blue or Warm in Idea, is but the certain Bulk, Figure, and Motion of the insensible Parts in Bodies themselves, which we call so' (II.viii.15, 137). If a violet's being blue 'is but' its having a certain arrangement of primary qualities in its insensible parts, perhaps being blue supervenes on those qualities, and is unilaterally reducible. Finally, if something like an isolation test is supposed to reveal intrinsicness ('Put a piece of *Gold...* by it self'), then gold's colour and weight—its secondary and tertiary qualities—may turn out to be intrinsic. It might be thought that such properties, being dispositional, do not require relations to other actual things, merely counterfactual ones, and Locke's talk of their being 'nothing else, but so many relations to other Substances', can perhaps be explained away.<sup>14</sup> If colour and weight are intrinsic, they can supervene on themselves, and be unilaterally reducible.

There are good reasons for thinking though that Locke does deny unilateral reducibility, and endorses *Irreducibility I*. When Locke says that in ascribing relational properties to a thing we 'imply also something else separate, and exterior to the existence of that thing', he surely means that we imply the existence of something else. One illustration is provided by what has been dubbed as mere Cambridge change,<sup>15</sup> a change in relation or relational property without change in intrinsic properties of the bearer.

[I]f either of those things [that are related] be removed, or cease to be, the Relation ceases, and the Denomination consequent to it, though the other receive in it self no alteration at all. *v.g. Cajus*, who I consider to day as a Father, ceases to be so to morrow, only by the death of his Son, without any alteration made in himself. (II.xxv.5, 321)

14. For example, by saying that he conflates a power with its manifestation; or thinks power concepts are relational, though powers are intrinsic. For a family of different intrinsic/extrinsic distinctions (for properties and concepts) see Lloyd Humberstone, 'Intrinsic/Extrinsic', *Synthese* 108 (1996), 205–67 (accepted 1992). Powers are intrinsic on some but not other conceptions of intrinsicness, cf. Langton, *Kantian Humility* ch. 4, James van Cleve, 'Putnam, Kant, and Secondary Qualities', *Philosophical Papers* 24 (1995), 83–109, and note 20 (below).

15. P. Geach, *God and the Soul* (London: Routledge and Kegan Paul, 1969), 71 f., discussed (and its prospects for elucidating the intrinsic/extrinsic distinction explored) in Humberstone, 'Intrinsic/Extrinsic', 207–8.

Change in a relational property, though its bearer 'receive in it self no alteration at all', shows that the relational property depends on something other than properties the thing has 'in it self', and is not reducible to those properties. If fatherhood were unilaterally reducible, it could not change without change in the intrinsic properties of Cajus.

Locke denies unilateral reducibility not only for such properties as fatherhood, but also for powers. In what he rightly says is a Lockean spirit, Bennett supplies an example of mere Cambridge change for powers. Phenol-thio-urea could lose its bitterness with no change in its primary qualities should the phenol tasting gene be eliminated from the human population.<sup>16</sup> If Bennett is right (and many will want to disagree) then powers are relational. And Locke's application of his own isolation test for intrinsicness—a test which can be viewed as a mere Cambridge change effected in the imagination—yields just this sort of result:

Put a piece of *Gold* any where by it self, separate from the reach and influence of all other bodies, it will immediately lose all its Colour and Weight, and perhaps Malleableness too. (IV.vi.11, 585–56)

A piece of gold put by itself is supposed to lose its colour, weight and malleableness, as Cajus lost his fatherhood—gold and the man each receiving 'in itself no alteration at all'. There can be a difference in colour, weight and malleability, with no difference in the primary qualities of the gold.<sup>17</sup> Locke denies unilateral reducibility, and this may be what he means by saying that relation is 'not contained in the real existence of Things'.

Locke's remark, on this interpretation, does not settle the question about mechanism and voluntarism. To assert *Irreducibility I* is not to deny that relations are reducible *tout court*. Locke may believe that no relations are unilaterally reducible and believe that all are bilaterally reducible, and then he would agree at least partly with Leibniz, as Bennett thought. In making

16. Bennett, 'Substance, Reality, and Primary Qualities,' *American Philosophical Quarterly* 2 (1965), 1–17.

17. Cf. porphyry's alleged loss of colour (as mere Cambridge change) following the absence of light, light supposedly being to porphyry's colour as the son is to Cajus's fatherhood (II.viii.19, 139).

the world of substances with their intrinsic properties, God thereby makes the relations: there is no need for superadding acts of God. Relation might be 'contained in the real existence of Things' when we include the full set of relata, when we understand 'Things' in the collective, not the distributive, sense. Perhaps the angel acquainted with the intrinsic properties of Cajus and *other* individuals will deduce that Cajus is a father. Perhaps the angel acquainted with the intrinsic properties of gold and *other* things will deduce that gold is heavy, malleable. To address the question of mechanism we must move on.

#### IV

*Irreducibility II: Not all relations or relational properties are bilaterally reducible.* On this second reading, Locke says that not all relations supervene on the intrinsic properties of their relata, taken collectively—contrary to Leibniz, and contrary to Bennett's interpretation of Locke's remark. This too seems true: some relations and relational properties seem to supervene on the intrinsic properties of their relata, taken collectively (Simmias's property of being taller than Socrates), and others don't (Simmias's property of being a mile from Socrates). But here again, notwithstanding its plausibility, there is a *prima facie* case for thinking that, as Bennett supposes, Locke rejects *Irreducibility II*. Bennett does not present the case, but a devil's advocate will find the beginnings of one, in those passages expressing the deductive vision:

I doubt not but if we could discover the Figure, Size, Texture, and Motion of the minute Constituent parts of *any two Bodies*, we would know without Trial several of their Operations one upon another, as we do now the Properties of a Square, or a Triangle. (IV.iii.25, 556, emphasis added)

Truths about the secondary and tertiary qualities will follow, Locke hopes, not from truths about the primary qualities of one thing considered alone, but of two:

Did we know the Mechanical affections of the Particles of *Rhubarb*, *Hemlock*, *Opium*, and a *Man*... we should be able to tell before Hand, that *Rhubarb* will purge, *Hemlock* kill, and *Opium* make a Man sleep... The dissolving of... Gold in *aqua Regia*...

would then, perhaps, be no more difficult to know, than it is to a Smith to understand, why the turning of one Key will open a Lock, and not the turning of another. (IV.iii.25, 556)

The truth about gold's secondary and tertiary qualities would follow from truths about the primary qualities of, not gold alone, but gold and aqua regia. This looks like *bilateral* reducibility.

Moreover, the case draws apparent support from a principle that relations need some 'ground' or 'foundation' or 'occasion' in the related things, which might express the thought that relations supervene on intrinsic foundations:

There must always be in relation two *Ideas*, or Things, either in themselves really separate, or considered as distinct, and then a ground or occasion for their comparison. (II.xxv.6, 321)

If one says of Cajus that he is whiter than Free-stone, the 'ground' or 'occasion' for the relation is the white colour of Cajus, and (presumably) the yellowish colour of Free-stone (II.xxv.1, 319). (Here again, a colour is being counted as intrinsic.) Perhaps Locke thinks Cajus's being whiter than Free-stone supervenes on the intrinsic properties of Cajus and Free-stone together, and that something of this sort must hold generally. He says,

it suffices for the knowing the precise *Idea* the relative term stands for, to have a clear conception of that, which is the foundation of the Relation. (II.xxv.8, 323)

Knowing the foundation of the relation is sufficient for knowing the relation. An angel (or anyone) acquainted with the two foundations (the colours of Cajus and Free-stone) can deduce that Cajus is whiter than Freestone. Here is apparent support for bilateral reducibility, for Bennett's reading of Locke's remark, and thus (indirectly) for the mechanist interpretation.

However, this *prima facie* case, made on the devil's behalf, does not hold water. Locke's requirement of foundations for a relation is not a requirement of an intrinsic supervenience base, as his other illustrations testify. His idea that knowledge of foundations, or occasions, supplies knowledge of relation is not that knowledge of intrinsic properties supplies knowledge of relation. Consider the 'occasion' supplied for another of Cajus's

relational properties.

When I give *Cajus* the name *Husband*, I intimate some other Person... [T]he Contract, the Ceremony of Marriage with *Sempronia*, is the occasion of the Denomination, or Relation of Husband. (II.xxv.1, 319)

The occasion for being a husband is not sought in intrinsic properties, but in a more fundamental relation of being joint signatories to a marriage contract. Consider too the 'foundation' for cassowary kinship:

It suffices for the knowing the precise *Idea* the relative term stands for, to have a clear conception of that which is the foundation of the Relation... Thus having the Notion, that one laid the Egg, out of which the other was hatched, I have a clear *Idea* of the Relation of Dam and Chick, between the two Cassiowaries in St James' Park; though, perhaps, I have but a very obscure and imperfect *Idea* of those Birds themselves. (II.xxv.8, 323)

The foundation is itself a relation: 'one laid the Egg, out of which the other was hatched'. Knowledge of that foundation (not of intrinsic properties) supplies knowledge of the relation of dam to chick. Egg-laying is to the relation of dam to chick as ceremonial contract-making is to the relation of husband to wife. Locke's purpose is to observe that ideas of a relation can be clearer than ideas of the relata, and his principle requiring 'foundations' for a relation is no endorsement of bilateral reducibility.

We need though to consider the powers in their own right. Locke also believes that secondary and tertiary qualities require 'foundations' in the primary qualities of things, and these foundations are certainly intrinsic properties: perhaps he thinks powers of things supervene on foundational primary qualities of things, taken collectively, and that knowledge of those foundations supplies knowledge of powers. Adapting Locke's isolation test: put a piece of gold *almost* by itself, accompanied by nothing more than *aqua regia*. Is the gold soluble in *aqua regia*? Will an angel acquainted with this sparse world deduce gold's solubility? In some moods Locke's answer seems to be yes: the angel knows the 'Figure, Size, Texture, and Motion of the minute Constituent parts' of these two bodies, and should therefore 'know without Trial several of their Operations one upon another, as we do now the Properties of a Square, or a Triangle'



(IV.iii.25, 556). But this faith in mechanism is not constant. Locke seems not only to have doubted human ability to see a connection between primary qualities and powers, but doubted the connection itself, doubted that secondary and tertiary qualities supervene on the intrinsic qualities of things. Notwithstanding occasional moods of optimism, he thinks there is 'no conceivable connexion' between our ideas of primary qualities and our ideas of the secondary and tertiary qualities, and that many, if not all, of the latter owe their being to God's arbitrary pleasure:

the *Ideas* of sensible secondary Qualities, which we have in our Minds, can, by us, be no way deduced from bodily Causes, nor any correspondence or connexion be found between them and those primary Qualities which (Experience shows us) produce them in us... [W]e can attribute their connexion to nothing else, but the arbitrary Determination of that All-wise Agent. (IV.iii.28, 559, cf. IV.iii.13, 545)

Locke is speaking here of the secondary qualities, which perhaps raise special problems about mind-body interaction, but he elsewhere suggests that what applies to secondary qualities applies equally to at least some tertiary qualities:

the gravitation of matter towards matter, by ways inconceivable to me, is not only a demonstration that God can, if he pleases, put into bodies powers and ways of operation, above what can be derived from our idea of body... but also an unquestionable and every where visible instance, that he has done so.<sup>18</sup>

The idea of body is that of body's primary qualities, and from this a power of gravity cannot be derived: no angel acquainted with primary qualities alone will deduce it. And the same applies to powers of cohesion and powers responsible for the communication of motion:

the *Idea* of a right-lined Triangle necessarily carries with it an equality of its Angles to two right ones. Nor can we conceive this Relation, this connexion of these two *Ideas*, to be possibly mutable, or to depend on any arbitrary Power, which of choice made it thus, or could make it otherwise. But the coherence and

18. Correspondence with Stillingfleet, Locke's *Works* (London, 1823) IV, 467–68, cf. Stuart, 'Locke on Superaddition', 355–9, Wilson, 'Superadded Properties', 148–49, for further texts.

continuity of the parts of Matter; the production of Sensation in us of Colours and Sounds, *etc.* by impulse and motion; nay, the original Rules and Communication of Motion being such, wherein we can discover no natural connexion with any *Ideas* we have, we cannot but ascribe them to the arbitrary Will and good Pleasure of the Wise Architect. (IV.iii.29, 559–60, cf. II.xiii.24, 309)

The geometrical analogy is here abandoned. These powers owe their being to God's good pleasure. No angel can infer from matter's primary qualities its powers of gravity, cohesion, and (perhaps) impenetrability, nor perhaps any of its causal powers.

This doubt about powers is shared by some of Locke's contemporaries, and many of our own.<sup>19</sup> On this opinion, it is possible that gold and aqua regia should have the primary qualities they actually have, and for gold to be insoluble in aqua regia. Had it been God's good pleasure to decree different laws of nature, or none, things could have the same primary qualities and different causal powers. Adapting Locke's isolation test yet again (in line with this understanding of relationality): put a piece of gold by itself, and this time really by itself, unaccompanied by other objects and *unaccompanied by laws*.<sup>20</sup> (Then add aqua regia again if you like, since it will make no difference.) Is the gold soluble in aqua regia? Will an angel acquainted with this sparse world deduce gold's solubility? The angel knows the 'Figure, Size, Texture, and Motion of the minute Constituent parts' of gold and aqua regia, but God's arbitrary decree has not issued laws of gravitation, of cohesion, or motion. Does the angel 'know without Trial' gold's solubility, 'as we do now the Properties of a Square, or a Triangle'? No: in this world gold is not soluble, much less known to be. On this understanding of powers as relational, there can be a difference in powers with no difference in intrinsic properties, showing that powers fail to supervene on the intrinsic properties of things, even taking things collectively.

To sum up, if some powers are superadded, and if (as Locke believes) such powers are relational properties, then not all

19. For some comparisons with Locke's contemporaries (especially Boyle and Descartes) see Stuart, 'Locke on Superaddition', and Ayers, *Locke II: Ontology*.

20. If intrinsicness is understood as (roughly) compatibility with isolation and lawlessness, powers are relational (extrinsic), cf. Langton and Lewis, 'Defining "intrinsic"', fn. 9, itself adapted from Peter Vallentyne, 'Intrinsic Properties Defined', *Philosophical Studies* 88 (1997), 209–19.

relational properties are bilaterally reducible. This may be what Locke means by his remark that relation is 'not contained in the real existence of Things'. The apparent evidence to the contrary in his chapter on relation is merely apparent. There is no general principle requiring an intrinsic 'foundation' for relations, of the sort that Leibniz required. Nor, contrary to Bennett, is Locke's remark a statement of Leibnizian (bilateral) reducibility: it is better interpreted as reducibility's denial.

The above argument offers support for the voluntarist interpretation of Locke argued for by Wilson, and rejected by Ayers. Or does it? The mechanism ascribed to Locke by Ayers is compatible with a weak voluntarism: Locke's God 'chose the laws of mechanics (whatever they are) in choosing to create matter (whatever that is)';<sup>21</sup> God chose to create matter, but given that choice, facts about matter's powers follow from facts about its primary qualities as inexorably as any fact of geometry. This weak voluntarism, according to Ayers, is very different to the strong voluntarism holding that God is a perpetual miracle-worker. But it seems that Locke endorses yet a different voluntarism, for there is a middle ground between viewing God as perpetual miracle worker and viewing God as geometer. God chose to create matter, substance that is extended, solid, possessing the primary qualities. That choice does not establish matter's powers, for different powers are compatible with those primary qualities. God must choose again, and decree the laws bodies will obey, systematically annexing powers of certain kinds to primary qualities.<sup>22</sup> God is no perpetual miracle worker: with the laws in place, there is no need for further creation. Nor is God a geometer, if that requires powers to be deducible from primary qualities. Powers fail to supervene on intrinsic properties: they are not rooted in things' natures, contrary to Leibniz, and things could have those natures without those powers. But powers not deducible to the angel acquainted with primary qualities alone may yet be deducible to the angel acquainted with

21. Ayers, *Locke II: Ontology*, 153.

22. Stuart suggests that some powers, e.g. those of cohesion, gravity and thought, are more arbitrarily superadded than other powers, e.g. those involved in the communication of motion, the latter being constrained by the primary quality of solidity (preventing co-location of bodies), the former not ('Locke on Superaddition', 372-73).

something more—namely, the laws it was the Architect's good pleasure to proclaim.

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